

**Emerging Issues Surrounding Same-day  
Logistics: From Customer, Retailer and  
Carrier Perspectives**

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## **Abstract**

This project investigates how collaboration can extend the efficiencies in the UK logistics sector to deliver successful same-day parcel delivery services through Electronic Logistics Marketplaces (ELMs). This investigation is attributable to the increasing demand for same-day courier services resulting from innovative retail competition and the increasing adoption of technology.

A triad of carriers, shippers and customers with a Technology Service Provider (TSP) as the inter-relationship facilitator are identified as the key players, and are studied through a mixed method approach that incorporates both quantitative and qualitative research methods.

A careful review of literature and the qualitative thematic expert analysis of carriers and shippers identified a series of developments such as growing customer awareness, increasing adoption of e-commerce by customers and shippers, and radical innovative competitive strategies that led to the increasing demand for same-day courier services. The attempt to validate the assumptions gained from the literature review about customers' attitudes, through the expert (shippers and carriers) analysis, prompted the need for further investigation into customers' preferences.

The quantitative examination of customers' attitudes, through a survey with a sample size of 1185, allowed for the testing of four hypotheses:

- i. The more customers shop online, the more enthusiastic they are about speedy delivery.
- ii. The more frequently customers shop on-line, the less they are willing to pay a premium for delivery.
- iii. The greater customers' desire for express delivery, the more they are willing to pay a premium charge.
- iv. There is no support for home delivery preference over alternative delivery types, regardless of a customer's economic status.

The most striking findings were 'even though customers rated delivery speed as important, they will not embrace same-day delivery services at a high premium, but will pay between £0 and £5'. The findings also upheld the expert view that customers are not responsible for the increase in demand for same-day courier services.

The expert interviews indicate vertical integration or partnership as a source of competitive advantage for the large players, and that the recent adoption of same-day delivery as a competitive strategy by giant e-tailers/ top online retailers (TORs), including Amazon and Argos, has put large carriers under pressure to innovate, and will leave small and medium carriers and shippers struggling to meet increased customer expectations. Consequently, an innovative and intelligent collaboration platform is identified as the key tool to boost efficiencies and alleviate the challenges that the small and medium enterprises (SMEs) face.

The project concludes that firm size influences business strategies, and large carriers stand a better chance of adapting to changes in the logistics sector through vertical integration or partnership.

As a contribution to knowledge, the project reveals a relationship between technology development and the rapid evolution of business models, and that large carriers should drive development of an intelligent platform to enable a wider logistics network by integrating small and medium sized carriers, e.g. ELMs with effective consolidation, collaboration and integrating features. Based on this, a series of conceptual logistics business models and strategies have been designed to suit different business needs and sizes for national small parcel same-day and cost-effective courier services.



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## **Declaration**

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I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

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Surajdeen A. Lasisi

4<sup>th</sup> April, 2018



## Abbreviations

AHP: Analytic Hierarchy Process

ANP: Analytic Network Process

B2C: Business to consumers

CEP: Courier, express and parcel

CODP: Customers order decoupling point

ECR: Efficient consumer response

EDI: Electronic data interchange

ELM: Electronic Logistics Marketplace

EM: Electronic marketplaces

EPOS: Point of sale

ERP: Enterprise resource planning

IMRA: International Mass Retailer Association

KSF: Key success factor

LE: Large Enterprise

LSC: Logistics Supply Chain

LSCM: Logistics Supply Chain Management

LSP: Logistics Service Provider

MAS: Multi agent system

RDC: Regional Distribution Centre

SCM: Supply Chain Management

SME: Small and medium enterprise

TOR- Top online retailer (The leading online retail stores e.g. Amazon, eBay, Argos etc.)

TSP: Technology service provider



## **Chapter 1: Introduction**

### **1.0: Overview**

This first chapter introduces the research work.

There will be an introduction to the research idea, the retail logistics market, the philosophy of e-commerce and the changing retail market, before moving on to briefly recognise the major research areas that have been previously investigated by academics in related areas, the field of e-commerce and the retail market. The discovery of gaps in the research will help identify research opportunities from which the main research aim and objectives have been formulated. The theoretical framework has been designed to guide the research process along with the methodological approach adopted in order to satisfy the set aim of this thesis.

The outline of the research scope and the thesis overview will also be presented to show how the structure satisfies the underlying purpose of the thesis.

### **1.1 The research idea**

In 2012, the author, as a result of a preliminary literature review of trade press on e-commerce and the retail market, recognised that e-commerce is influencing consumer behaviour and has already led to changes in market requirements. The traditional retail model is changing from bricks-and-mortar to pure players and clicks-and-mortar; there is increasing demand for small parcel delivery, and parcel distribution is being transformed from a standard 4-8 days to next-day delivery and even same-day delivery, as evidenced by the trade press. The preliminary literature review on same-day delivery services revealed that same-day delivery has existed since the 1980s, but mainly in the business-to-business (B2B) sector, where important documents or high-value items are specially shipped via a point-to-point (P2P) delivery system.

From personal experience in the family business, the author is aware of a successful national small parcel same-day delivery service in the Nigerian retail market, where the retail logistics system is not regulated and lacks structure. This service is practiced through

informal collaboration, between shippers and coach drivers or taxi drivers, in order to deliver parcels to customers at an agreed and convenient location, and at low cost.

Since an informal collaboration works in Nigeria for a same-day service, the author decided to carry out a preliminary investigation into the role of formal collaboration in the retail logistics market, with a focus on advanced or developed countries, and particularly the UK, where the market is regulated. It was established that collaboration has, in recent times, been adopted in the retail market to enable retailers and carriers to respond to the rapid changes in demand for small parcel and speedy delivery requests.

It is based on these findings that the author sought to investigate e-commerce and the changing retail market, and how the benefits of collaboration can be extended to drive cost-effective, same-day delivery in the UK.

## **1.2 Brief overview of the evolution of retail logistics**

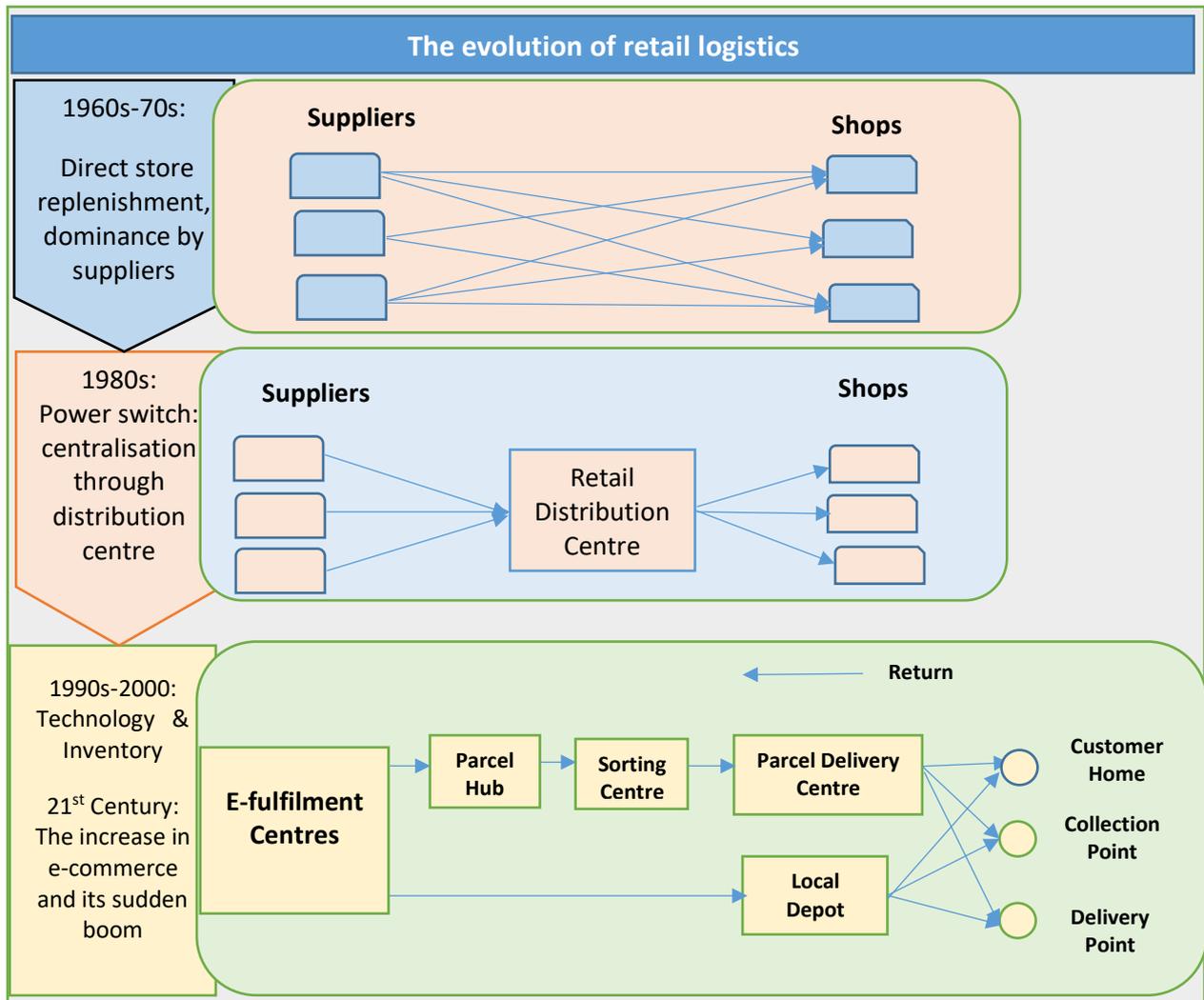
Sparks (1994) wrote about the transformation in retail logistics that took place in the 1980s, when the retail market and logistics activities were largely dominated and controlled by manufacturers who stored products in their warehouses and distributed to stores using their own business expertise. He added that not long afterwards, a change was perceived whereby retail multiples gained in prominence and started to invest in regional distribution centres to consolidate delivery from suppliers to stores. Fernie (1997) established that a power switch from manufacturers and suppliers to retailers took place in the 1980s. Fernie and Sparks (2004) and Fernie et al. (2010, p.900) recognised this switch as a major retail business transformation, which helped retailers to improve their business approach through a reduction in lead time, reduced inventory and “greater product availability” to customers in their stores. They noted that by this time, businesses had started to engage in the use of B2B technology infrastructure and facilities. Fernie (1997) explained that in the 1990s, the penetration of information technology into the retail industry had played a key role as a retail change agent through teleshopping and electronic shopping. He argued that although teleshopping did not really influence the market as envisaged, electronic shopping, although moving at a slow pace, penetrated the retail market and resulted in market improvements and improved logistical support. This is in line with an earlier prediction by Mandeville (1995) on the prospects for home shopping, as shown in Table 1 below.

<b>Prospects for home shopping in Europe by the year 2000</b>	
<b>Items</b>	<b>Predictions</b>
Food sales via home shopping	10-15% increase
Non-food sales via home shopping	20-25% increase
Main communication media	Cable, telephone (Internet)
Most popular home devices	(1) TV plus set-top box
	(2) PC-based communicating multi-media device
Largest market	Two income professional households
Still growing	TV shopping
Falling	Catalogue mail order
Overall winners	Existing mail order companies (but under a different name) Packagers of on-line services to homes Software houses Distribution companies Owners of infrastructure Manufacturers of leading brands Highly efficient large retail companies Small retail high street specialists with high service levels Young professionals
Overall losers	Retailers who opt out Less efficient retailers Traditional advertising agencies Retailers and banks with large property holdings Lesser brands Manufacturers of in-store equipment The old, frail and poor

**Table 1: Prospects for home shopping in Europe. Source: Mandeville (1995).**

In line with the above prediction, Table 1 indicates that by the end of the 20<sup>th</sup> century, the internet was expected to be firmly established as a means of communication for shopping, but broadband was not anticipated. This prediction was confirmed by Fernie et al. (2004), who added that the retail logistics market has witnessed a noticeable, although not a rapid, improvement in the e-commerce boom, and a great deal has changed in relation to the business approach and particularly the logistics. Fernie et al. (2010) added that in comparison to the 1990s, the acceptance of e-commerce by consumers in the 21<sup>st</sup> century has massively contributed to the rapid changes in the retail logistics market. According to Viswanadham and Gaonkar (2001), retail logistics is a business-to-consumer (B2C) approach that is defined as the management of goods delivery from retailers to end consumers. Figure 1 below represents the evolution of the retail logistics market from the 1960s to the 21<sup>st</sup> century.

Figure 1 shows that between the 1960s and 70s, the retail store replenishment system was dominated and controlled by suppliers, where direct-to-store deliveries were made infrequently with little or no control by retailers over the distribution system.



**Figure 1: The evolution of retail logistics. Adapted from LaSalle (2013).**

The 1980s saw the emergence of technology, such as personal computers and business computational tools that changed the retail logistics market; retailers took over the control of secondary distribution by routing inventory from multiple suppliers through their own centralised distribution centres for consolidation and onward delivery to their stores.

Further technological advances in the 1990s resulted in the design of new internal systems, such as the ERP, supply chain collaboration system and inventory management system, which helped retailers synergise disparate supply chain functions to gain more control of primary distribution.

The 21<sup>st</sup> century has seen a transformation of the retail logistics system through e-commerce; the entire order-to-delivery cycle now revolves around the internet, and distribution now involves the use of both warehouses and e-fulfilment centres.

Based on the rapid growth of e-commerce and changes to the retail logistics market, significant business transformation has been recorded both in the academic literature and via the trade press. However, a comparison of industry practice and the academic literature has revealed that there is a lack of synergy between the two, especially as industry is moving at a much faster pace than the theory (Ducret, 2014). Hence, there is a need to expand the theoretical research base to keep up with the market.

### **1.3 Recent developments**

A series of studies concerning recent trends in the logistics services market, retail competition and internet usage suggests a growth in demand for same-day courier services (Lim and Shiode, 2011). The same study also indicates that increasingly unpredictable requests in B2C operations require firms to proactively and innovatively 'respond to demand volatility'. Reasons for this demand volatility include: shortening product and technology lifecycles, competitive pressures forcing more frequent product changes and consumers demanding greater product variety (Singh, 2011b). The push for speedy delivery is increasing, and same-day delivery has become an evolving B2C competitive strategy amongst large e-tailers. More recent press reports bear this out, suggesting that same-day order fulfilment is becoming available as a standard rather than as a bespoke service to customers (see, for example, Telegraph online by Murgia, 2015).

Statistics from the Centre for Retail Research (2014) reveal e-commerce as the fastest growing retail market in Europe, with sales in the UK, Germany, France, Sweden, The Netherlands, Italy, Poland and Spain expected to reach a combined total of £111.2bn in 2014 (€155.3bn or \$212.8bn) and for the US to reach \$306.0 bn. (€224.0bn) in 2014. The Centre for Retail Research, cited in Jinks (2017), stated that the number of UK high street stores has dropped from 600,000 in 1950 to 290,000 in 2012; with the exponential rise in the uptake of e-commerce and home delivery, the number of stores could drop to 220,000 by 2020, and there could be a further decline by another 100,000 by 2030.

The rise in the e-tailing industry has resulted in an increasing need for rapid and guaranteed delivery; 30% of delivery in this sector is now dependent on express delivery (Oxford Economic Forecasting, 2011), which contributes to 579,000 European jobs and €23.4bn of GDP. Amazon CEO Christopher North also analysed how parcel delivery has transformed

from one week to next day, and predicts that over the next five to ten years, same-day delivery will become the norm, and that this norm is Amazon's target (Fletcher, 2015).

These and many more trends have resulted in recent moves by the top online retailers (TOR) to deliver parcels quickly, and at affordable cost, by using their 'deep-pocket' approach to invest in radical innovation through advanced technology investment. This is also seen to have put other large carriers under pressure to review their business models, and SMEs are competitively disadvantaged (Niemeier et al., 2013). This necessitates the need to investigate how SMEs and large players can benefit from a level playing field, and effectively compete (Singh, 2011b).

With rapidly developing technology and its adoption, the retail market has, in recent times, been transformed from being traditional to being technologically driven, where bricks-and-mortar is fast changing to become clicks-and-mortar, and above all the retail stores have started to become showrooms without walls. Retailers have started to review their parcel distribution from standard to express delivery, and they now engage in collaboration and partnership with carriers, while some top online retailers (TOR) have embarked on technological innovation and vertical integration in order to satisfy changing market requirements. Carriers have also had to review their approach to parcel distribution from group pallet shipping to fast, small and single parcel shipping. It is as a result of these developments that the academic literature has largely focused on e-commerce/e-tail and its effect on retail logistics and changing market requirements.

#### **1.4 Previous research**

Burt and Sparks (2003, p.276) in an early research article expressed the view that e-commerce possesses the capability to change the business approach, especially in the retail and distribution industry, and that it could be defined as an innovation process, through which "technology provides the capability for the reconfiguration of existing business and channel relationships, and the scope for introductions of new operations". They also cited Dussart (2000, p.387), where he argued that the adoption of e-commerce will revolutionise the business world with eight interrelated factors: "re-vamping management, re-storing control, re-launching the economy, re-configuring offers, re-structuring markets, re-distributing power, re-defining relationships and re-organising channels".

Xing et al. (2011, p.353) argued that with the growth in e-retail, firstly, market requirements have changed: traditional retailers are being forced to review their supply chains for multi-channel retail, and distribution infrastructure is being redesigned to adapt to changing market requirements. Secondly, the market has required the pure players to invest in home delivery systems by either setting up a new e-fulfilment centre or partnering with LSPs for lower risk and a reduced capital investment. In response to this, Xing et al. (2011) identified the need for mutual understanding and communication between the three stakeholders: customers, shippers and carriers, and for shippers and carriers to undergo collaborative operations and marketing to better serve customers' needs. Richey et al. (2012) argued that antecedents to collaboration are often driven by external forces, e.g. changes in customers' needs, and in response to this most firms engage in supply chain partnership or collaboration on the basis that a mere response to external forces may not be as beneficial as engaging in supply chain partnership.

Related research has been conducted concerning the increasing demand for speedy and small parcel delivery, and how the existing infrastructure can satisfy market requirements. Lim and Shiode (2011, p.733) stated that with technology changing the retail business approach, and the increasing demand for small parcel delivery, it has reached a stage where carriers are concerned about cost efficiency. They explained further that if the rising demand for small and speedy parcel delivery continues, shippers and carriers would have to reassess their business plans to remain competitive. They expressed concern about how existing logistics infrastructure (hub-and-spoke) will meet the increase in parcel volumes, and carried out simulations with respect to "per-item delivery cost, reliability (or the success rate of on-time delivery), network configuration, and hub terminal congestion" (Lim and Shiode 2011, p.746). The simulations revealed that when the volume of parcels overwhelms hub capacity, there is likely to be a delay in the entire operation due to congestion, and this may lead to reduced efficiency and reliability. Further simulations also revealed that in order to satisfy market demand, there would be a need to invest in an expansion of the hub's sorting capacity, and to achieve a good return on investment. In similar research, Greasley and Assi (2012) explained that with changes in the retail market, the increasing demand for time-critical parcels has put pressure on the traditional hub-and-spoke policies and practices, and the need to strategize for an improved delivery system has become important. In response to this, they also carried out a simulation to test a

specific change in the existing hub-and-spoke delivery policy; they discovered that separation of retail and non-retail deliveries had the potential to improve performance, but with the implication of increased numbers of drivers and higher fuel costs.

Having identified concerns relating to delivery infrastructure, another scholarly view shows that there is a need for a total overhaul of the retail logistics industry's activities through the redesign of its business model. Niemeier et al. (2013) explained that the retail industry has always used technology for business operations, but the recent radical change through which the internet has become affordable and available in all households in developed countries has shifted the power away from retailers to consumers, and has now required retailers and carriers to redesign their business models to handle the changes that are being witnessed. Luis et al. (2014) similarly added that ongoing changes in the retail market have made the retailer's reputation and the quality of delivery, key factors in distinguishing their competencies and capabilities from competitors; retailers, as a result, have embraced different collaborative strategies with carriers for improved supply chain management.

Other scholars also investigated how the current market can be improved through effective supply chain management, with three key tools being identified as drivers for success: information sharing, collaboration and innovation. Earlier research by Horvath (2001) revealed that economic and competitive benefits can be derived through strategic supply chain management, and to manage a strategic supply chain would require information sharing and collaboration between enterprises. This is similarly argued by Wu et al. (2014), who established that a key approach to respond to the challenges in this market evolution is to embrace an effective supply chain management (SCM), through which partners are effectively managed for long-term relationships. They emphasised the two key tools that drive effective SCM to be information sharing and the collaborative effort. They expressed that there is usually some inconsistency in information sharing between the upstream and downstream supply chain partners, which must be addressed in order to reduce the bullwhip effect on the business. To maintain good collaboration, there must also be an established mutual decision-making process for transparency and common goal achievement amongst partners. With these tools intact, Wu et al. (2014) believed there would be effective management of the three complementary flows of SCM, i.e. material, information and finance, and that this would enable supply chain performance to be improved.

Fawcett et al. (2008) expressed the view that with the market evolving through technology, collaboration alone may not be sufficient to satisfy the market requirement, and that a higher level of creativity or innovation will be required.

In related research, Oke et al. (2013) stated that the success of organisations has mostly been traced to their ability to innovatively integrate the supply chain aspect of their business, and that those who lack innovative capability will seek innovative partners, through which additional value is tapped. They added that companies with the technical know-how strive to reduce their dependence on partners, and implement technologically driven innovative strategies or vertical integration for enhanced performance, while those that lack the technical know-how or innovative capability continue to rely on their supply chain partners. Based on this, they emphasized that to enhance innovative capability at a low investment rate partnership should be sought with companies with innovative ideas and the required technological infrastructure.

Research by Teece (2010) revealed that even though the current market has become customer centric, developments in the market have shown that business owners need to re-evaluate their value propositions beyond just their customers' needs, and they need to capture other business activities through a differentiated business model design, which would be hard for incumbent and new entrants to imitate. Amit and Zott (2012) added that responding to the changing market usually requires innovative action, and whilst the current market is saturated with product and process innovation, the future market now requires all business activities to be redesigned through an innovative business model. This is because products or processes embedded in an innovative business model are unlikely to be easily neglected (Amit and Zott 2012). This claim is further supported in an earlier argument by Casadesus-Masanell and Ricart (2010), where they expressed that only firms that have taken advantage of structural innovative business model changes are those that flourish in today's market.

A brief introduction to the literature has revealed that existing knowledge on e-retail and the changing market is substantial, and has attracted a high level of interest within different related fields as shown above. It has been established at this stage that even though there is a large volume of research on retail logistics services, parcel distribution, speedy delivery and innovative collaboration, only a few research articles on same-day delivery can be

traced to recent (2014-2016) publications, e.g. Savelsbergh and Woensel (2016); Taniguchi et al. (2016); Gessner and Snodgrass (2015); and Taniguchi and Thompson (2014), while several can be traced to the trade press. This project will therefore join the limited current academic literature to extend the academic knowledge base on retail logistics to the same-day delivery market.

Since the research work is based on retail change and environmental forces, a framework will be developed based on the forces shaping the retail environment, and this will be guided by the aim and objectives below.

### **1.5 Aim and objectives**

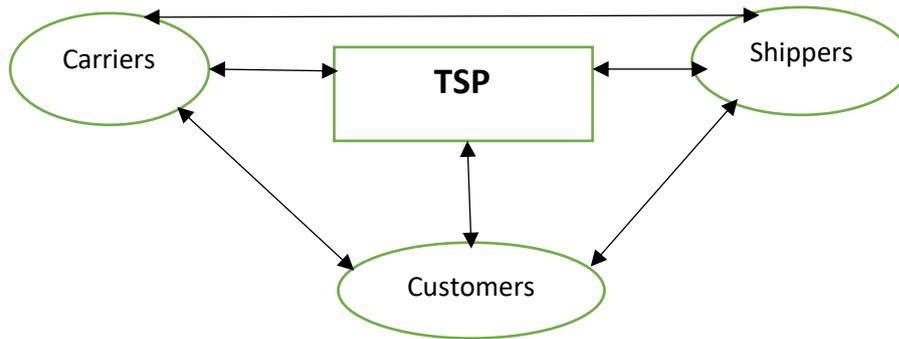
As a result of changes in the structure of the retail logistics market, many TORs and large firms have embarked on a review of their business models, especially with regard to the inclusion of same-day delivery services, while other firms, particularly SMEs, are left at a competitive disadvantage; collaboration has been identified as playing a major role in improving efficiencies in logistics. This research therefore aims to investigate:

***“how collaboration can improve efficiency in the UK logistics sector for same-day parcel delivery services.”***

Having presented the research motivation and preliminary introduction alongside the underlying factors that helped shape this research work, the objectives are presented below:

1. Explore the forces shaping the retail environment and the demand for express logistics.
2. Investigate whether hub-and-spoke distribution can extend its effectiveness to support current same-day market demand.
3. Investigate a cost-effective and innovative approach to the same-day delivery service.
4. Discover how a business model can be developed for a cost-effective same-day delivery service for both large players and SMEs.

### 1.5.1 Identifying the stakeholders



**Figure 2: The logistics triad. Source: Lasisi et al. (2015).**

The contemporary retail logistics market is observed to revolve around a triad of carriers, shippers and customers, with their activities facilitated by the technology service provider (TSP) (Sparks, 1994 and Xing et al., 2011) as shown in Figure 2.

The customer is the consignee to whom merchandise is delivered; the shipper is the consignor (retailer) who intends or aspires to meet the market trend through logistics collaboration and tailored logistics; the carrier is the logistics service provider and the mediator between consignor and consignee, while the technology service provider (TSP) is the inter-facilitator who integrates the “retail and logistics” (purchase, retail/sales and delivery) activities of the triad.

### 1.6 The theoretical framework

Two similar and conceptually relevant underpinning theories have been identified and selected:

1. The environmental theory of retail change: changes in retailing that are “a function of development in an institution’s operational milieu”, i.e. changes resulting from the marketplace forces of “economic system, demographic, customer demand, competition, social, cultural, legal and technological conditions” (Brown 1987, p.6). In this case, “institutional innovations will only occur, or rather prove successful, when operational conditions are favourable, and only those techniques which possess the ability to adapt to alterations in their trading milieu are likely to survive and prosper in the longer term”

(Brown 1987, p.6). The operational milieu can in this case be explained as functions of one another, where

Retail change = f (competition, customer demand, supplier and technology)

Customer demand = f (population demography, disposable income, culture and consumer confidence)

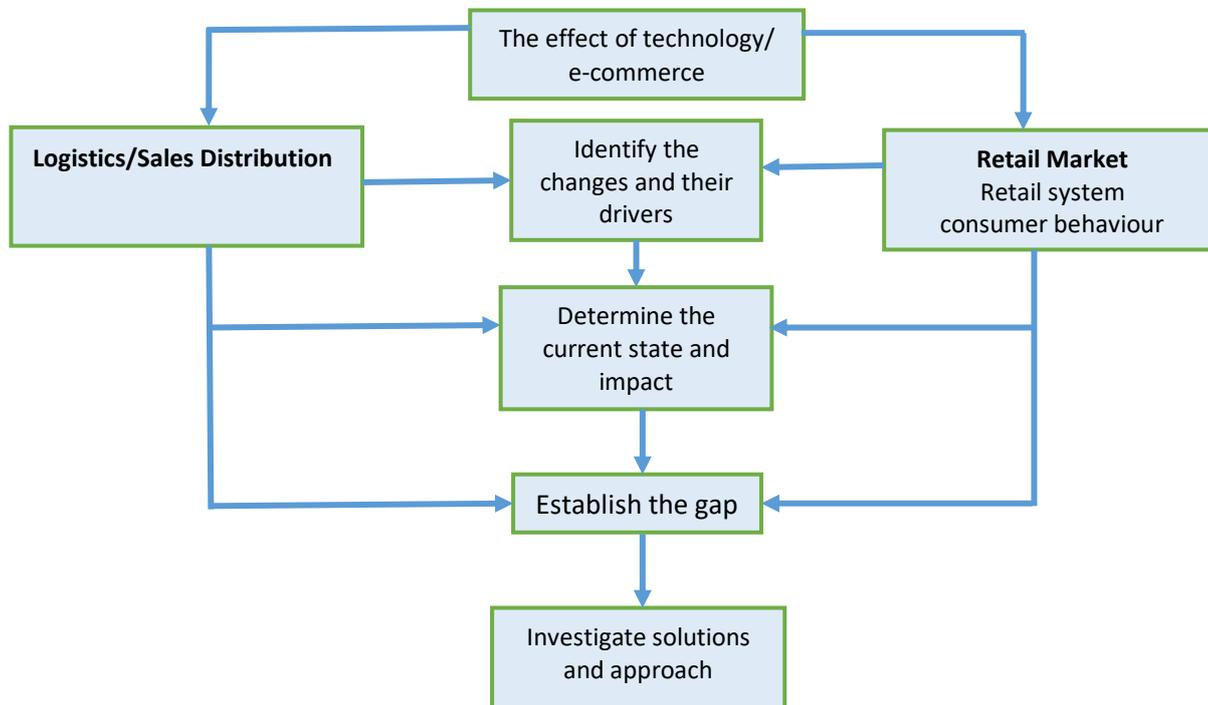
Competition = f (economic system)

Supplier = f (technology)

Technology = f (innovation).

2. Adjustment theory: "that the retail institutions best adapted to prevailing environmental conditions are the ones most likely to avoid extinction". This is based on Darwin's theory of survival, i.e. the fittest will survive the longest" (Brown 1987, p.8). This theory is deemed relevant as it could be regarded as a reaction or response to the environmental theory. Furthermore, in another reaction to the retail change theories, Brown (1987, p.8) cited Markin and Duncan (1981) where they used the phenomenon of retail change to analyse survival by institutions from an ecological point of view, i.e. as a "parasitic relationship, where one institution depends on another for survival"; as "commensalism, where different retail species share the same environment"; and as "symbiosis, where institutions benefit from their mutual dependencies".

In line with findings from the literature above, some of the forces identified, such as competition, innovation, technology and customer demand, from the environmental theory, have been recognised as being active which implies they are relevant to today's market. Also, since the broad view of this thesis revolves around e-commerce and its effect on the retail logistics market, the research investigates the effects of e-commerce on the retail market and logistics services, and identifies the changes, the factors and their requirements. The research will also help determine the current state of the logistics/distribution market and its impact on general retail practice, will identify the research gap and finally investigate solutions and approach, as represented in Figure 3 below.



**Figure 3: The conceptual framework**

## 1.7 Rationale for the study

The market and trade press suggests that the same-day delivery market is growing, and as there is limited academic research in the field, it is therefore relevant and useful to investigate the subject area through closely related fields. The research will dwell on the effect of external forces, such as technology, competition and customer demand from a triad (customers, shippers and carriers) perspective and emphasis will be put on sales distribution, particularly the transition from standard delivery to the recent phenomenon of same-day delivery. The investigation will be carried out by identifying the factors driving the establishment of same-day delivery in the UK, its market acceptability, the infrastructural requirements and its future prospects. The infrastructural requirements will be investigated in detail to understand the existing infrastructure, with the focus being on whether the infrastructure can meet the requirements of the changing market. Since collaboration has been identified as playing a key role in the reaction to the changing market, the research will include retail logistics collaboration and how its benefits can be innovatively managed or extended towards same-day delivery services. Given that the entire concept is largely concerned with business change and market adaptability, this research will carefully study business models, and will investigate how new and innovative business models can be designed

for a leveraged market for the three levels of players (small, medium and large enterprises), at no significant cost.

## **1.8 Applied research method**

Although elucidated in Chapters 4 and 5, preparing the reader's mind with an encapsulated brief as regards the entire research process will undoubtedly do no harm.

Firstly, desk-based research was carried out around five themes: e-commerce, e-logistics, logistics innovation, logistics collaboration and parcel delivery, to understand the level of previous research work undertaken. Secondly, because the nature of the subject is evolving and there is a great deal of media attention on e-commerce and same-day delivery, an online and professional/trade press research review was conducted to investigate the level of ongoing innovation in the logistics or retail market to validate the viability, feasibility and applicability of the proposed project both for academics and business stakeholders. Thirdly, the key players were identified as shown in Figure 2 above, and their roles were carefully studied to determine their level of importance to the project. The key players were investigated further to determine the appropriate stakeholders and respondents for data collection. This contributed to the design of the data collection process, which started by identifying and establishing contacts with academics in the field and networking with relevant industrialists.

Guided by the information obtained from the preliminary literature review, a mixed method of qualitative and quantitative research was identified as fit for the primary research.

### **1.8.1 Project scope**

Bearing in mind that the project was constrained by time, finances and access to information, the research was limited to the following areas:

1. In order to facilitate data collection, the research focused solely on the United Kingdom.
2. The primary focus of the research was on non-grocery products and small parcels, which have common handling characteristics.

3. The project primarily focused on investigating how available resources could be improved to satisfy requirements in the changing market, and did not investigate radical technological developments, e.g. drones.
4. The research mainly concentrated on emerging approaches to collaboration and did not investigate the different types of collaboration in depth.
5. Although omni-channel retail has been recognised in the literature more recently, it was purposefully not investigated, because it looks at pre, during and post transaction, while logistics is mainly post transaction.
6. Although the literature has shown the breadth of work from experts and various establishments on the development and research of different e-logistics platforms, for example Wang et al. (2007a,b) and the Department for Transport (2008), this research seeks to contribute to the ongoing efforts by opening a complementary research area.

## **1.9 Thesis overview**

Chapter 1 briefly explains the background and motivation for this research work, outlines the thesis structure and the context of the empirical research. The chapter introduces and provides an overview of the thesis alongside the aim and objectives of the thesis and presents a brief summary of the research method.

Chapters 2 and 3 are solely concerned with the academic literature review and the trade press. These chapters provide an in-depth understanding of the transition of the retail market; the transformation brought by technology and the factors driving this transformation; they identify the requirements needed to respond to the changes; touch on the current/existing market approach; and shed light on the emerging market. The chapters outline the key themes that drove the investigation alongside the identification of the research gaps and research questions.

Chapter 4 presents a detailed explanation of the research techniques and methodology adopted for this research. Following a review of the underlying research paradigm, the chapter justifies the manner in which the research was conducted and discusses the author's chosen technique of using a qualitative and quantitative mixed method approach.

This chapter also discusses the design of the research process and explains the sampling techniques, data collection approach and the analysis techniques.

Chapter 5 describes the qualitative analysis and its entire process. Readers are furnished with views from experts through the thematic analysis. The analysis is explained in detail, with emphasis placed on the research findings and transcripts quotes from respondents included as evidence for the findings. Some of the findings are compared to the academic literature and the professional trade press, and finally the findings are summarised.

Chapter 6 provides an explanation of the quantitative analysis carried out, with analysis of the findings from hypotheses tests and descriptive analysis. Several findings from the literature and qualitative research were confirmed and validated.

Chapter 7 deals with a brief discussion on the development of new business models through a review of the findings from the literature and qualitative research. It describes the requirements and assumptions for the model designs.

Chapter 8 discusses the project in brief, summarises the analysis, details the findings and limitations, and puts forward the project's contribution to knowledge. The chapter also gives recommendations, and draws the final conclusion through a proposed agenda that highlights avenues for further research.

## **1.10 Summary**

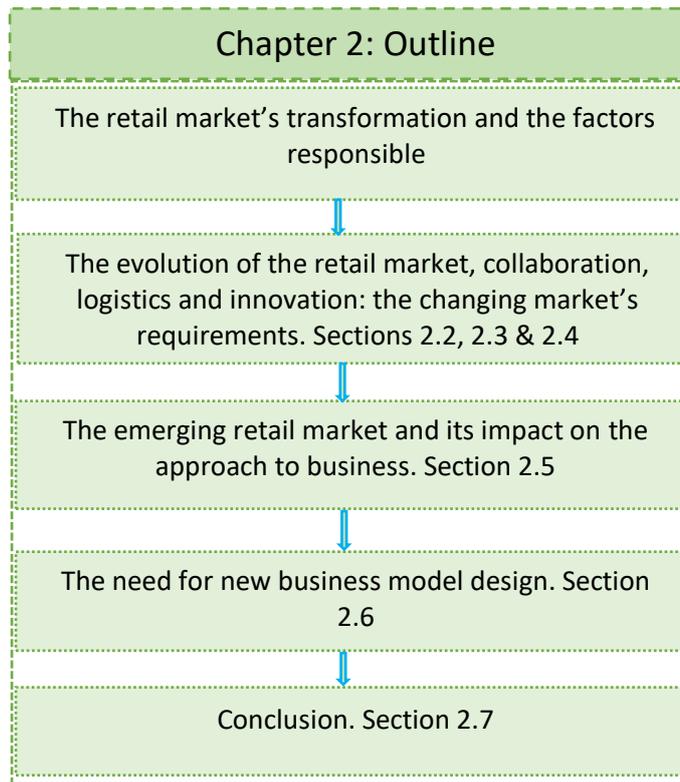
This chapter briefly introduced the research by identifying the motivation for the research, touched on the evolution taking place in the retail market and summarised some of the relevant literature; the aim and objectives were outlined and stakeholders were identified. The chapter proceeded to recognise relevant theories that helped in the design of the theoretical framework, moved on to establish the rationale of the study and summarised the applied research method from the proposal stage to the final stage. This was followed by an outline of the project scope and an overview of the general research.

The next chapter explores the relevant literature, through which the different tools and factors that influence the transformation in the retail market are identified and discussed in detail.

## Chapter 2: The transformation of the retail logistics market

### 2.0 Literature review

#### 2.1 Introduction to literature review



**Figure 4: Outline of Chapter 2.**

This chapter outlines the key themes relating to the investigation of the retail market's transformation from the 1960s to date. These themes continue on from the literature reviewed in the previous chapter. Chapter 2 provides an in-depth discussion on e-commerce and the role it plays in both retail, the supply chain and distribution management. It goes on to discuss the factors (the need to satisfy new market demand and maintain relevance driving the market, and the tools of collaboration, technology and innovation) responsible for a successful retail logistics system, and the challenges faced in retail logistics. Furthermore, literature on the emerging retail market, its disruptive nature and the current market's requirements are reviewed, alongside the different approaches for the design of responsive business models.

### 2.2 The evolution of the retail market

Until the mid-1960s, the dominant distribution method was controlled by suppliers storing products in warehouses, using their business expertise to determine which shops or stores

required which products and the quantities needed, a process referred to as the push-of-supply. In this distribution method, stocks are not dispatched until a full truckload can be delivered. Transformation was observed in the 1980s to pull-of-demand, when shippers gained prominence by taking over control of logistics/distribution from suppliers and started to invest in regional distribution centres (RDC) (Sparks, 1994). They changed the distribution approach to focus on consolidated deliveries, where freight forwarders combine different consignments from various suppliers into a single shipment for a particular destination (Ferne, 1997). With increasing pull-of-demand, suppliers could no longer satisfy the growing request for half-filled trucks, which prompted the emergence of third party logistics (3PL) (providers of outsourced logistics services), alongside an increasing need for hub-and-spoke distribution (a form of wire-wheel-arranged connections through which traffic moves along the spokes that are connected to the hub at the centre). The mid-1990s saw the growth of e-commerce and its adoption in retail and logistics services, with a resultant rising demand for small parcel deliveries (Ferne and Sparks, 2004); this gave rise to the need for partnerships between retailers and 3PL (Ferne et al., 2010), and partnerships between retailers and e-fulfilment centres for last-mile deliveries (LaSalle 2013). The growth in e-commerce has influenced parcel logistics services to become “a backbone for competitive advantage” in retail operations/services, as many retailers now engage in the integration of complex distribution systems, e.g. hub-and-spoke and e-fulfilment centres, i.e. a central network of warehouses that provides fast and flexible shipping for e-tailers (Ocicka and Razniewska, 2016). The hub-and-spoke system provides a central hub for small parcel distribution to enhance economies of scale. It is argued to have been effective for over 30 years, particularly in developed countries, where it has helped reduce the problem of capacity utilisation (Tran and Haasis, 2015).

Moe and Hudson (2006) explained that, with technology-driven retail, there is a difference between conventional commerce and e-commerce on the basis that, with the former, customers will always make their own arrangements for delivery, while with the later, responsibility for delivery has shifted from customers to retailers. With the shift in responsibility for delivery provision (Golicic et al., 2002; Bakker et al., 2008), it has become necessary for retailers to adopt technology in their supply chain network partnership, through an efficient information exchange platform.

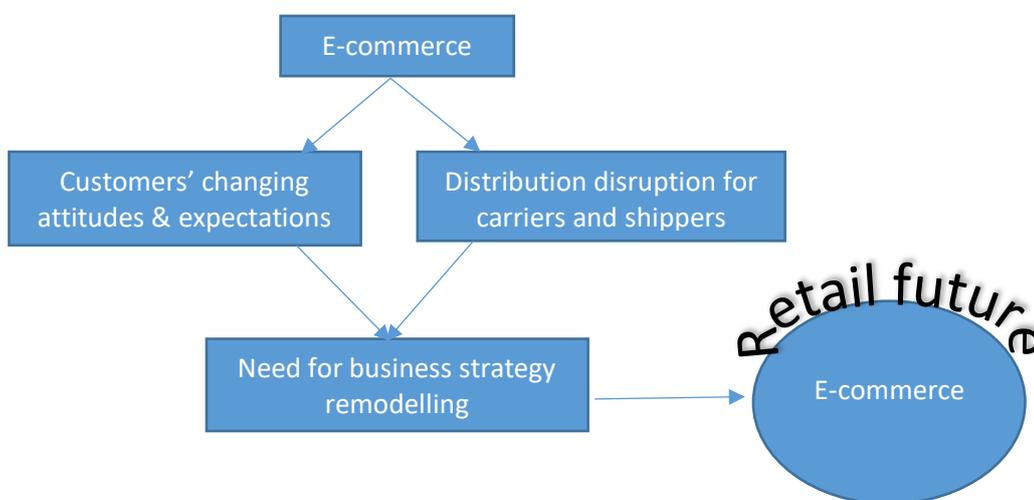
### 2.2.1 Technology acceptance, market transformation and implications

Information technology has been identified as having played a major role in the evolution of retail logistics. It has become a key tool in B2C shipping, inventory management and delivery services. With reference to the prediction by Mandeville (1995), as shown in Subsection 1.2, who stated that by the end of the 20<sup>th</sup> century the internet would become the primary means for business transactions and communication, later publications appear to have validated this prediction. For example, Pitt et al. (1999, p.19) state that “the new electronic medium is ravaging traditional distribution philosophy, rendering many conventional intermediaries and delivery channels obsolete”. This was supported by Rao (1999, p.288), who argued that with the growing presence of the internet and adoption of information technology, the traditional distribution structure is being challenged and businesses are being forced to “re-evaluate their value proposition to customers, and meet the challenges of more nimble rivals”. Forrester Research, cited in Ha and Stoel (2009), predicted that the revenue generated from online shopping will grow from \$144bn in 2004 to \$316bn by 2010, implying a possible 14% gross annual growth. Furthermore, in line with the Global Retail E-Commerce Index (2015), as reported by A. T. Kearney, online retail sales reached \$694.8bn in 2013, \$840bn in 2014, were estimated at \$994.5bn for 2015 and forecast to rise to \$1.51tn by 2018. According to Katros (2000, p.75),

...retailers have worked through the stages of shock, denial, anger, grief and acceptance in coping with the Internet, and are now rushing to identify and secure ways to protect their customer relationship franchise.

Burt and Sparks (2003, p.284) argued that e-commerce is “a process innovation”, and that evaluations undertaken have revealed that business owners have started to experience how e-commerce will revolutionise the retail market, to harness, drive and enhance business efficiencies. Burt and Sparks (2003) added that even though the arrival of e-commerce was received with reluctance and denial, it was eventually accepted by large players, and was followed by investment and adaptation through business strategy remodelling. Furthermore, alongside Edwards et al. (2010), they identified that, with e-commerce revolutionising the retail market, customers’ attitudes and expectations are changing, and consequently retailers and carriers are faced with distribution disruptions and new delivery requirements. Burt and Sparks (2003), however, admitted that e-

commerce through e-tailing will likely be the future replacement for traditional retailing and would result in the need for new business models. Delfmann et al. (2002) approached e-retail as a function of logistics, and determined that many failures in e-commerce are attributable to logistics being neglected; this was traced back to the shift from the uncoordinated individual customer’s shipping arrangements to coordinated shipping activities by retailers or suppliers. Several other authors (Johnson and Whang, 2002; Hesse, 2002; Matthews et al., 2001; Sarkis et al., 2004; Gunasekaran et al., 2002; Edwards et al., 2010; Verhoef et al., 2015; Cordon et al., 2016) have confirmed that e-commerce is revolutionising the retail and logistics market. It can therefore be argued at this stage that the predictions from the 1990s have been manifested as the retail market now revolves around e-commerce, and the need for business strategy remodelling to be more innovative has become important, in order for firms to remain relevant and responsive to the changing market. This is summarised in Figure 5 below.



**Figure 5: The impact, effect and implication of e-commerce in retail business.**

The following subsections will analyse the transformation in the market, the implications of e-commerce on the market and the requirements needed to satisfy the transformed market.

### 2.2.2 The market control switch

Fernie et al. (2010) analysed the trend in the UK retail sector from its passive stage to the current active stage. They explained how the retailers’ role in product distribution and sales used to be passive, and was based on retail store allocation by manufacturers in anticipation of demand. In recent times (late 1990s to date), the system has been transformed to

retailers now being controllers of the system, in “reaction to known customer demand”. McKinnon (1996), cited in Fernie et al. (2010), summarised the transformation of UK retail logistics into six parts: adoption of a quick response, introduction of supply chain management and efficient consumer response (ECR), increased control over secondary distribution, a restructured logistical system, the rationalisation of primary distribution and increased return flow of packaged material and handling equipment for re-cycling or re-use. From this list, only the two most relevant parts to this section are explored below.

1. Adoption of a quick response: this is achieved by using IT to reduce inventory levels and improve the speed of product flow; this is made possible with the development of electronic data interchange (EDI) and electronic point of sale (EPOS), which helps with stock record updating to enhance re-ordering and replenishment as products are scanned per sale.
2. Introduction of supply chain management and ECR: this is based on achieving greater efficiencies in logistics operations through improved information exchange systems brought about by IT developments. Many retailers have also embarked on collaborating with suppliers and LSPs to maximise efficiencies in the retail supply chain, using the well-established web-enabled system of enterprise resource planning (ERP).

Fernie (2009) explained that consumer orientation has changed from ‘waiting to be satisfied’ to instant action, and the logistics system of supplying products from production to consumption has also been similarly transformed. This is making the traditional distribution system obsolete in the face of rising e-retail, and is resulting in integrated LSC overtaking conventional LSC through the power of information exchange.

A LSC involves multiple enterprises (including manufacturers, suppliers and retailers) that are concerned with product distribution, manufacturing and procurement.

#### 2.2.2.1 Definitions of conventional LSC and integrated LSC

Canadine (1994, p.21), cited in Wilding and Newton (1996), identified what could be regarded as a paradigm shift by the Institute of Logistics in defining LSC “as the time-related positioning of resources”. According to Walter (2003), LSC is the function responsible for the flow of materials from suppliers to an organisation, through operations within the organisation, and then out to customers. Childerley (1980) defined LSC as denoting a total approach to the management of the distribution process, including all of those activities involved in the physical movement of raw materials, in-process and finished goods

inventory, from the point of origin to the point of use or consumption. This, in other words, means LSC combines the traditionally defined areas of material management and physical distribution; Aburto and Weber (2007, p.137), on the other hand, viewed it to be the coordination of the movement of materials, goods and services, and the flow of information from its originating point to the final consumer, through “order generation, order taking, information feedback and the efficient and timely delivery of goods and services”.

Integrated LSC is defined as the degree to which firms can strategically collaborate with the network of supply chain partners, and collectively manage the intra- and inter-organisational processes and operations for effective and efficient flows of products and services alongside decision-making. (Prajogo and Olhager, 2012).

### 2.2.3 The IT-controlled market

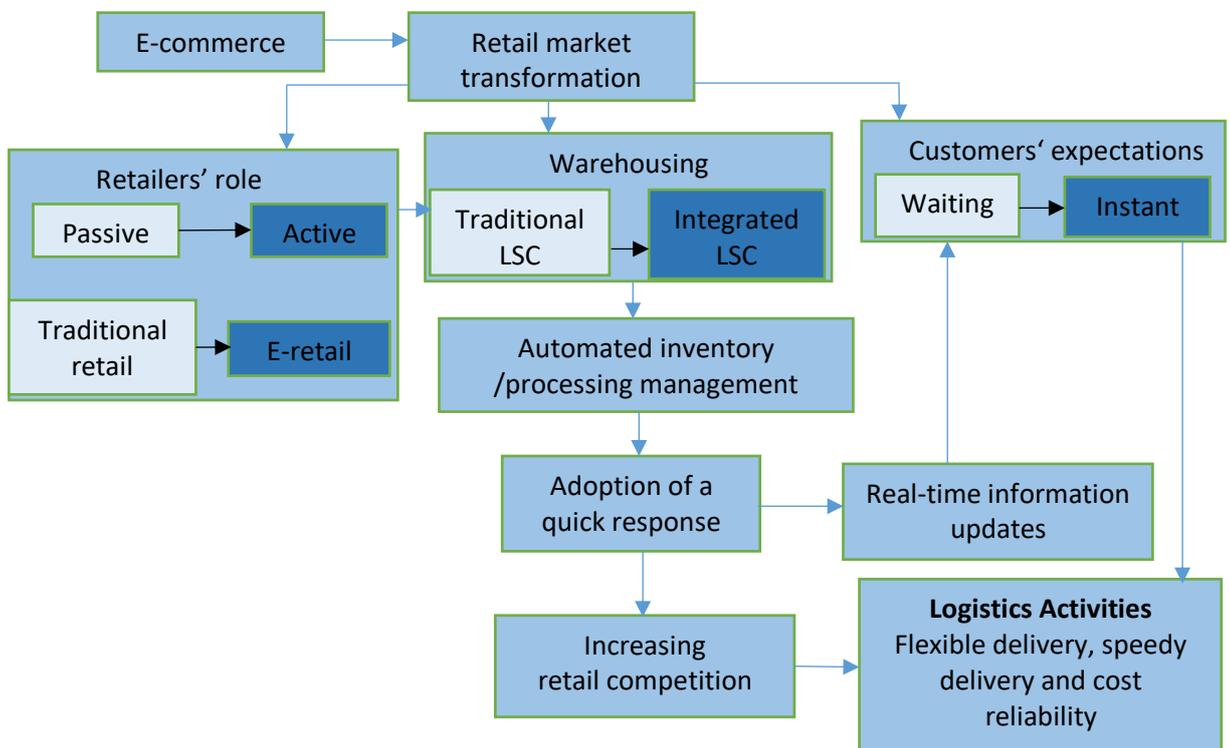
Fernie and Sparks (2004) argued that unpredictable demand for parcel deliveries has led to traditional warehousing being replaced with integrated LSC. They observed that the transition from conventional to integrated LSC is no longer new, but has become a norm that is required to meet the constant and unpredictable demands of consumers. They commented that this would not have been possible without effective information exchange through technology, while adding that suppliers and retailers have ceased to compete on the basis of their activities, but do so now on the effectiveness and efficiency of their entire logistics supply chain management (LSCM).

Rosen and Howard (2000) argued that retail in the ‘technology era’ has migrated from just the traditional retail store to the online retail store, bringing increased information access, such as a high level of flexibility on price and product comparison, decreased procurement costs and improved inventory management. Bretthauer et al. (2010) are of the opinion that the adoption of e-commerce has introduced intense complications and competition, wherein consumers now sidestep local stores in favour of online stores and that this is attributable to flexibility in delivery services. Rotem-Mindali and Salomon (2007) also expressed the view that e-commerce has brought multiple delivery options to customers, and that these options make it easy for the customer to shop online and not visit a store, as delivery arrangements made by the seller are regarded as potentially more efficient than

the traditional approach to delivery. Abshire and Premeaux (1991) and Lin and Lee (2009) corroborated that retail competition now lies in its logistics, i.e. delivery information, speed of delivery, cost and reliability.

Wright (2007) stated that effective parcel delivery could be achieved through the use of information updates, particularly via the use of mobile phones. He argued that almost everybody uses a mobile phone and when orders are placed, the customer is usually expecting a delivery and, therefore, will be willing to work with carriers and not against them to ensure delivery takes place at the first attempt. Efficiency can be achieved when customers are updated on the progress of their orders, with the conclusion that modern mobile communication is a useful tool for effective and efficient parcel delivery, and could also help ensure more cost-effective operations, e.g. savings in fuel via reduced mileage.

A summary of this section is depicted in Figure 6 below.



**Figure 6: E-commerce and the retailers' active role in parcel distribution/delivery.**

Although many retail logistics activities have been considerably affected by e-commerce, the switch in distribution/supply to retailers has had a huge impact on their business model; retailers have had to approach their business in a more competitive way, especially through collaboration and innovation.

## **2.3 Collaboration**

Collaboration has become a new focus in business practice and research, and can be defined as an amalgamated ideology that encircles both conflict and partnership, through mutual agreement, but without an obligation to long-term commitment for participants, (Vereecke and Muylle, 2006). Anthony (2000) defined collaboration as the sharing of responsibility, management, and execution and performance measurement between two or more firms to optimise customer satisfaction. Cannon and Perreault (1999), Min et al. (2005), Das et al. (2006) and Wiengarten et al. (2013) argued that collaboration is synonymously used with integration and buyer-supplier relationships in supply chains, while Min et al. (2005) and Johnson and Filippini (2009) have advanced the view that collaboration should be conceptualised as either internal (inter-departmental) or external (inter-organisational) for expansion, flexibility and growth. To collaborate effectively, there must be basic underlying reasons for the collaboration (Faems et al., 2005; Nyaga et al., 2010). Many large firms have a record of success in collaboration because they possess the resources necessary for successful collaboration, while only few SMEs can boast of such success, despite possessing innovative ideas and skills and, as a result, are incapable of matching the larger firms with resources (Stefansson, 2002). With respect to this, a series of academic and industrial investigations are emerging on how SMEs can compete with large firms, in order to allow a more even spread of benefits from inter-organisational collaboration. Mason et al. (2007, 2013) stated that, by collaborating, industries can acquire the resources they lack for improved logistics operations.

### **2.3.1 LSC collaboration**

Kotler (2007) indicated that collaboration does not just happen overnight, but because most companies cannot compete individually in the face of a highly demanding market, LSC collaboration has become crucial for any business that wants to remain competitive and profitable, irrespective of its size, function and relative position. Kanda and Deshmukh (2008) defined LSC collaboration as two or more organisations working together to jointly plan and implement necessary logistics operations that may not be individually achievable. Mentzer et al. (2001, p.11) defined collaboration as “a business component that synchronises efforts of all parties: suppliers, manufacturers, distributors, dealers and

customers to satisfy customers' unique demands." This often requires the use of technology to enhance uninterrupted information exchange, and to build a stronger value chain for timely and adequate delivery of the goods and services required (da Silveira and Cagliano, 2006; Bakker et al., 2008). It also implies a platform to institute strong communication and trust, so that all concerned can operate as a single entity and, above all, derive maximum business satisfaction. Audy et al. (2012) and Lehoux et al. (2009) identified LSC collaboration as a tool driven by competitive pressure, unstable environmental concerns and a changing business model for improved distribution, transportation and warehousing. LSC collaboration helps ease the complexities in the individual components of a business by encouraging mutuality, attention and commitment from all parties involved to enhance adequate funding and other necessary resources, which, if lacking, could lead to deficiencies in productivity. These are the reasons the majority of large firms today have either outsourced the LSC aspect of their businesses or have formed coalitions with third parties to help them focus on other aspects of the business, as they understand the setbacks a failed LSC operation would have on their businesses.

Chopra and Meindl (2007) explained that optimising a LSC is derived by supply chain partners through strategic inter-organisational and inter-functional integration, while Meredith and Shafer (2009) argued that, when there is no cooperation or each partner works towards individually strengthening or optimising its own value, there would be incoherence and discontinuity in the underlying aim, with the cost of maintaining the collaboration becoming unjustifiably high. Audy et al. (2012) expressed that via collaboration, a firm's LSC is optimised through cost and information sharing, which results in a competitive edge and unrestricted access to the new market. He added that load capacity usage, loaded travel time and asset utilisation can be optimised in 3PL through collaboration, while unloaded travel distance is also reduced in backhauling. Kamath and Roy (2007) also stated some of the benefits derived through LSC collaboration to be: cost-effective materials management, and improved financial and information flow management, from the point of origin to the final stage for enhanced customer satisfaction. Nyaga et al. (2010) buttressed this statement by saying that a LSC collaborative relationship brings efficiencies, flexibility and sustainable competitive advantage. Zare (2009) corroborated this by stating that, more often than not, companies collaborate in order to reduce their exposure to risk, but that risk reduction lies in a firm's ability to maximise the

integral or underlying intelligence in the supply chain network, and in its ability to metamorphose existing business processes and ensure competence in its prospective partners. However, to ascertain effectiveness and efficiency, Simatupang and Sridharan (2005) argued that information sharing, decision synchronisation and incentive alignment must be monitored conscientiously. Information sharing is the process by which decision-makers plan, control and disseminate relevant information for supply chain operations. Decision synchronisation is joint decision-making by the participants towards an operational goal, while incentive alignment refers to the sharing of the partnership's dividends (Simatupang and Sridharan, 2005).

### **2.3.2 Logistics collaboration through intelligent networks**

Lehoux et al. (2009) explained that logistics is concerned with the movement and storage of a product through the supply chain, which, if properly implemented and executed, will increase responsiveness, reduce inventory costs and consequently drive competitive advantage. Based on this, Horvath (2001) and Sahay (2003) similarly argued that to gain competitive advantage, collaboration through an intelligent network (advanced collaboration) is important because it offers all value chain participants the chance to benefit from improved market flexibility, enhanced customer retention and increased customer responsiveness, etc., hence the opportunity to grow and succeed. Horvath (2001), and Simatupang and Sridharan (2005) further argued that the exact infrastructure capacities required vary with the role and size of each participant. Horvath (2001) and Ma et al. (2015) stated that when collaboration is electronically inclined, certain fundamental attributes of LSCM remain constant. Two examples of these are: open low-cost connectivity where smaller players are allowed access to the collaborative infrastructure without a major investment in proprietary technology, and the ability of participants to tap into a variety of collaborative systems. Horvath (2001) explained that higher-level self-service capabilities must also be ensured, i.e. the collaborative platform must offer new services that go beyond general or common services, e.g. order tracking, and must offer intelligent capabilities, such as automated product configuration, payment and dispute resolution. Other constants include intelligence gathering and analysis, supply chain collaboration and sophisticated security capabilities, together with the new and emerging benefits associated with e-commerce. These attributes and other benefits afford participants the ability to respond in a timely way to the changing needs of customers through access to resources

that would have been impossible for them to possess individually. Horvath (2001), therefore, concluded that competitive advantage resides in the ability to leverage those requirements that are essential in the LSCM network towards transforming the existing business process, and not in the ability to put up technological barriers against rivals.

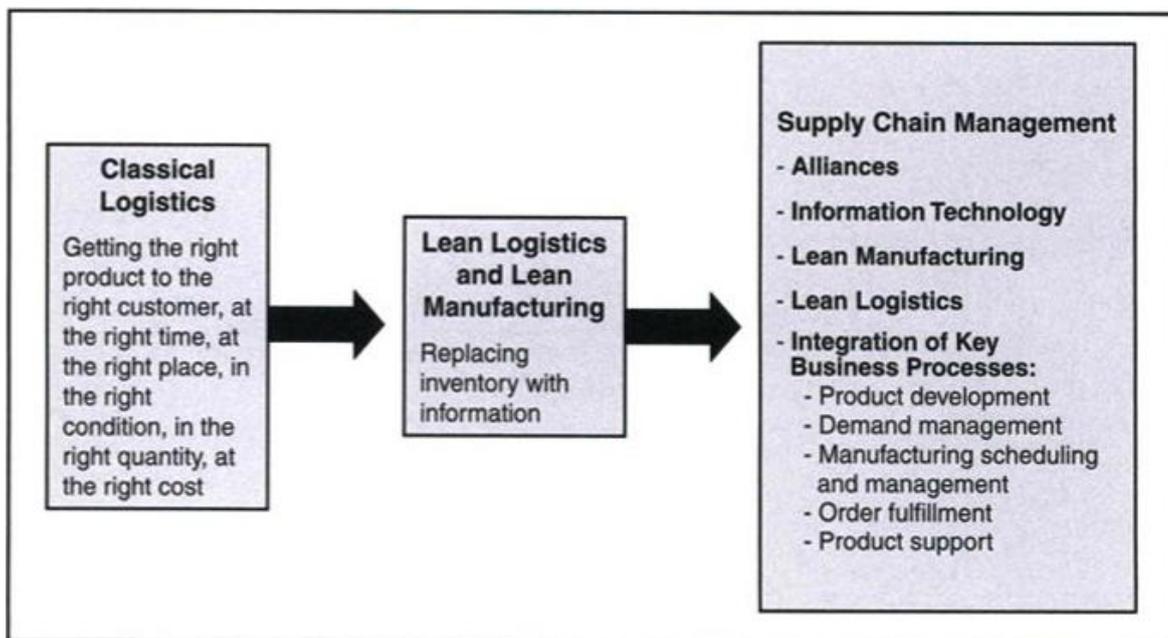
Hudson et al. (1999), in their early research, stated that the future of any successful business lies in its ability to respond innovatively to the overwhelming increase in the need for inter-organisational collaboration, which involves public, private and government agencies. This is because the majority of companies, especially SMEs, cannot tackle their problems by themselves, and are unable to deliver their innovative ideas as these require external or additional input. Huxham (1996) noted, however, that a number of organisations have started engaging in joint ventures and inter-organisational relationships in order to achieve collaborative benefits and competitive advantage.

### **2.3.3 LSC collaboration and information technology**

The advent of IT has driven a major transformation in today's business; e-commerce has left no aspect of business unaffected and has contributed to considerable success both for SMEs and large companies. This is especially so in terms of collaboration in both the B2B and B2C sectors, thereby driving the changing designs of business models (Bakker et al., 2008; Wiengarten et al., 2013). Changing business models have factored in information sharing as a key element in inter-organisational collaboration (Wiengarten et al., 2013; Nyaga et al., 2010). Wiengarten et al., (2013) stated that a strategy to reduce uncertainty in demand can only be achieved through a well-coordinated, technology-inclined collaboration that enhances information sharing, i.e. the sharing of logistics demand information through synchronised planning and activities. Simatupang and Sridharan (2005) and Wiengarten et al., (2013) explained that the effect of e-business on the supply chain goes beyond information sharing, but through a complex collaboration it benefits from dedicated investments and the efforts of the partners in the joint relationship, i.e. mutual planning decisions, goal setting and performance measurement in terms of cost, quality, flexibility and innovation.

### 2.3.4 Logistics collaboration and information

Russell (2011) explains that logistics changes as market demands change. He explained this idea using the transition from classical logistics to supply chain management, which focuses on modern logistics and modern manufacturing via the incorporation of lean practices, i.e. lean logistics and lean manufacturing. Classical logistics is described by ‘the seven Rs of logistics’, i.e. the acquisition, storage, and distribution of material to deliver the right product to the right customer, at the right time, in the right place, in the right condition, in the right quantity and at the right cost, while lean practice is described as the practice or act of preserving value with less work (Russell, 2011). With the advent of lean practices, the focus goes beyond just time and place, but “emphasises flows rather than stocks”. (Russell, 2011, p.5). The transition is therefore explained as the replacement of just-in-case with just-in-time, i.e. the replacement of inventory with “information in the form of real time demand”. This transition is shown in Figure 7 below.



**Figure 7: Transition from classical logistics to supply chain management. Source: Russell (2011).**

Christopher (2011, p.3) similarly defined supply chain management as, “the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole”. However, Lambert (2006) and Russell (2011) had different views of supply chain management and regarded lean manufacturing and lean logistics as components of supply chain management. They disagreed with the common view that supply chain management is “super-charged

logistics”, but argued that alliances with key partners, where information technology is the primary means of timely and accurate information sharing, can be regarded as the framework for a responsive and efficient supply chain operation. Russell (2011) further explained that the presence of seamless and efficient information sharing, the introduction of lean logistics, lean manufacturing and the integration of key business processes constitute supply chain management. An alliance is defined as a collaboration of partner firms, where partners are viewed as the focus for extension and a resource for innovation. Information technology is regarded as a tool used in either “isolation or combination” that bridges the technological infrastructure of the network partners (Jonsson et al., 2007).

Dachry et al. (2013) also emphasise information flow in LSC innovation by developing a ‘supply chain information system collaborative multi-agent architectural system’, where they show how information flow within a collaborative supply chain system improves the strength of the market. They defined ‘agent’ as an independent intelligent entity, with the ability to communicate freely with other independent agents. Following this definition, a Multi-Agent System (MAS) is defined as a set of agents in an environment that interact with one another in pursuit of a common goal. Figure 8 below shows the information flow between the agents. All actors are regarded as agents and they can seamlessly communicate for collective decision-making, while adding the following as expected features of the network: autonomy, distribution, learning, intelligence, scalability, adaptability and flexibility.

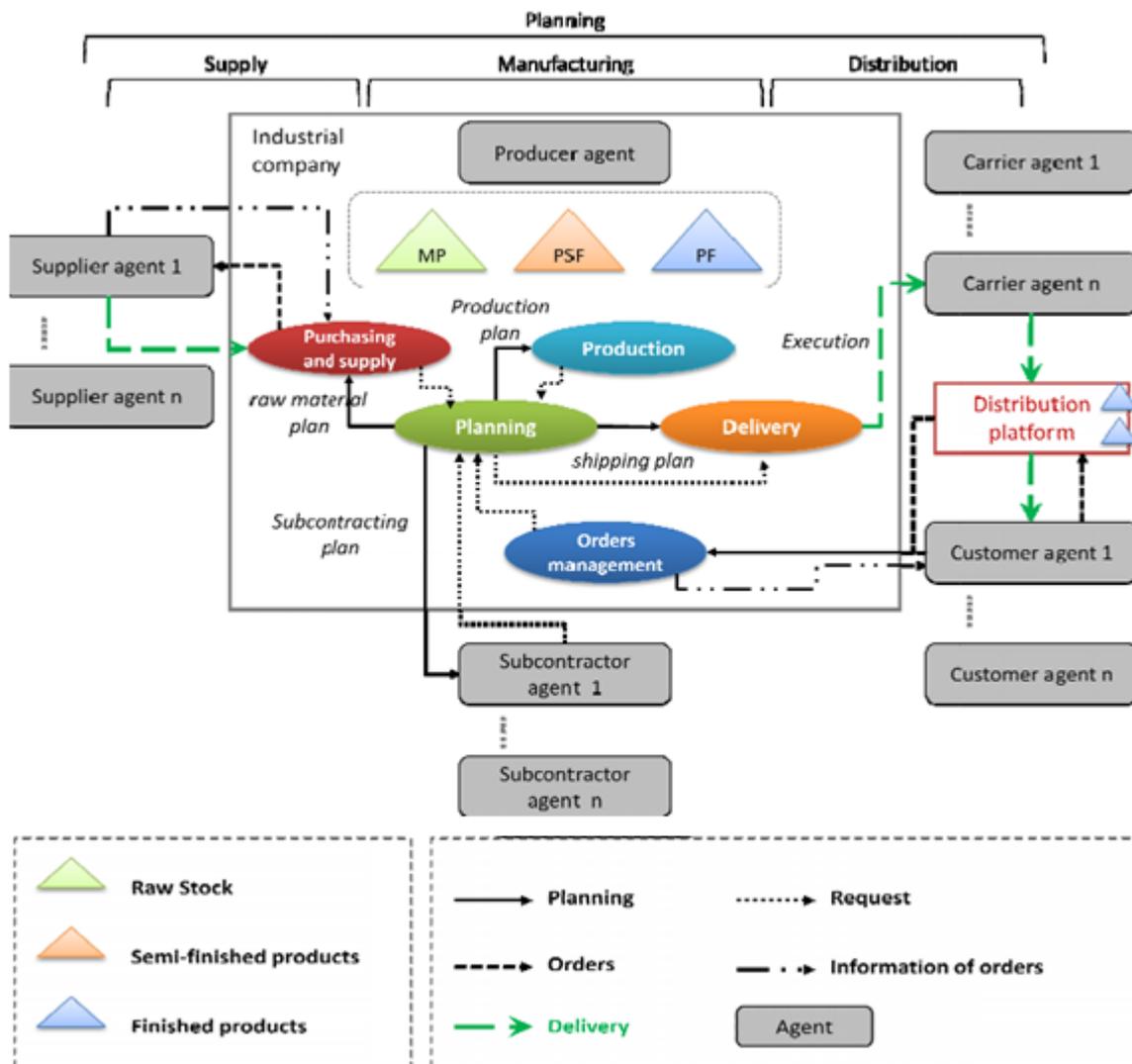
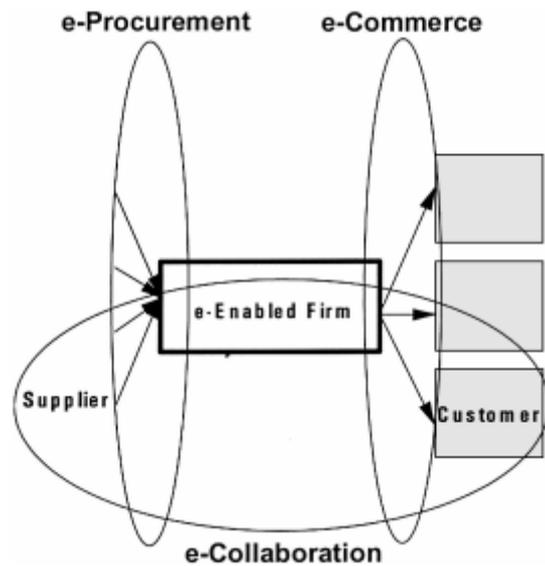


Figure 8: A multi-agent supply chain for a collaborative network. Source: Dachry et al. (2013).

Johnson and Whang (2002) divided the e-business application into three: e-commerce, e-procurement and e-collaboration, as represented in Figure 9.



**Figure 9: Forms of e-business and their impact on the supply chain. Source: Johnson and Whang (2002).**

They explained that with e-commerce, a network of supply chain partners is now effectively able to identify and respond in a timely fashion to changing customer demands. Through e-procurement, companies are now able to use the internet to manage both material and non-material flow, alongside value-added services like warehousing and transportation. E-collaboration is categorised as being far greater than e-procurement and e-commerce, due to its ability to facilitate and allow for efficient and transparent coordination of activities, such as decision-making/sharing, resource sharing and process sharing, on transactions that are beyond the reach of the supply chain partner network. Lancioni et al. (2003), in a related research study, posit that the supply chain was once relegated to the background of businesses, but with the internet reshaping the market, the supply chain is now central to business activities and planning. They added that, with the retail market taking on a new dimension, new rules of competition mean that individual firms can no longer dictate or determine economic worth, rather, it is the function of a network of firms involved in delivering goods and services to consumers or end users that determines market value. Based on this, they referred to the internet as the market enabler that allows real-time communication amongst a network of firms and supply chain partners. They added that with the internet, supply chain partners are now able to carry out integrated forecasting, where orders can be modified to meet real-time demand.

### **2.3.5 Electronic Logistics Marketplaces (ELMs)**

The Department for Transport (2008) described ELMs as an emerging logistics collaborative technology, through a web-based system, which allows all participants access to resources they would not individually possess for their logistics activities; this consequently results in resource expansion. Zhang et al. (2008, p.1) defined ELMs as “open electronic platforms that facilitate transaction and interaction between logistics buyers and sellers”, and Wang et al. (2007a) defined them as electronic hubs that link shippers and carriers in collaboration and trade via a web-based system. According to Zhang et al. (2008), ELMs are viewed as a specific B2B model of electronic marketplaces (EMs), which only a few authors have investigated with respect to logistics. Electronic marketplace is defined as “a Web-based system that facilitates and encourages buying and selling to induce collaboration among trading partners across a selection of industries” (Tan and Macaulay, 2008, p.576).

ELMs basically consist of three key players: the shipper, carrier and the technology service provider (TSP). Wang et al. (2007a) stated that, because an ELM is capable of handling different functions and activities, in certain circumstances, other parties, such as customers, freight forwarders and financial service providers might be involved in the trading. There are two types of ELM: open and closed.

#### **2.3.5.1 Open ELMs**

An open ELM allows collaboration between shippers and carriers with no restrictions or barriers to entry. Due to its openness, stakeholders have been sceptical of being forced to pay charges without having a quality service rendered. In this case, parties do not enter into any form of contract and, as a result, no legal binding exists. It operates similarly to the generic EM trading model and carriers are able to bid for return loads (backhaul).

#### **2.3.5.2 Closed ELMs**

In closed ELMs, the system tends to focus on the requirements of a defined set of shippers and/or carriers and it is able to operate on a single platform. This platform supports the collaboration of any size of business as long as it meets or satisfies the platform’s requirements and has a primary target of long-term, value-added transactions. According

to Wang et al. (2007a) and Edward et al. (2010), a closed ELM consists of three forms: private, shared and collaborative. Carriers will likely benefit from backhaul as freight activities are usually planned well in advance.

#### 2.3.5.2.1 Private ELMs

The collaboration in a private ELM is said to exist primarily between a single shipper and a range of carriers, and it does not link to any other form of ELM. It operates on a single platform and is mainly managed by the collaboration leader. It is simple to set up, but the set-up cost is a major challenge, especially with regard to interfacing with each stakeholder; furthermore, companies are likely to be bound to the marketplace.

#### 2.3.5.2.2 Shared ELMs

A shared ELM is similar to a private ELM, except that information can be shared with other ELMs. In this case, the marketplaces are hosted by a single company, but they share the same platform. In comparison to a private ELM, limited technical help is required for connectivity in a shared ELM and savings can also be made as the repeated set-up costs associated with an open ELM are not required.

#### 2.3.5.2.3 Collaborative ELMs

The collaborative ELM is more advanced compared with the preceding forms. It constitutes a consortium of firms with identified common interests. This platform supports an easy sharing of resources and is helpful for freight capacity utilisation, through the identification of product flow synergy. Since multiple players are involved in different aspects of a collaborative ELM (Wang et al., 2011), the marketplace enhances both vertical integration and horizontal collaboration.

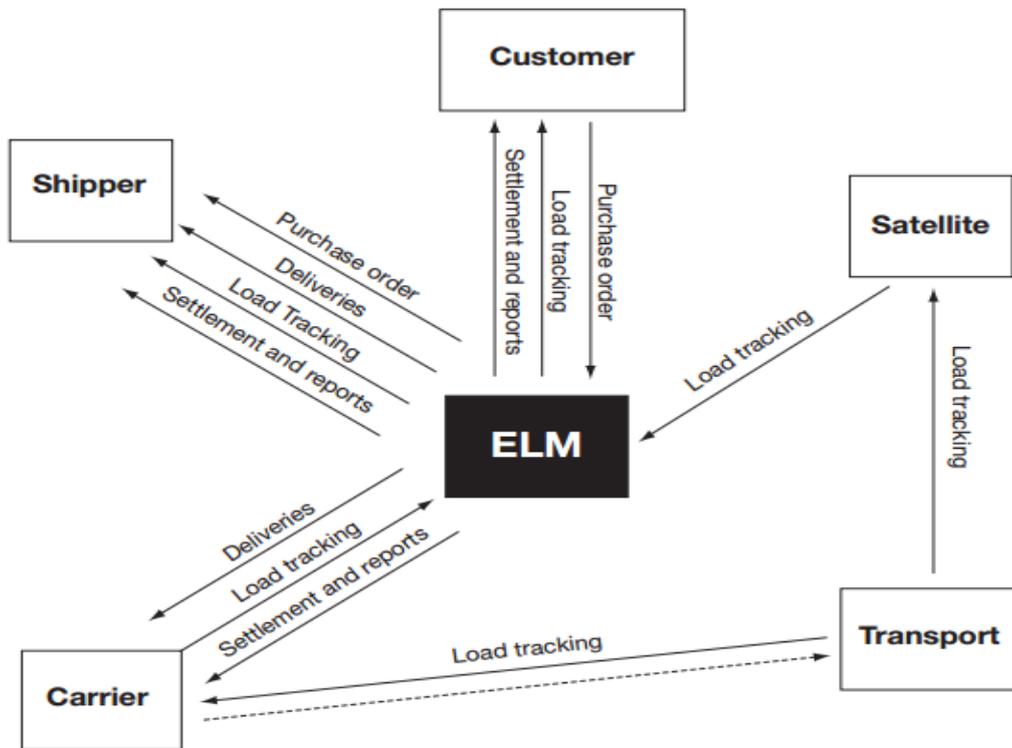


Figure 10: Overview of ELM operations. Source: Edward et al. (2010).

### 2.3.5.3 Benefits of an ELM

The closed ELM appears to be a better match for the tailored or customised logistics system when considering the benefits and motivations identified. Examples of the benefits and characteristics of the closed ELM are: business customisation focusing on the needs of a particular consortium (McLaren et al., 2002), and centralised and integrated business information as a unified system for enhanced communication is facilitated across the supply chain (Wang et al., 2011).

### 2.3.5.4 Shortcomings

Edward et al. (2010) identified one shortcoming as being the incompatibility of trucks with certain products, for example, the availability of chemical trucks and the need to transport foodstuffs. Lewis (2002), cited in Wang et al. (2011), explained that an open ELM will likely leave its stakeholders struggling for 'critical mass'.

Research by Lasisi et al. (2015), presented at the International Symposium of Logistics (ISL) in Italy, revealed that, the intelligent nature of new information technologies can be integrated into an ELM design to also include B2C for small parcel delivery. With this design,

full and real-time tracking together with details of the trucks, as regards contents and space, from the starting point to all nodes and the final destination, could be maintained. With this information available, the system can intelligently map trucks with new parcels in real time, as shown in Figures 11 and 12 below.

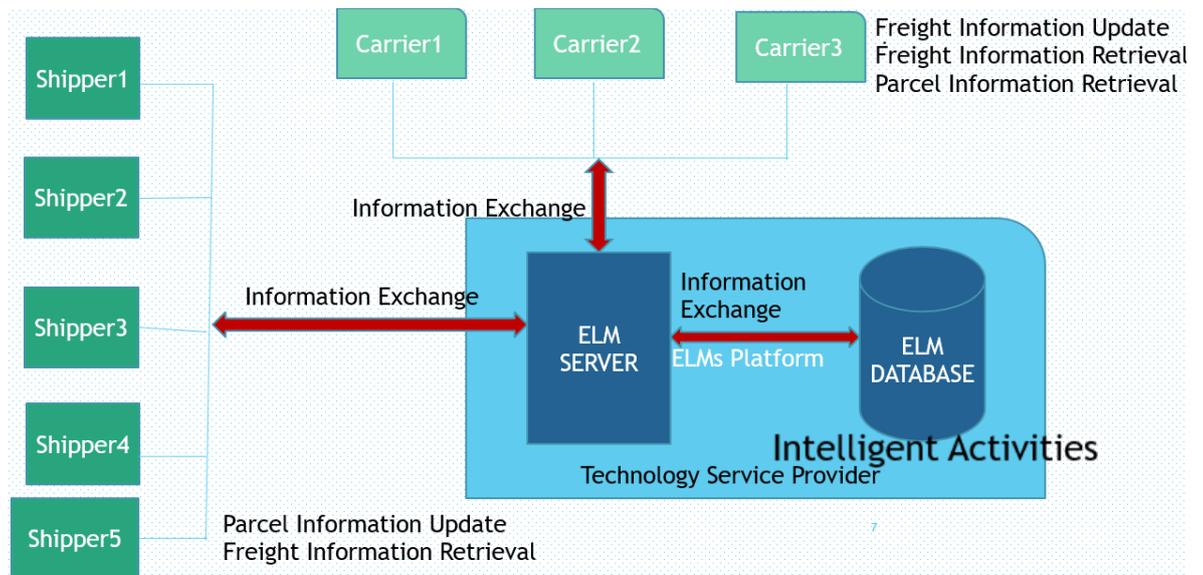


Figure 11: Revised ELM operations 1. Source: Lasisi et al. (2015).

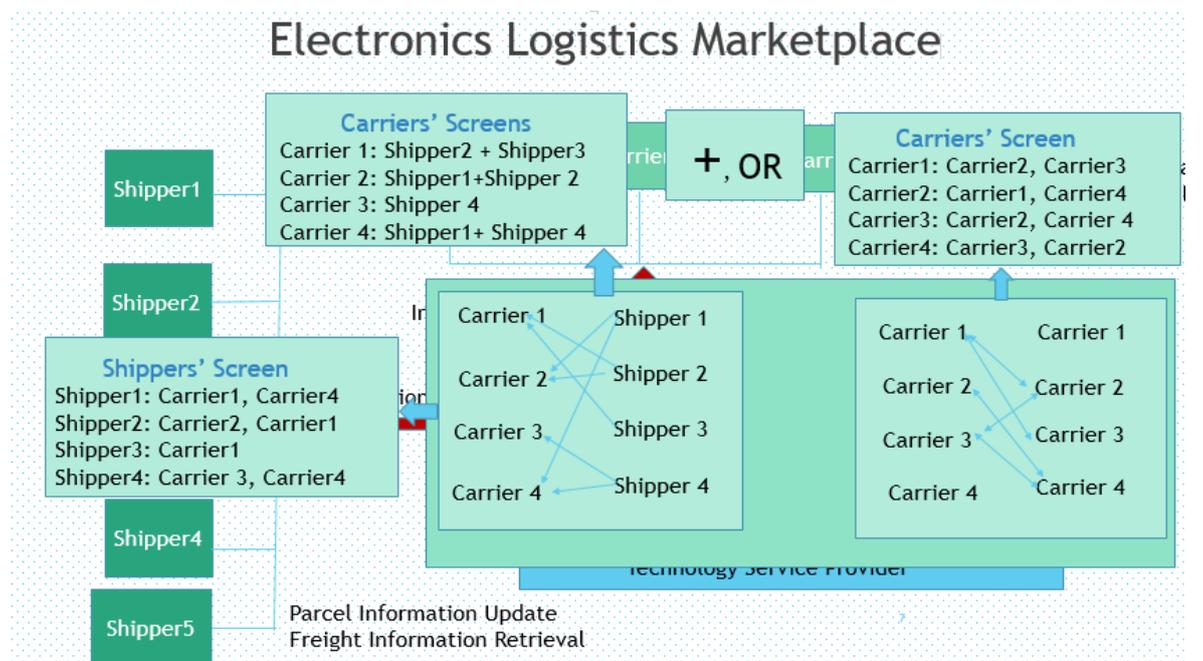


Figure 12: Revised ELM operations 2. Source: Lasisi et al. (2015).

### 2.3.6 Partnership/collaboration and selection criteria

As analysed above, the contemporary market requirements for supply chain efficiency have gone beyond a firm's individual approach and now require a holistic approach, through collaboration and/or partnership. Christopher (2011, pp.15-16) explained that:

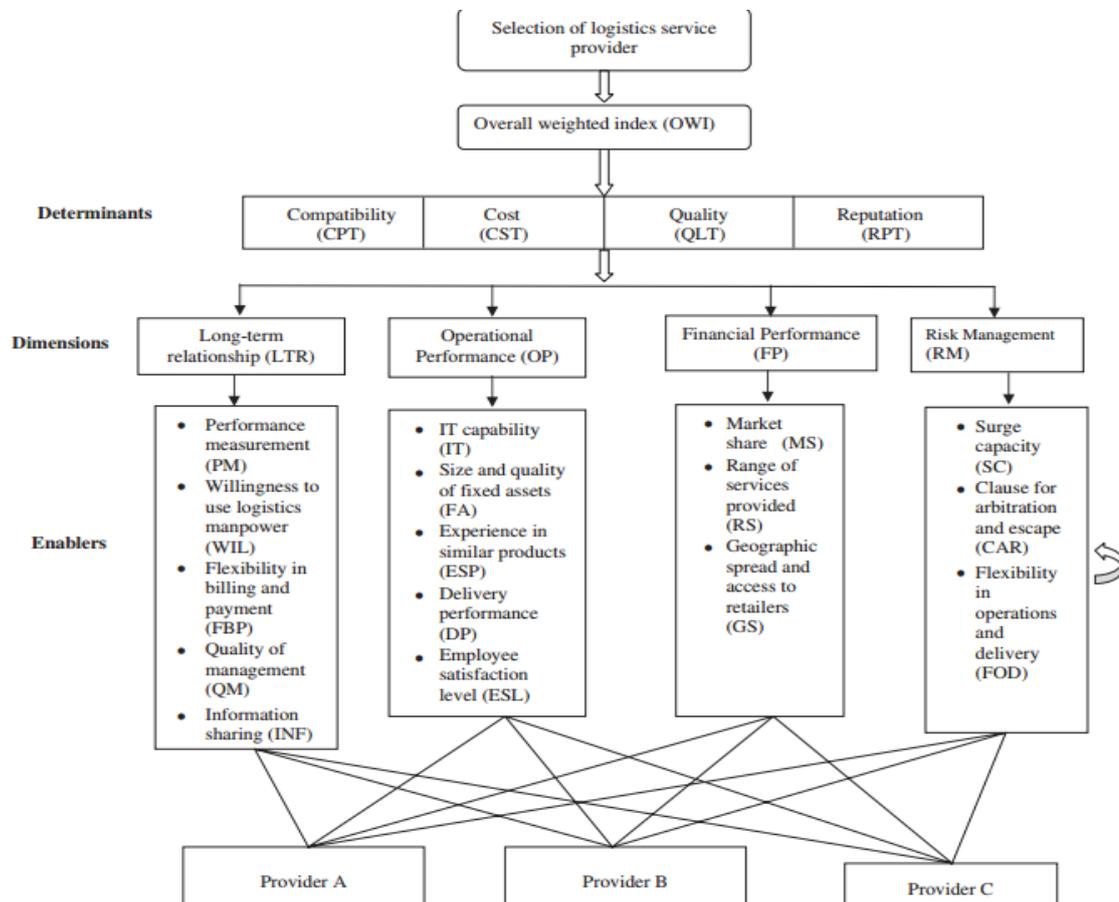
...we are now entering the era of 'supply chain competition'. The fundamental difference from the previous model of competition is that an organisation can no longer act as an isolated and independent entity in competition with other similarly 'stand-alone' organisations. Instead, the need to create value delivery systems that are more responsive to fast-changing markets and are much more consistent and reliable in the delivery of that value requires that the supply chain as a whole be focused on the achievement of these goals.

Soosay and Hyland (2004) similarly argued that competition has ceased to exist between organisations but does exist within their supply chain services and, with reference to the above subsections, organisations need to collaborate for effective competitiveness within the supply chain.

Early work by Bagchi and Virum (1998) has shown that the task of developing logistics skills and using them as competitive tools appears to be difficult for business owners, especially with the increasing demand for fast delivery by shippers, which has subjected carriers to contradictory pressures. They are therefore required to provide better logistics services, and develop and maintain closer relationships with their trading partners. Gelinas and Brigas (2004) observed that successful firms know how important it is to adapt to the demands of logistics integration, which must adjust to the needs of their customers, to preserve market share and assure growth. Therefore, effective management of commercial partnerships in an integrated logistics chain, as analysed by Landry (1990), is based on the long-term development of partners. This, they believe, will help firms benefit from their expertise, and enhance their information processing, production, supply and distribution skills to a highly competitive level.

Vijayvargiya and Dey (2010) identified transportation as the largest portion of a firm's logistics, usually accounting for up to two-thirds of the budget. They also identified with Aguezzoul et al. (2006) who stated that the transport system has been prone to radical changes and variables, such as globalisation, deregulation, corporate restructuring,

government policy, and industry regulation, all of which have affected its smooth and stable manageability. Vijayvargiya and Dey (2010) and Jharkharia and Shankar (2007) argued that these combined challenges drive companies into outsourcing, so as to ease daily operational logistical problems; enhance flexible schedule management; deal with complex regulatory changes, freight cost comparisons and flexibility; and concentrate on core competences. In order to fully optimise the cost and improved efficiencies, there is the need to logically and systemically approach the LSP selection process. In related work, Andersson and Normann (2002) suggested that firms must always remember in their selection process that LSPs offer a variety of services and should therefore factor in all stakeholders. Meade and Sarkis (1998) also indicated that the selection process becomes tougher as the number of criteria increases. Saaty (1980) expressed that, in order to make a satisfactory choice, a standard approach should be used and suggested the Analytic Hierarchy Process (AHP). The AHP is defined as a selection methodology used in the resolution of problems, particularly when enmeshed with multi-criteria scenarios, by “comparing objectives and alternatives in a natural, pairwise manner” (Forman and Gass, 2001, p.1). So et al. (2006) stated that, even though the AHP is one of the most commonly embraced approaches in the multi-criteria selection process, it is recognised as having significant shortcomings among the various selection techniques available as it does not support the use of assumptions. However, in earlier research by Saaty (1996), he suggested that the Analytic Network Process (ANP), a technique defined by Kone and Buke (2007, p.5221) was “a systematic approach to set priorities and trade-offs among goals and criteria, and also can measure all tangible and intangible criteria in the model”, and was therefore a better decision-making technique than AHP. The ANP was also recognised by Jharkharia and Shankar (2007) as a broader and a more general methodology that addresses the shortcomings of the AHP. Jharkharia and Shankar (2007) integrated the ANP into their proposed model for LSP selection. The ANP-based model is shown in Figure 13 below.



**Figure 13: The ANP-based model for the selection of a logistics service provider. Source: Jharkharia and Shankar (2007).**

Datta et al. (2013) listed many questions for consideration by consignors (shippers) during the 3PL decision-making process: (1) Are the services required provided by the 3PL? (2) Are they technologically proficient in the task required? (3) Does the company have the warehouse space, dock capacity, warehouse personnel, etc. required? (4) Are they financially sound? (5) Are their geographical locations suitable for the services/network coverage required? (6) Do they have the capability to respond to ad hoc situations? (7) How flexible are they with respect to changes? (8) Do they have the flexibility to respond to changes? (9) Are their environmental policies compatible?

Gol and Catay (2007, p.380) also conducted research on a 3PL selection methodology by studying Tofas-Fiat, an automobile manufacturing plant based in Turkey. The company specialises in three major product flows in its supply chain, i.e. “complete built-up (CBU) units flow, spare parts flow, and inter-company/complete knocked down (IC/CKD) flow”, and is involved in shipping to Italy, Poland, Brazil, China, Egypt (Nasco), South Africa,

Vietnam, North Korea, Morocco and India. In order to increase its profit margin, the company decided to outsource LSC operations through the AHP selection technique.

#### 2.3.6.1 The AHP selection technique

Gol and Catay (2007) stated that Tofas-Fiat settled for the AHP as a scrupulous approach after a series of investigations, conducted and reviewed by the Direct Material Logistics Department of the company, revealed how it could be used to factor in all stakeholders with their varied requirements, as per the list of expectations from the 3PL by Tofas-Fiat listed below.

- Integration: Partnership and collaboration, IT integration with the Tofas-Fiat supply chain, dedicated 3PL resources to Tofas-Fiat, confirming daily material procurement programmes with suppliers/Tofas-Fiat and tracking.
- Optimisation: Optimum daily vehicle planning, fixed/variable route planning and load optimisation assuring high saturation.
- Operations: On-time shipment, synchronisation of customs documentation, transportation of returnable containers (including customs clearance), emergency planning and minimum transportation cycle time.
- Performance/quality: Reliability of shipments, quality assurance in loading, documentation and transportation, measurement of logistics performance, accepting penalties for poor performance and reporting continuous improvement plans.

The investigation also suggested three requirements to be met by Tofas-Fiat, i.e. “Partnership with the suppliers, Synchronized custom operations and Partnership with a global logistics service provider” (Gol and Catay, 2007, p.381).

Table 2 below explains the general 3PL selection criteria.

<b>General Partnership Considerations</b>	
Price	Competitive pricing derived from quotations.
Financial Considerations	Liquidity, operating, profitability and leverage ratios are the ratios selected for measuring the financial situation of the 3PL providers. These will be derived from balance sheets and income statements.
Same Industry Experience	The provider's automotive industry expertise will be taken into consideration. References and previous experiences may provide information about the logistics company's automotive industry experience.
Location	The geographic area served by the provider is an important issue. The distribution of the offices/branches/warehouses of the service provider, according to the suppliers of the company, will be considered.
Asset Ownership	The percentage of asset ownership is also an important indicator for consideration.
International Scope	The provider's revenues generated from foreign sales will show the strength and breadth of its international scope.
Growth Forecast	The number of days it takes the 3PL to respond to a capacity increase of 20% demonstrates the sensitivity of the 3PL providers' growth capability.
Yearly Efficiency	This is a measure of continuous improvement for reducing total costs.
<b>Capabilities</b>	
Optimisation Capabilities	The software names used for optimisation in route planning, load planning, vehicle /container planning and returnable container plans.
Information Technology Systems	The names or description of the computer systems used for tracking, tracing and confirmation.
Customer Service	This criterion relates to the dedicated resources of the company. These resources should be full-time employed. The selected indicators for customer service are management of human resources in hours/months and the number of trucks dedicated to the company.
Supply Chain Vision	(Capacity to accommodate and grow the client's business). The supply chain vision of the 3PL provider is vital since it adds value to the chain by offering service migrations.
Creative Management	(Flexibility and capability to handle specific business requirements). Transportation with containers in a customized milk run project for export parts provides an example for specific business requirements. The flexibility and capability to handle these requirements is an important consideration.
Responsiveness	(To unforeseen problems or unexpected events). Ability to undertake emergency planning and to perform hot shipments indicates the level of responsiveness to unexpected events.
<b>Quality</b>	
Service Quality	The quality management systems that the service provider exploits, e.g. Six Sigma and ISO 9000 give an idea of the quality of service and performance of the 3PL provider.
Continuous Improvement	The reputation of the 3PL provider for continuous problem solving can be understood from references provided.

Key Performance Indicator (KPI) Measurement and Reporting	The KPIs proposed by the 3PL provider or the ability to measure the KPIs desired by the company and the forms of reports proposed by the 3PL provider are vital, even in the selection process for the future quality of the service.
Availability of Top Management	The accessibility of personnel from top management is important in case there is a need for an urgent decision to be made.
Cultural fit	Compatibility with company culture and policies is derived from subjective 'feel'.
Service Cancellation	The durations of the contracts and the reasons for cancellation of contracts for the past five years illustrate the 3PL's client relationships.
General Reputation	The subjective 'feel' derived from the industry for the 3PL provider demonstrates its image and the general reputation of the 3PL provider.
<b>Labour Relations</b>	
Human Resource Policies	The organisational structure and the titles for the positions indicate the 3PL provider's HR policies.
Availability of Qualified Workforce	The occupations of the employers and their automotive and logistics experience in terms of years will demonstrate the quality of the talent that the 3PL provider employs.

**Table 2: AHP 3PL selection criteria. Source: Gol and Catay (2007).**

### 2.3.6.2 The ANP selection technique

Gencer and Gurpınar (2007) explained the ANP decision hierarchy and model used in an electronics firm (see Figures 14 and 15 below) and identified that the ANP tackles the assumptions and limitations in the AHP, as shown in Figure 16, by making provisions for the consideration of alternative suppliers, which implies that the ANP does not only help in the selection of a single provider, but also makes provision for alternative suppliers.

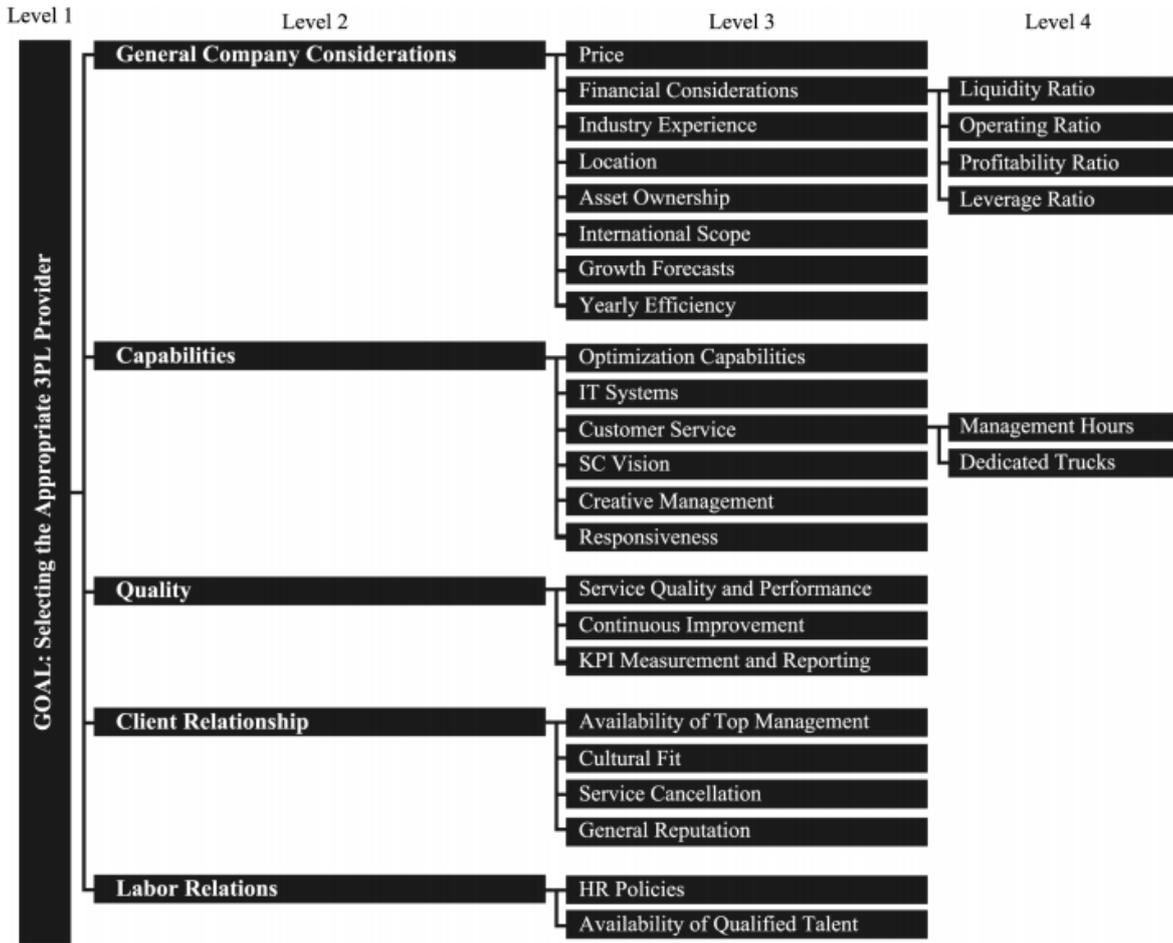


Figure 14: ANP decision hierarchy. Source: Gol and Catay (2007).

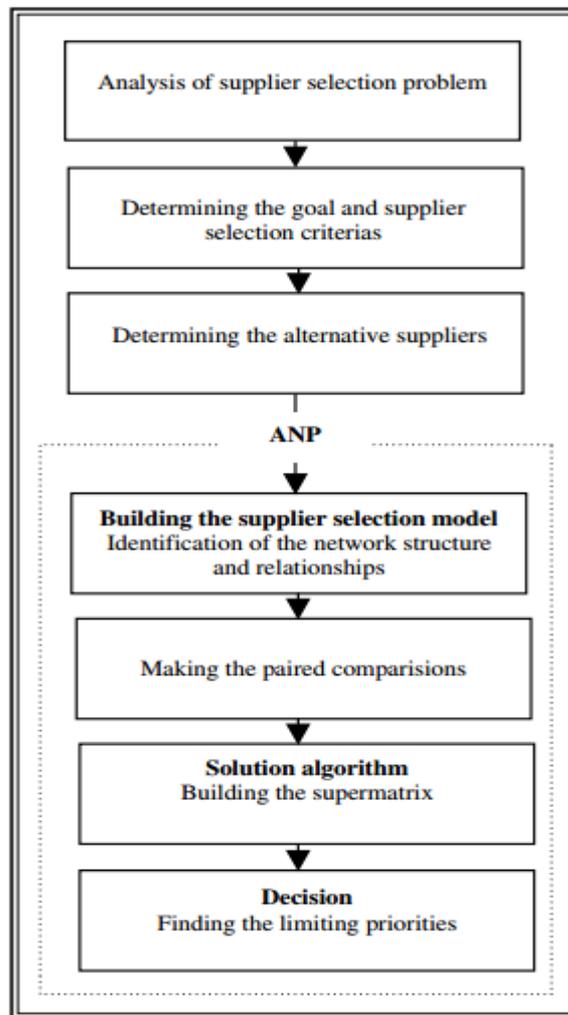


Figure 15: The proposed ANP model for an LSP provider. Source: Gencer and Gurpinar (2007).

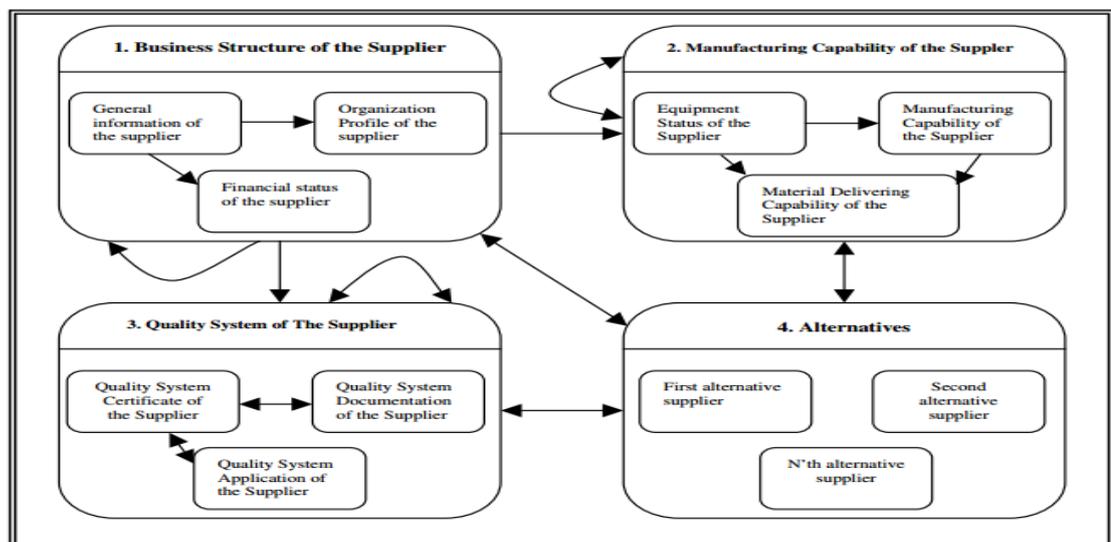


Figure 16: The supplier selection network model's control hierarchy. Source: Gencer and Gurpinar (2007).

### 2.3.6.3 The need for innovative logistics

According to Coltman et al. (2011), even though several factors are considered in 3PL selection, the ability to be proactive and innovate, as well as fit between cultures, has been identified as being key. Jayaram and Tan (2010) added that, in order to build a resourceful partnership with 3PLs, there must be a proactive innovative business model in place. Coltman et al. (2011, p.143) put forward that proactive innovation aims “at providing new solutions to improve customers’ business and address any potential problems and challenges”. Anderson et al. (2011) added that businesses are now more careful in their selection approach and base their choice of 3LP on the level of innovation offered. Very innovative 3PLs are, in most cases, industry leaders and generally offer more potential than firms with poor innovation. Anderson et al. (2011) argued that businesses must learn to be responsive as the market is unstable and will continue to evolve technologically.

Wee et al. (2010) argued that successful competition requires improved and innovative customer satisfaction strategies, such as product customisation, delivery flexibility and reliable response capability in a changing environment. This was corroborated by Soinio et al. (2012) through their explanation that today’s logistics is not only concerned with transportation, cost and warehousing, but it is currently being driven by customers’ value-added service demands and has further shifted the client-LSP relationship towards a more innovative collaborative mode. This requirement, according to Akintoye et al. (2000), has led to LSCM becoming an important source of innovation “for and between suppliers and customers” by serving as a driving force for partnership. Partnerships are usually between local firms, related firms and customers (Yu et al., 2001). Lambert et al. (2010) argued that a partnership with customers is essential for value creation, thereby driving both logistics and innovation in a mutual direction. Nambisan et al. (2002) explained that when customers dictate logistics innovation, high satisfaction and customer loyalty is usually derived.

## 2.4 Innovation

Several views and opinions have been expressed on innovation, particularly with regard to its lack of a consensual definition. Baregheh et al. (2009), Vermeulen (2004), Henderson and Clark (1990) and Damanpour and Schneider (2006) all argued that, due to its multidisciplinary nature, innovation has been defined from different perspectives that

include economics, entrepreneurship, business, management and technology. Baregheh et al. (2009) added that the diversity in innovation studies leads to definition overlap and, consequently, to a lack of a clear and authoritative definition. According to Udwadia (1990), innovation is defined as a major tool used to ensure a firm’s success, survival and continuity in a competitive business environment. Other definitions are shown in Table 3 below.

<b>Authors</b>	<b>Definition of Innovation</b>
Tidd and Bessant (2009); Cox (2005, p.2)	Successful exploitation of new ideas
Jasimuddin (2012, p.291)	The successful creation, development and introduction of new products, processes or services.
West and Anderson (1996), cited in Wong et al. (2009, p.2)	A successful introduction, implementation and execution of a new process/product to an organisation for a design that benefits it (the organisation) and its stakeholders.
Damanpour (1996, p.694)	A means of changing an organization, either as a response to changes in the external environment or as a pre-emptive action to influence the environment.
Baregheh et al. (2009, p.1334)	A multi-stage process whereby organizations transform ideas into new/improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.

**Table 3: Diverse definitions of innovation.**

Baregheh et al. (2009) analysed the need to innovate as a requirement to meet unstable market demand, and to capitalise on opportunities brought by technology and the changing marketplace. Tidd and Bessant (2009) argued that, even though success is not guaranteed, innovation increasingly appears to be a powerful tool to secure competitive advantage and is a secure way of defending strategic positions, mostly through collaboration. They added that the problem with its definition is the “variation in what people understand by the term” and also its confusion with invention, while Wright (2012) writes that he believes innovation

does not have a clear definition because most executives are confused about what innovation is and what it can do for them.

Shepherd and Ahmed (2000) and Permala et al. (2015) expressed that recurring challenges, such as technology-driven competition, shorter product lifecycles and increasingly sophisticated customer needs have compelled business owners to devise improved, innovative logistics strategies. Soosay and Hyland (2004) controversially argued that innovation has ceased to exist between organisations or in product improvements but exists within the proficiency of their supply chains and logistics.

Fawcett and Cooper (1998) argued that several competitive and environmental developments have sprung up, with demands for more aggressive and innovative performance measurements, which can be traced to the traditional logistics approach that has failed to provide the insight needed for uniqueness in this competitive and dynamic global market.

### 2.4.1 Types of innovation

Table 4 shows different types of innovation as identified from the literature.

Authors	Innovation Types
Oke (2007), and Gunday et al. (2007)	Product and service
Tidd and Bessant (2009), and Baragheh et al. (2012)	Product, process, position and paradigm
Baragheh et al. (2009)	Process, product and service
Baba (2012)	Technical and managerial

**Table 4: Types of innovation by different authors.**

#### 2.4.1.1 Brief on product innovation

Tidd and Bessant (2009) defined ‘product’ as what is offered to the world, which becomes innovative when changes are made either incrementally or radically for competitive advantage. Dougherty (1999, p.174) defined product innovation as:

a tool used by organizations to improve the quality of their output, revitalize mature businesses, enter new markets, react to competitive encroachment, try out new technologies that are so expensive that no single product can recoup them, and develop alternative applications for existing product categories.

#### 2.4.1.2 Service Innovation

Ettlie and Rosenthal (2011) defined service innovation as a tool used when changes are made in the direction, organisation and even the product line of a business in order to anticipate demand and keep the company at the forefront of an industry. Service industries in America, Asia and Europe have started playing an increasingly important role in economic development and job creation (Sung et al., 2011; Paswan et al., 2009; Johannessen and Olsen, 2010). Crevani et al. (2011) expressed that since the 1990s, the service industry accounts for approximately two thirds of employment and GDP in Europe and also of many developing countries, such as Malaysia, China, Argentina and Mexico. Abramovici and Bancel-Charensol (2004) advanced that services are becoming a driver for growth and productivity in developed economies, and this has resulted in net job creation in the past 20 years or more in the European economy. In addition, statistics from the World Bank also suggest that 64% of the GDP in most of the high-income countries comes from the service industry (Soubottina, 2004). Similar statistics were also given by Ind and Coates (2013) who provide the percentage of GDP that the service sector represents in the following countries: UK – 77.7%, France – 78.9% and the USA – 76.7%.

Terwiesch and Xu (2011) and Ettlie and Rosenthal (2012) explained that for more than 20 years, service innovations have been beneficial to firms in tackling problems; manufacturing firms have particularly benefitted as they have been able to diversify into new lines of business and, therefore, benefit from long-term profitability. Similarly, Gadrey et al. (1995, pp.5-6) view that

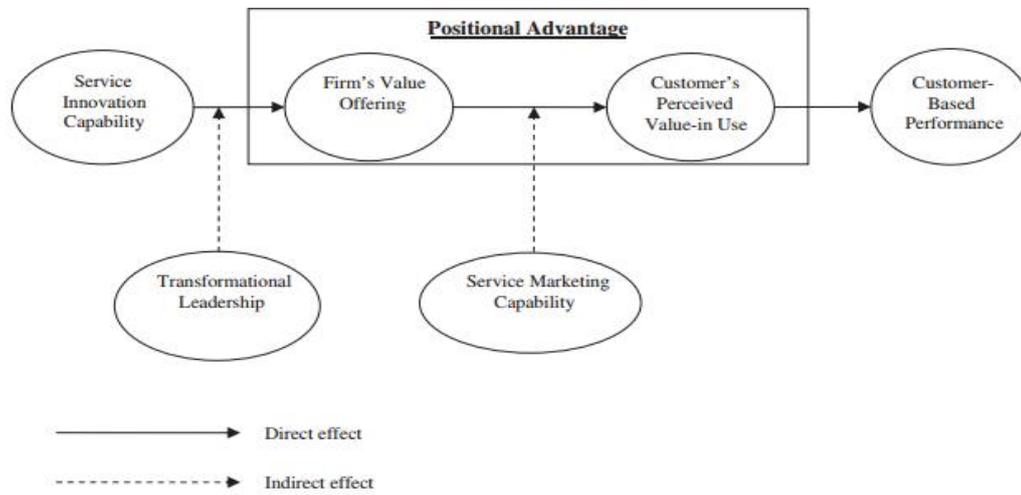
...to produce a service, therefore, is to organize a solution to a problem (a treatment, an operation) which does not principally involve supplying of goods. It is to place a bundle of capabilities and competences (human, technological, organizational) at the

disposal of a client and to organize a solution, which may be given to varying degrees of precision.

Michel et al. (2008b) also presented a similar view by arguing that problem-solving through service innovation may lead to/require changes in the customer's role/participation and may result in value creation processes. The customer's role/participation, according to Dabholkar and Dunlap (1990, p.484), is defined as "the degree to which the customer is involved in producing and delivering the service." In line with Michel et al.'s argument, Ngo and O'Cass (2013) are of the opinion that, since innovation capability and customer participation are closely associated, firms that prioritise innovation will likely make changes to improve their competitive activities and, therefore, meet customer requirements, while a related argument can be traced to Prahalad and Ramaswamy (2004 a), who suggest that when firms engage customers in their services and products, they learn and meet customers' needs better, and this results in an improvement in performance.

Olhager (2010, p.863) argued that successful competition is achieved through the strategic alignment of operations with market requirements, one of which is the increasing interest by companies to incorporate customers in production and delivery plans, which he termed the "customers' order decoupling point" (CODP). He defined the CODP as "the point in the material flow where the product is tied to a specific customer order; the basic choices being make-to-stock, assemble-to-order, make-to-order, and engineer-to-order". Bendapudi and Leone (2003) expressed that there is nothing new in customer incorporation in production and other value-added services; the newness is the recognition that encouraging customers' participation with firms is gradually becoming the norm for competitive effectiveness and advantage, which drives innovation.

As a conclusion to the service innovation section, the research by O'Cass and Sok (2013) depicts a theoretical model showing both the direct and indirect benefits derivable through service innovation capability in the B2B operations, as shown in Figure 17 below. Also, on the basis that retail logistics is service-oriented, other types of innovation that have been identified will not be analysed in detail.



**Figure 17: Service Innovation Capability. Source: Adapted from O’Cass and Sok (2013).**

## 2.4.2 Forms of Innovation

There are several forms by which innovation is achieved, yet many authors base their research on the two forms that are commonly used, e.g. Nemet (2009), and Chidamber and Kon (1994) mentioned radical and incremental. They referred to radical innovation as a disruptive process that has a significant effect on the business or a market’s economic activities; incremental innovation has a mild effect on the business or a market’s economic activities, as it is more concerned with upgrade or value added services through existing infrastructure. They added that although incremental innovation is the dominant form of innovation, the innovation requirement greatly differs from sector to sector, and could be driven either by market demand or technology change. Gustafsson et al. (2012), however, through a multidisciplinary study, discovered other additional forms, i.e. radical, incremental, improvement, ad hoc, re-combinative and formalisation innovation. In order to prevent unnecessary complexity and remain focused, the most relevant forms of innovation have been identified as radical and incremental, and these two forms are the focus of this research.

### 2.4.2.1 Incremental Innovation

According to Fisher (2007), incremental innovation is a way to refine, adapt and enhance products and services. Leifer et al., (2000) viewed it as a way of adding to and sustaining the value of existing products and services through enhanced efficiencies, and the effectiveness

of existing processes and practices. They corroborated their view with a controversial example of how Asian firms took over the electronics market from American and European firms in the 1980s using an incremental design of consumer electronics. Their response to this challenge by American and European firms was also through an extensive incremental innovation study by the business managers and academics, which resulted in the redesign of business models. The adoption of the new business models, however, helped the majority of American and European firms to regain their competitive positions in the global marketplace. Leonard et al. (2006) advanced the view that, although companies pay great attention to incremental improvement of the services they offer, few succeed in creating service innovation that generates new markets or reshapes existing ones. Attaining such a level may require executives to understand the different types of market and create service innovations, even though each type of innovation varies by sector. For example, innovations in the natural resource sector tend to focus almost exclusively on processes and much less on products and services, while the focus is on products and services in the manufacturing sector.

#### 2.4.2.2 Radical Innovation

The word radical literally means a complete change. Radical innovation, according to Leifer et al. (2000), is defined as a breakthrough that evolves from unmet and unarticulated customer needs to transform the supplier-customer relationship, displace current products and restructure the marketplace economy through research and development processes to an eventual commercialisation of radically new products or services. Gary (2003) argued that significant revenue growth cannot be achieved unless impressive new products and services are presented. Paulson et al. (2007) also added that radical innovation has an element of risk, due to its high level of uncertainty and lack of evaluation tools, particularly within large firms. Hurmelinna-Laukkanen et al. (2008, p.285) advanced that environmental dynamism plays a huge role in the prediction of radical innovation by putting pressure on firms to “generate new insights” and find new and additional sources for profit generation.

### 2.4.2.3 Comparing Radical and Incremental Innovation

<b>Incremental Innovation</b>	<b>Radical Innovation</b>
Low uncertainty	High Uncertainty
Improves competitiveness within current markets or industries	Creates a dramatic change that transforms existing markets or industries, or creates new ones
Exploits existing technology	Explores new technology
Focuses on cost or feature improvements in existing products or services, processes, marketing or business models	Focuses on processes, products or services with unprecedented performance features

**Table 5: Comparison of radical and incremental innovation.**

### 2.4.3 Logistics innovation

Chapman et al. (2003) expressed that knowledge, technology and relationship networks are key in building logistics innovation, as it has become important for business owners to be knowledgeable about the changing market and its requirements, to understand how the adoption of technology helps competitiveness and relevance, and how partnership/networking now facilitates accessibility to the larger market. Soosay and Sloan, (2005) argued that customer satisfaction alongside continuous improvement is the most fundamental driver in logistics innovation on the basis that customers' changing requirements drive innovation, and that it is important that shippers and carriers show that their actions and deeds are customer focused. Langley et al. (2005, 2006, p.11) argued that environmental factors like unexpected changes in market demand, changing technology requirements and competition are responsible for the unceasing need for LSPs to innovate by extending their services using a sophisticated approach, such as the adoption of RFID technology. This technology can include a "warehouse/distribution centre management" system, a "transportation management" system, "visibility tools (shipment tracking/tracing/event management)" and "web enabled communications" to drive services, while globalisation, which often advocates consolidation, leads to increasing competitive pressures that lead to high-level innovation.

Similarly, Cui et al. (2012) researched the drivers, barriers and effects of logistics innovation drawing from case study findings, interviews and observation from 3PLs in China. The study revealed, in a similar way, that the key factors that motivate 3PL innovation are as follows:

...customer requirements, situational factors, efficiency and effectiveness enhancements, wider service portfolio provision, differentiation, growth, increased geographical coverage, market forces, entrepreneurial orientation and supply chain orientation. The barriers are associated with cost, time, employee capability, limited resources, unqualified suppliers and ineffective internal communication (Cui et al., 2012, p.113).

Cui et al. (2012) further explained that strategies, such as carefully listening to clients and fully understanding their latent and unmet needs lead to the generation of proactive and innovative ideas or measures, which are then presented as a response to market intelligence obtained from current and potential clients, and competitors. This is similar to the argument by Grawe et al. (2009) that customer orientation directly motivates service innovation, and also leads to co-creation.

Soosay and Hyland (2004) studied logistics innovation drivers in distribution centres using Singapore and Australia as case studies. The comparisons revealed that all the distribution centres innovate but that they have varied needs, which include the need to compete, the need to improve operational performance, financial motives, shareholder and customer requirements, and the need to take a lead in the industry. These needs are categorised as either push or pull factors: “The push factors are defined as drivers or causes, initiating a realization or a response”, while the pull factors are the actual desire and end results that firms intend to achieve as a result of their innovative efforts (Soosay and Hyland, 2004, p.48). These two factors were further categorised as internal and external factors. The internal factors are the people, systems, processes and strategies within the organisation, while the external factors refer to the environment or industry of operations. Soosay and Hyland (2004) observed that firms innovate using a combination of internal and external factors to improve their business position in the market, and further observation revealed that there are more pull factors than push factors in the two countries studied: Australia pursues innovation mainly for external reasons, while Singapore has more internal

motivations. The study showed that financial measures are the major driver from the Australian perspective, while in Singapore a firm's human resource management systems and organisational structure are designed to drive and support innovation, which are associated with its position and reliance on logistics industries, its size and location. Soosay and Hyland (2004) further revealed that the study did not show any significant cultural differences in relation to the driving forces behind innovation and that the major drivers are financial pressures, the customer and increasing global competition. They also observed that, with the ongoing competition in global trade and the high market penetration by low-cost economies such as China and India, there would be a need for improved innovation, as customers' sophisticated demands now focus on a quality delivery service made in a timely manner and at a cost-effective price. This implies that, as customers become more demanding, firms will have to respond to the pressure by seeking innovative organisational structures and collaborative arrangements that reduce the chance of losing customers rather than competing for new clients.

They concluded that, even though this study has mentioned collaboration, it has not addressed its role in enhancing and driving innovation and, therefore, they recommend further studies on collaboration in logistics innovation. It was also discussed that, irrespective of location, firms with similar functions in the same industrial sector, servicing similar customers have similar drivers such as competition, relevance, improved operational performance, and responsiveness in the changing market for innovation.

#### 2.4.3.1 Approaches to adopt LSC innovation

With the technology-driven economy, LSC now faces global competitiveness with its increasing demands to reduce costs, increase quality, improve customer service and ensure continuity of supply (Goebel et al., 2003). To achieve these demands successfully, a comprehensive innovative approach must be adopted. Hazen et al., (2012) noted that merely adopting an innovative approach does not necessarily imply value added services for the firm; innovation needs to be fully incorporated within a company in order for anticipated benefits to be achieved. They also added that, irrespective of the achievement level attained, the end-state of an organisation's diffusion process is not achieved until complete incorporation of the innovation concerned. Nevertheless, Rogers et al. (2008)

advocated that, irrespective of the urgency, a precipitous incorporation or implementation of innovation results in utter rejection by stakeholders. In a related work, Soosay et al. (2008) argued that achieving certain innovation targets requires collaboration, most especially when the innovation level is highly demanding. Lambert et al. (2010) explained that successful collaboration is not achievable until the required processes, such as assessing the key drivers for entering a collaboration; aligning expectations; developing the action plan, product and service agreement; reviewing performance; and re-examining the drivers periodically, have been duly and conscientiously adhered to.

Sahay (2003, p.76) argued that collaboration drives LSC value creation through the creation of a close relationship between the supply chain network of “suppliers, manufacturers, transporters, distributors and customers”. Simatupang and Sridharan (2005) found that higher or advanced LSC collaboration results in higher operational performances and improved innovation activities, through enhanced information sharing. This in turn promotes timely dissemination of relevant information for decision makers, decision synchronisation and incentive alignment, which helps members of the chain with the fulfilment of on-time demand, lower inventory maintenance costs, and leads to improved responsiveness to changes in demand. Coates (2003) discussed that, at the International Mass Retailer Association (IMRA) 2003 in Orlando, members reached a consensus that the key driver for LSC operation is collaboration with vendors, customers and other participants in the value chain. Coates (2003, p.32) also noted that the idea of using consensual knowledge of these companies to generate more accurate forecasts, make exceptional preparations, improve flexibility and quantify supply chain impacts "is itself an innovation" in comparison to the way business was done in the past. He further deduced from the discussion that, even though technology is regarded as a key enabler of the collaboration process, the innovation lies in the communication process.

#### 2.4.3.2 Logistics innovation network

LSC exposure and experience has grown beyond a single firm's innovation to uniquely dominate the market or outperform the competition and instead, collaboration with partner firms in the same LSC network is embraced for effectiveness and efficiency (Manceau et al., 2012). To corroborate the above argument, Arlbjorn et al. (2011) identified

three conceptual elements that capture LSC networking as: process, technology and structure. The process can be described as a business process within the LSC network that is customer-focused for specific value outputs and has a transactional focus across the LSC network for a seamless intra- and inter-organisational relationship (Lambert et al., 2005, cited in Arlbjorn and Paulraj, 2013). Information technology is regarded as a tool used in either “isolation or combination” to bridge the technological infrastructures of the network (Jonsson et al., 2007) and finally, a collaborative structure handles the framework of the LSC network and the link to the end consumer (Arlbjorn et al., 2011; Daugherty et al., 2011). Staying with the above analysis, Arlbjorn and Paulraj (2013, p.4) defined an innovative LSC network as “an incremental or radical change in process, structure, and/or technology that takes place in the supply chain network so as to create value for all stakeholders”.

#### 2.4.3.3 Improving logistics through innovative collaboration

Even though improving the operation of a LSC requires business owners to be traditionally and technologically innovative, Bloom and Van (2006) argued that the simple adoption of technological innovations alone is not sufficient to gain a competitive edge until there are other similar, related and associated innovations in product design, customer relationship and supply management. Pittaway et al. (2004) advanced the idea that, when companies collaborate innovatively, the following benefits result: gaining access to technologies and scarce resources, risk-sharing, rapid commercialisation, accessing complementary skills and acquiring external knowledge. They also identified the need for horizontal technology collaboration, where partners outside the value chain collaborate with similar or non-similar companies, competitors or non-competitors. It is preferable to collaborate with non-competitors as the relationship is usually mutual.

Rothwell (1986), Noteboom (1991) and Pittaway et al. (2004) all stated that, although many small firms may well be innovative, they often do not have the commercial strength or professionalism required to successfully turn inventions into innovations. Bougrain and Haudeville (2002), however, explained that SMEs must not only be able to develop their own internal activities, they also have to be able to strengthen their abilities to collaborate with other companies as well as with customers.

Christensen et al. (2005) argued that, if a firm's LSC becomes proficient in practicing open innovation via collaboration with its network partners, they can compensate for deficiencies in internal resources and any lack of competence. Open innovation is defined as innovating in partnership with those outside your company by sharing the risks and rewards of the outcome and process (Heap, 2010). Ford and Baum (2000) explained that, by accessing the external resources of network partners, SMEs can develop new technological innovations, and hence take better advantage of market penetration.

Cooke and Mayes (1996) evaluated the benefits of networked innovation on business as being to enhance the protection and flexibility in market share, increase operational efficiency, improve productivity and reduce costs.

## **2.5 Emerging retail market**

Pantano (2014) identified that the modern-day retail sector has innovatively made IT the enabler and identifier of business competitive advantage through several developments for improved business strategies. He added that a great deal of research into advanced technology for a competitive retail sector has resulted in frequently disruptive innovation processes and requirements in order to meet market demand, to be proactive with the changing market demand, or for market dominance. This has therefore left stakeholders with no alternative but novel innovations that are achieved either through investment in research and development (R&D), collaboration or a review of the business model. He added that, a lack of innovative capabilities by the majority of retailers has made them always outsource their needs for innovation to third parties. Kim et al. (2014) established that the boom in e-commerce and television home shopping has hugely influenced the increasing demand for small parcel delivery in developed countries, which has consequently put pressure on the efficiencies of parcel delivery companies. Davies et al. (2007) similarly argued that there has been pressure on freight operators to squeeze costs and simultaneously maintain or improve service effectiveness, which has resulted in difficulty in incorporating other incurred costs in service charges. In order to meet market demand, different innovative actions are designed or developed by stakeholders and academics. Kim et al. (2014) stated that the greater the delivery demand, the more challenging it is to devise a new model to meet market requirements. In view of this, large

stakeholders (retailers and carriers) have had to always change their business models to meet new market demands.

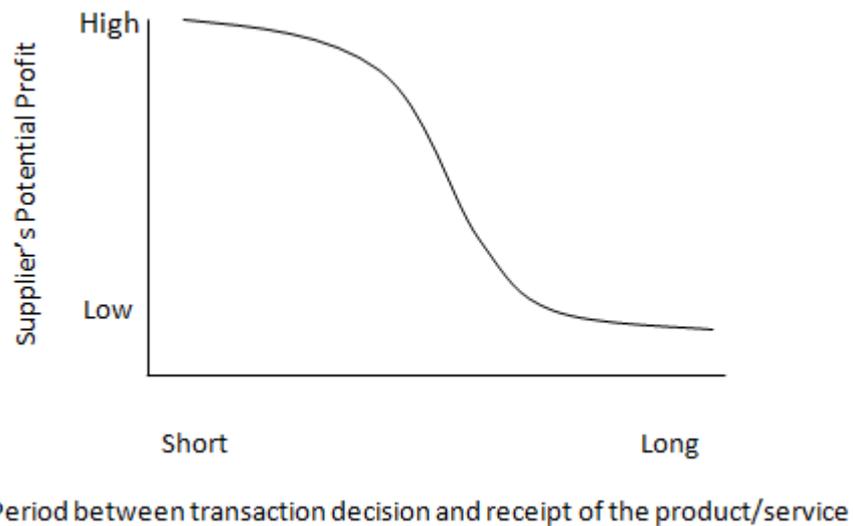
Accordingly, Li et al. (2006) suggested that the advent of e-commerce has also greatly contributed to the requirement for market flexibility, as clients now want customised goods delivered at high speed and with flexible options. Comi and Nuzzolo (2016) revealed that the boom of e-commerce has taken a new turn by changing consumers' attitudes from traditional shopping to online shopping by impacting on their daily activities and related travel. The research established that technology has had a major impact on bricks-and-mortar businesses, resulting in reduced patronage and it is becoming important for stakeholders to embrace information technology for e-business activities. They attributed the increasing demand for city logistics to the boom in e-commerce, and stated that carriers are feeling great pressure as to how to satisfy market demand. Furthermore, it has been established that most large retailers have also shifted base to invest in online shopping, logistics delivery services or to partner with a 3PL provider in order to reduce the requirement for investment. The accumulated effect is said to be a reduction in traditional shopping and travelling times for consumers but an increase in travelling times and congestion for parcel delivery companies. Carriers have experienced an increase in delivery requirements, the result of which is the need to invest further and improve their infrastructure to gain trust and improve reliability.

### 2.5.1 Customers' increasing time and value consciousness

Berry et al. (2010) argued that the handling of interactive retail and supply services has worsened as a result of changing economic conditions, particularly in the first decade of the twenty-first century and especially in aspects of the LSC; consumers have become more value-conscious in their consumption, ordering and delivery requirements and suppliers have become more innovative in their responses. However, they expressed that this current challenge threatens firms who do not possess the innovative and financial capability to respond to the market, as consumers may find new alternatives offered by competitors. Prahalad and Ramaswamy (2004b) explained that, in order to successfully co-create and remain competitive in today's market, firms need to re-orientate from the traditional company-centric system and acknowledge changes in the role of consumers from passive to active, from isolated to connected and from unaware to knowledgeable. Furthermore,

in an earlier research study, Prahalad and Ramaswamy (2000) argued that complexities in market requirements, such as product customisation, delivery dynamism and flexibility make it obligatory for firms to re-assess their business model if they want to remain relevant. Ding et al. (2005) identified this as a reason why firms need to partner with LSPs as a way to reduce logistics challenges both for large firms and SMEs. Based on this, Ding et al. (2005) developed a fuzzy multi-criteria, decision-making model and produced the following as the evaluation criteria for carrier/LSP selection: (1) speed and reliability, (2) cost of freight, (3) safety, (4) the salesman factor and (5) service and convenience. These criteria have been corroborated by Lin and Lee (2009) who explained that speed and reliable parcel delivery services are critical to sustainable business logistics, such as for companies that sell replacement spare parts and technical maintenance units. In addition, customers' perceptions of value and the dependence on time-sensitive, high-value products and services are also critical.

This current trend acknowledges the statement by Tyler (1989) that the urgency associated with despatch and delivery will, at some point, become the main logistics competitive strategy, especially for mail, parcels and small goods delivery. This forecast resulted from the aftermath of the Post Office strike in England that provided an opportunity for private logistics service providers to promote different competitive strategies, which focused on performance and price to attract customers, i.e. timely, urgent and reliable deliveries at competitive rates. Hum and Sim (1996) also supported the argument that the response speed of a company to the needs of its customers greatly influences the price of the goods and services, and consequently the company's profitability, as schematically represented in Figure 18 below.



**Figure 18: Relationship between supplier profitability and speed of delivery. Source: Hum and Sim (1996).**

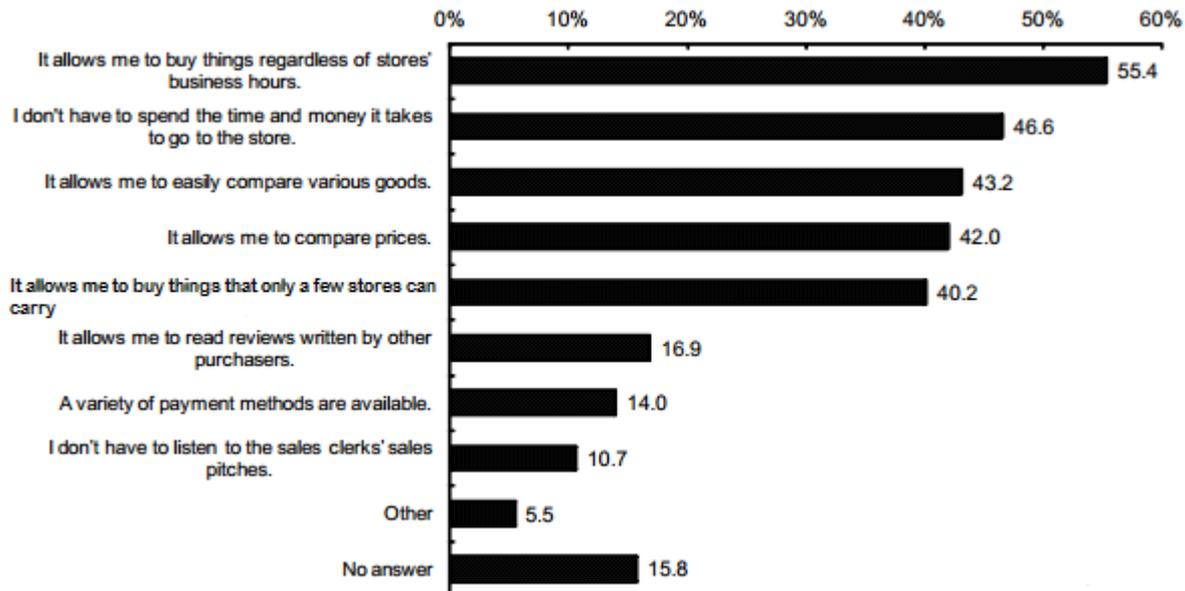
Hum and Sim (1996) presented three major findings in their study to corroborate Tyler's (1989) forecast, thus providing more evidence on consumers' expectations for delivery, i.e. determining customers' price sensitivity:

- 85% of users are willing to pay a 10% premium for a same-day service, 60% would pay 20% more and 40% would pay a 30% premium.
- Brand name and distributor reputation were worth only half the premium that a same-day service was worth.
- Technological features were worth only one-fourth the premium that a same-day service was worth (Hum and Sim, 1996).

### 2.5.2 Changing consumer attitudes and delivery requirements

Comi and Nuzzolo (2016) explained that several innovative strategies have been introduced, such as delivery points and a same-day delivery service as a way of meeting urban delivery requirements, reducing failure rates for first-time delivery and also reducing the delivery backlog. Miyatake et al. (2016) researched how information technology has influenced consumers' shopping attitudes through reduced online shopping costs, with a case study in Japan. Since consumers are unable to use items purchased online immediately, their study considered travel and delivery time as a consumer cost. In order to motivate and drive customer loyalty, e-retailers have demanded fast delivery from

carriers. A survey was conducted to show the reasons why consumers choose online shopping as shown in Figure 19 below.



**Figure 19: Customers' reasons for shopping online. Source: Miyatake et al. (2016).**

The survey revealed that customers have made delivery time in online retail a key factor that drives their purchase decision, and online retailers who can provide fast delivery have benefitted from an increase in sales. It is also noted that as there are no restrictions to an online retailer's business hours, customers spend less time and money shopping, and with the fast delivery options offered, many customers have chosen online shopping over bricks-and-mortar stores.

Furthermore, most delivery costs from large online retailers are already included in the price of the product and so it appears to the consumers that they are benefiting from free delivery, which implies a series of B2B negotiations such as rebates, discounts based on purchase volumes or discounts based on shipping volume, etc. have been undertaken (Kleindorfer 2012; Miyatake et al. 2016). As a result, online consumers in Japan have most of their parcels delivered without additional cost, and yet at a price which is comparable to the bricks-and-mortar price. Miyatake et al. (2016) carried out a different price and cost comparison for online shopping and traditional shopping, and also researched costs for the e-retailer and the bricks-and-mortar retailer. The comparisons revealed that consumers end up spending less through online retail while e-retailers also benefit from lower costs overall. Miyatake et al. (2016) therefore assumed that the outcome of the comparison in

favour of online shoppers and e-retailers could be responsible for the increase in the online retail sector.

### 2.5.3 Last mile delivery failure

Lee and Whang (2001) contributed from another perspective that, with increasing levels of competition in the retail sector due to the boom in e-commerce, especially at Christmas, only firms that possess the ability to fulfil orders and deliver parcels in a timely fashion are guaranteed success. In response to this, they added that a few companies have come up with innovative strategies for last mile delivery, by employing efficient information exchange systems for improved resource/infrastructure management.

Weltevreden (2008) also added that the large increase in the need for parcel deliveries has resulted in a corresponding increase in the number of delivery vehicles. The high demand for home deliveries has also been instrumental in the increase in the number of failed deliveries, which is attributable to the fact that many parcels do not fit through the letter box and usually require someone to receive the parcels. Unfortunately, there has been an increase in failed deliveries as a result, thereby requiring redelivery, which implies increased delivery costs. They expressed that it is on this basis that alternate delivery plans should be encouraged to reduce the overall logistics costs for parcel delivery companies.

Miyatake et al. (2016) mentioned that delivery in Japan operates within a designated time window, while redelivery is also carried out at no cost. Their research, however, recommended that failed delivery resulting from a consumer's absence from the delivery address should attract penalty charges and that consumers should always take delivery dates seriously in order to help reduce overall costs for freight companies.

### 2.5.4 The adoption of same-day delivery as a competitive strategy

Savelsbergh and Woensel (2016) revealed that the e-retail market has made the desire for speed one of their major competitive strategies, the result of which has made same-day parcel delivery a growing competitive strategy that has gone beyond just same-day to even hourly delivery (1 to 2-hour) options. Same-day delivery is defined as a special demand placed upon shippers by customers and thereafter on the carrier, and it often requires the dedication of a truck, van, motorbike or bicycle for a single parcel, depending on its size. Savelsbergh and Woensel (2016, p.4) added that Amazon, for example, has adopted this

strategy as a way of competing with the bricks-and-mortar retailers “as they can provide instant product delivery”. They added that, even though e-retailers are investing in same-day delivery strategies, end consumers are not willing to pay an extra premium, as many of them do not necessarily require such delivery speed. However, they expressed that this and many other competitive strategies have contributed to complexities in city logistics and congestion, which may be resolved by new technology, e.g. the drone delivery service being considered by Amazon and Walmart.

Alternatively, Gessner and Snodgrass (2015) expressed that, since large e-retailers have embarked on the use of same-day parcel delivery as one of the strategies to lead retail market competition, with the service being successfully practiced in Japan through partnership between large carriers and retailers since 2006 (Hayashi et al., 2014), it has become important to design a level playing field system that favours both large companies and SMEs.

Taniguchi and Thompson (2014) explained that e-commerce has transformed retail logistics to the extent that customers now want parcels delivered at the earliest possible time to their desired location and at the lowest possible price. They added that same-day delivery is taking over the market, particularly in America, Europe and Asia where online stores have embarked on free delivery services while also investing in same-day delivery services. They also referred to companies like Amazon as setting the pace in the same-day delivery market and other major retailers, for example, eBay, Walmart, Nordstrom and Sears have started responding by investing in the same-day market, especially in the US. Taniguchi and Thompson (2014) added that in Japan, customers are accustomed to guaranteed parcel delivery times, which is as a result of assured next-day delivery by the major parcel delivery companies like Yamato and Sagawa; customers have made delivery speed one of their key loyalty factors. As a reaction to this, e-retailers have included same-day delivery in their competitive strategies.

Yang et al. (2013) revealed that, due to changes in the economy and e-commerce, demand for express delivery in China is increasing annually by over 30% and currently exceeds 163 million USD. They explained that the increase has resulted in competition amongst state-owned enterprises, which have devised several means for express delivery, one of which is a partnership between parcel freight companies and passenger transport providers to use the luggage compartment of coaches for transporting same-day delivery parcels in a service

called Highway Passenger Transport Based-express (HPTB-express). In this case, factors like parcel arrival time, coach departure time, available space in the luggage compartment and city coverage play important roles in the successful implementation of express delivery. It is observed, however, that although the business is lucrative, the service is unable to cover places beyond the reach of highway express coaches (mostly rural areas). With this gap identified, Yang et al. (2013) proposed an improved model using a heuristic algorithm.

### 2.5.5 Innovation by new entrants/giant players

Ducret (2014) viewed the courier, express and parcel delivery (CEP) market as a strategic and dynamic sector that constantly changes with time. He categorised the market into two sectors: the offensive and the defensive. In the offensive sector, players are either new or innovatively equipped, and/or are giant players who have a need to radically innovate for business transformation. He argued that, in order for them to lead the market, they have invested to change the competitive direction of the market from standard delivery to same-day and same-hour delivery. Ducret (2014) further argued that the situation has become highly intense so that these firms do not just innovate, but are now equipped with offensive delivery strategies such as “scheduled delivery, weekend or delayed delivery, redirected delivery, fitting services, return logistics offer, e-grocery delivery, convenience store delivery, same-hour or same-day delivery and so on” (Ducret, 2014, p.19). He added that, although the investment may not initially be profitable and is at times risky, “the progressive industrialization of the process compensates for the investment”.

In the defensive sector, the players, who are mostly traditional, do not have a need to innovate as in the case of the players in the offensive sector. However, in responding to the market trend, they have been engaged in subcontracting and partnering with the innovative new players in the parcel sector and/or with specialised delivery service providers, through which they provide affordable innovative services.

Ducret (2014) added that, with subcontracting, only little distortion is experienced by the defensive firms while the offensive players experience large distortions, disruptions and a huge requirement for investment. Furthermore, he identified several innovative steps being employed by firms for last mile delivery, examples of which are: the DHL and TNT electric cargobike in Britain and the bicycle and tricycle delivery in Germany. He also

explained that, because of market changes, the difference between standard and express delivery is decreasing and most of the top retailers and carriers have invested in the same-day delivery business. Examples of companies offering same-day delivery include Amazon, Google, USPS in San-Francisco, and DPD's 90-minute delivery in fifteen German cities. He concluded the research by arguing that the CEP sector is rapidly changing and will continue to do so on the basis that e-commerce is still in its infancy.

### 2.5.6 The disruptive technology (omni-channel)

In the last two decades, technology and digitisation have transformed and disrupted the retail market. Initially, retailers took creative steps through the multichannel approach, i.e. bricks-and-mortar and online retail, to achieve customer satisfaction. But with the dawn of social media, and mobile devices, such as smartphones and tablets, retail business now knows no bounds as the market drifts away from showrooming to webrooming, where information is sought online and the purchase is made offline. Firms have started to add new channels for purchases, while various devices are now being used by customers round the clock (Avery et al., 2012). Firms can now, through wifi, communicate with customers on their mobile devices, and can track or monitor their behaviour or retail preferences (Verhoef et al., 2015). They viewed this as a new era when the market takes on a new dimension and ordinary online/multi-channel retail may lack the ability to satisfy the required flexibility and sophistication. At this stage, not only is the retail market witnessing disruption, the logistics sector now struggles with the high level of flexibility required and the increasing demand for reverse logistics:

Omni-channel has placed supply chain firmly on the front line. With consumers now expecting to browse, purchase and return goods across a variety of channels, the supply chain has to reach beyond the retail store to the consumer's home and dedicated pick-up points. This requires real-time, channel-agnostic visibility of inventory across the supply chain and a single view of the consumer as they hop from one channel to another (EY, 2015, p.2).

This approach has seen many firms struggle as it may require huge investment in infrastructure, collaboration, innovation, and possibly the development of a new business model. Hubner et al. (2016) cited EY (2015) to reveal that approximately four out of five retailers believe their logistics system is incapable of supporting the requirements of omni-

channel services, which require a total re-engineering of the distribution system. The retail sector is witnessing too many transformational requirements simultaneously and this has hindered the entire retail and supply chain network from developing a single and robust model that satisfies all requirements. To cope in this evolutionary period, it is important that firms invest in the design of multiple business models that can co-exist (Trkman et al., 2015). As challenging as omni-channel services may seem, EY (2015, p.2) advanced that “to succeed, we believe companies must embed Omni-channel into their strategy, transform their supply chain to be truly agile and responsive, and build robust data and analytics capabilities”, as represented in Figure 20 below. They added that 81% of their respondents believe the existing supply chain system is not fit for the omni-channel market, and there would be the need for businesses to radically review their supply chain approach.



**Figure 20: Prospects for successfully incorporated omni-channel retail. Source: (EY 2015).**

Since the approach aims to drive a strengthened consumer loyalty, its design must be customer-centric, and must understand their wants, changing attitudes and requirements; this means that customers’ desires should be prioritised over the company’s. Since the approach is customer-centric, and will likely become the favoured approach for firms and customers, it is time businesses invested in relevant plans for a responsive business model.

### 2.5.7 Urban logistics and its changing requirements

The constant changes in today's market resulting from e-commerce have led to changing delivery requirements in urban areas and have necessitated the need to take innovative steps in responding to the market. Lindawati et al. (2014) expressed that responding to the market requires robustness and achieving this is difficult due to complexities in the process, and the need to engage multiple stakeholders with potentially conflicting interests. They added that several attempts have been made, with some failing at the proposal stage and others failing during implementation. Taniguchi et al. (2007) advanced, however, that some of the failures are attributable to a lack of commitment and participation or withdrawal by stakeholders, which is due to variations in their set objectives. Lindawati et al. (2014) went on to study the factors responsible for stakeholders' participation and derived a model from the literature with the following features: expected benefits, internal capability, lack of trust and competitive intelligence risk. These four factors resulted in four related hypotheses, to which several other factors were added in order to test the model. These factors were later streamlined to only two, i.e. expected benefits and competitive intelligence risks, these factors being responsible for the stakeholders' decision to participate. They suggested, however, that as a way to motivate stakeholders for future participation, the cost benefit analysis must be transparent to all stakeholders while "top management of business must be well aware of the underlying competitive intelligence risks and be prepared to put in place the requisite mitigation strategies for their firms to be forearmed optimally" (Lindawati et al., 2014, p.287).

Kiba-Janiak (2016, p.558), in similar research on the successful design and implementation of passenger and freight city logistics, identified six stakeholders: the "local authority, residents (consumers), shippers, receivers, transport companies and public transport operators", all with varied expectations and needs. Three of these stakeholders, the shippers, receivers and transport companies, are of major concern to this research. Kiba-Janiak (2016) explained that the expectation of shippers is to satisfy customers with the lowest possible cost; receivers aim for timely delivery to the right location, while transport companies are more concerned with satisfying shippers and receivers with high-quality and effective transport services. In line with the expectations of the stakeholders, the question therefore emerges as to how these three main targets for city logistics – mobility, sustainability and quality of life – can be achieved if each stakeholder has different

expectations and interests? In order to answer this question, Kiba-Janiak (2016) developed multiple key success factors (KSF) to be tested on the basis of the SLIM-PREF model:

- Strategy and operations – relating to strategic documents in a city and operational activities (for example, including targets for environmentally friendly freight and passenger transport)
- Logistics infrastructure – mainly relating to linear and point infrastructure
- Innovation & ideas – innovative technologies, such as intelligent transportation systems, ICT, etc.
- Marketing – the promotion of ecological passenger and freight transport
- People – social aspects, such as road transport safety, staff availability, experience and knowledge
- Regulations – all regulations affecting passenger and freight transport in a city
- Environment – the environmental degradation caused, for example, by freight transport
- Finance – the financial situation of the stakeholders (for example, the budget for local government and expenditure for communication and city transport) and economic benefits for city logistics stakeholders accruing from the implementation of projects

The test was carried out using the Delphi method, a method used to gather expert opinion on special themes and topics, usually when it appears difficult or impossible to obtain the information required quantitatively (Habibi et al., 2014). The test revealed the following KSF to be of very high importance to all stakeholders: local authority regulations; cooperation of stakeholders; access to infrastructure; urban space planning and organisation, with an emphasis on road traffic and the development of an environmentally friendly infrastructure strategy; management techniques; and the role of the leader of the project and the public-private partnership (Habibi et al., 2014).

### **2.5.8 Moves to drive customer satisfaction and loyalty**

Studies have revealed different perceptions of the relationship between customer satisfaction and loyalty, the majority of which have categorised satisfaction as antecedent to loyalty (Cao et al., 2005; Xu et al., 2002; Bose, 2002). Zeithaml (2000) expressed that perceived quality dictates customers' attitudes and decisions on continued patronage, and is therefore a major factor responsible for a firm's innovative steps in relation to their

logistics services. Silvestro and Cross (2000) argued that repeat purchase of products and services, being critical to firms as a measure of performance and success, suggests customer loyalty is a top priority and the move to retain customers has made firms take innovative steps to partner, particularly with the 3PL for continuing professionalism, hence Castaneda's (2011, p.379) expression that,

...the notions of satisfaction and loyalty have, not infrequently, been confused both in the literature and in the actual business world. Even those who view them as clearly different concept, assume a strong and direct relationship between them, a relationship that has traditionally been seen as linear.

Joaquín and Magdalena (2009) and Trasorras et al. (2009) expressed that there is strong empirical evidence that customer satisfaction dictates customer loyalty and, as such, becomes an antecedent to continued innovation. Similarly, Von Hippel and Katz (2002) and Bonner (2010) added that consumers' needs usually dictate a retailer's business direction and these needs have, in a large part, been responsible for increases in innovation. Based on this, understanding the antecedents becomes germane. Customer satisfaction is defined as the judgement that a product or service provides a pleasurable consumption-related fulfilment (Oliver, 1997, p.13), while customer loyalty is said to be the consistency of customers to repeatedly patronise the same set of suppliers/LSPs (Fraering and Minor, 2011). Authors have argued in different research studies that customers' requirements should be analysed separately or individually and also that care should be taken to partner with 3PL, i.e. to ensure a partnership with 3PL that is flexible and will meet changing and unpredictable demands (Coyne, 1989; Bloemer and Kasper, 1995; Mittal and Kamakura, 2001; Bowen and Shiang-Lih, 2001). Attempts to satisfy the requirements of customers have led firms into outsourcing their LSCM (Wee et al., 2010), and studies have further shown that competition exists between carriers in order to satisfy customers' needs. As a result, retailers do not just outsource their LSCM anymore but innovatively collaborate or partner with carriers to meet the requirement for flexibility in the current market (Childerhouse et al., 2002).

Customer loyalty is vital to any business, particularly as customers are difficult to recruit and retain. An empirical demonstration by Edvardsson et al. (2000) revealed that customer loyalty leads to an unquantifiable profitability and revenue generation, while Castaneda and Alberto (2011) stated that customer loyalty is vital for two main reasons: customers

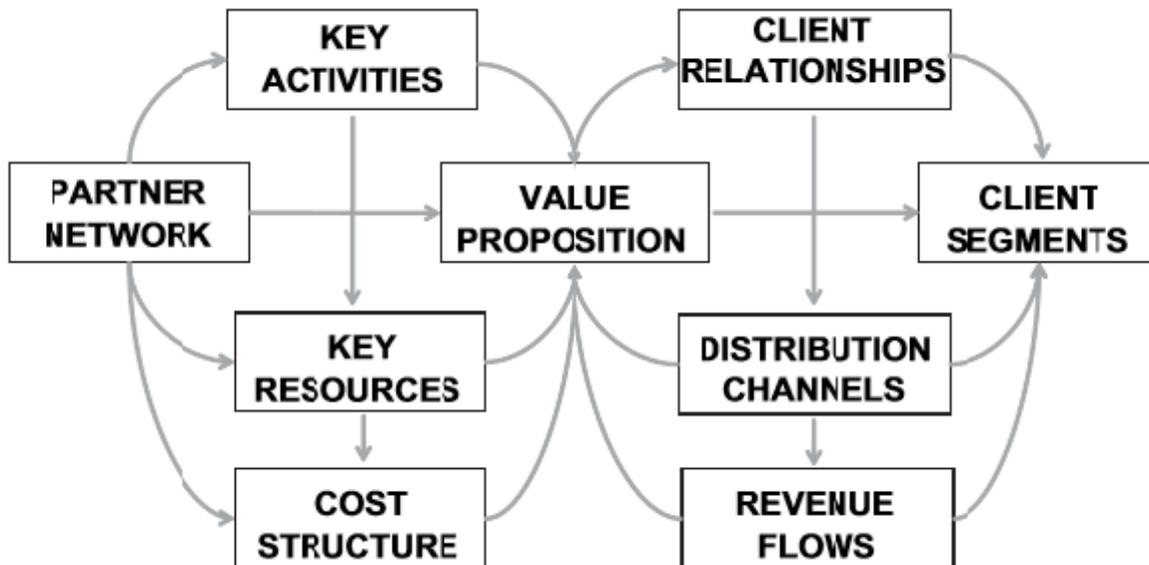
are a scarce resource and obtaining purchases from old customers is easier in comparison to those from new customers and, that customer loyalty has positive effects on increased profitability and revenue generation, through repeated patronage and referrals that result in an increase in sales. This being the case, Streukens and Ruyter (2004), Wu et al. (2012) and Martins and Sampaio (2012) argued that there is a positive relationship between customer satisfaction, loyalty and innovation, i.e. satisfied customers will likely return, and in order to retain these customers, and even attract more, businesses will usually engage in more innovative services that will improve the customer experience.

## **2.6 Business model**

Looking back at the above analysis, it can be argued that the adoption of e-commerce has made the retail market highly susceptible to competition, particularly through changes in the market requirements for the LSC. There has been a recurring demand for new approaches to LSC operations, either by designing new or reviewing existing business models. According to Amit and Zott (2001, p.511), “a business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities”. Trkman et al. (2015) and Tanco et al. (2015) explained that there is a high level of turbulence and unpredictability in contemporary LSC markets, especially with the increase in e-commerce, through which competition is being influenced by macroeconomic issues and fluctuations in demand by end consumers. In responding to this, Trkman et al. (2015) advanced that there is a need for firms with LSC operations to have a continually changing business model, while Farahani et al. (2014) added that, even if there is no competition, businesses should be proactive in their LSC business model design. Casadesus-Masanell and Ricart (2011) posit that responding to the unpredictability of the LSC market has to be robust, and mostly helpful through a collaborative business model through which firms can strike a balance between market demand and standardisation of LSC operations. Chapman et al. (2003) also argued that, in order to have a responsive business, firms must ensure their business models are not only technology driven, but also innovative and collaborative.

## 2.6.1 Elements of a business model

The figure below depicts the composition of the business model by Chesbrough (2010), which has been designed in line with Osterwalder's 9-point business model. Each of these elements will be explained in line with the work of Osterwalder and Pigneur (2010).



**Figure 21: Osterwalder's 9-point decomposition of a business model. Source: Chesbrough (2010).**

**Client Segments:** This explains the different groups of people and or organisations that businesses aim or intend to serve. In order to have a satisfactory relationship with these clients, they can be grouped into segments with common attributes, behaviour or needs.

**Value Proposition:** This is defined as the collection of benefits that a company can offer its clients or customers. Some of these values are similar to existing market offers, but with new attributes, while others are innovative and could be disruptive. Values can also be regarded as quantitative, e.g. price or speed of service, or qualitative e.g. design or customer experience.

**Channels:** These are avenues through which companies reach out to the different client segments in order to satisfactorily deliver a value proposition. These channels could be communication, distribution and sales channels, and also direct, indirect, own and partner channels.

**Client relationships:** This describes the kind of relationship between companies and their clients. The relationship can be categorised into different types, a few of which are:

customer acquisition, customer retention and upselling. It is believed that the relationship type that exists determines or influences the customers' experience. Companies have also gone beyond the conventional relationship to co-creation with customers, with examples being Amazon, Google and YouTube.

**Revenue streams:** These are the avenues through which companies generate income. The ability to identify the different values for each customer segment helps companies generate one or multiple revenue streams. Two revenue forms are identified: a one-time transaction revenue and a recurring revenue. Similarly, two pricing mechanisms are also identified: fixed menu pricing and dynamic pricing.

**Key Resources:** These are the most important assets to any business model. Their uniqueness helps in the creation and offer of a value proposition to the different client segments, for relationship maintenance and revenue generation. Key resources are categorised as financial, human, physical and/or intellectual, and are either owned or leased by the company or through key partners.

**Key Activities:** These are the most important operations companies must regularly engage in. These operations help yield the key resources, influence value creation and proposition, and influence relationship maintenance and revenue generations.

**Key Partnership:** This is referred to as the collection or network of partners that form the alliance for the optimisation of business operations. Each partner plays a key role in a business model, and their coalition helps in risk reduction, resource sharing, business expansion, etc.

**Cost structure:** The cost structure encompasses all costs and expenditure incurred during all business operations. These costs could be associated with marketing, resource acquisition, maintenance, labour, etc. Companies always strive to minimise costs in their business model. However, a business model cost structure could be cost-driven or value driven, while some companies fall in-between these two.

## 2.6.2 Approach to business model design

Chesbrough (2007) analysed business model designs through a six-model framework; the models are ranked in order of sophistication, from type 1 to 6, i.e. from the least to the most sophisticated.

Type 1: An undifferentiated business model, where there is no uniqueness in the business strategies. Businesses in this category operate in ways that are undifferentiated from many others, e.g. commodity stores like restaurants and barbers.

Type 2: A form of differentiated business model, where some unique inventions can be introduced, and a type or different types of customer can be targeted. The pattern is regarded as a 'one-hit wonder', where the company is successful with its first product or service, but lacks the power and resources to follow-up their innovation or inventions. An example could be technology start-up companies.

Type 3: A segmented business model, where companies can simultaneously compete through different segments. Companies in this category benefit from high margins, are more profitable in comparison to Type 2, and are able to avert the challenges of being a one-hit wonder. This model type is however vulnerable to any major market or technical shift beyond the scope of its current inventions or innovations. An example could be "an ERP system that is deeply connected to business processes, but has few ways to link in other software on top of its own code" (Chesbrough, 2007, p.14).

Type 4: An externally aware business model, where the company is open to external ideas and technology designs, and able to unlock access to many resources for the execution of its business activities. Companies in this category carry out systemic innovations, share internal roadmaps with suppliers and customers, and above all share business risks with external parties.

Type 5: An innovation-integrated business model, where the business model becomes important in the "integrative role within the company" (Chesbrough, 2007, p.14), where suppliers and customers become a key part of the innovation process. Companies in this category enjoy clearer visibility of future requirements through a co-creation approach, and are also able to experiment with business models for cost reduction and more technical shifts.

Type 6: An open and adaptive business model, where a company is committed to experimenting with business model variants, such as corporate venture capital with a small start-up company, spin-offs and joint ventures to outsource the business technologies, and the internal incubator for the cultivation of new ideas for future experimentation and implementation. Customers and suppliers are part of the business model design, and technical and business risks are shared amongst the partners. Furthermore, this model uses technology as the “basis for a platform of innovation” (Chesbrough, 2007, p.15), and additional external bodies can further invest for expansion, without attracting additional costs from the platform initiator.

Chesbrough (2007) argued that firms that attain the type 6 model operate on an even more open and adaptive model than types 5 and 4. In this case, a technology-inclined partnership will be established between key suppliers and customers, while leaving the model open to other firms or investors who share the same values as the partnership. It is believed that, in this way, the business model platform will be open to value expansion without incurring too much cost. Examples of firms in this category are Walmart, Intel and Microsoft. This kind of business model is, in most cases, highly profitable and usually hard to imitate.

### 2.6.3 More on the approach used in business model design

Chesbrough (2007) advanced that care should be taken in the design of the new business model to ensure no competition is created that could harm the mainstream business. In this case, it must be ensured that a separate pool of funding is set aside for experimentation with the new model and to prevent the new model from taking away resources from existing initiatives. Although the type 6 model has been identified as the best, other models are good in their own ways and are fit for different business purposes and sizes. Amit and Zott (2012) explained that, although the creation of new business models may be the success factor for the business, care should be taken to prevent the new initiative (business model) from making the existing model or mainstream business obsolete or less profitable. Similarly, Chesbrough (2010) added that, to be successful in the design of new business models, it is quite timely to start with research and development (R&D) and experimentation of alternative business models, before actually committing to any specific investment. Sosna et al. (2010, p.385), in a similar research study, argued that business model development through “experimentation, evaluation and adaptation” is a trial-and-

error approach, which is key to the “organisational renewal mechanism”. They put forward that, when an existing business is faced with turbulence or uncertainty that could adversely affect its growth and profitability, the best approach is to experiment with new business models. They cited Chin-Ning Chun who wrote, “...without the strength to endure the crisis, one will not see the opportunity within. It is in the process of endurance that opportunities reveal itself” (Sosna et al., 2010, p.383). They added that the behavioural theories of the firm imply past experience in their routine, and they believe these theories influence their action towards adapting to environmental changes. They also argued that, if the business routine, belief and culture cannot be adapted and is not current enough for the evolving market requirements, there would be a reduced confidence and chance of survival. On this basis, the need to invest in new R&D will become crucial in a crisis or near-crisis situation. Week (2000) explained that we are in a new era that is dynamic and discontinuous in nature and that requires continual reassessment of the organisational routines, business operations and the decision-making processes so that they are up-to-date with the dynamicity and radically changing business environment. Chapman et al. (2003) viewed that the service industry is growing and many companies, with an emphasis on logistics, now require technology and innovation to drive customer satisfaction. They added that failure to follow this path will result in losing out to competitors whose business strategy is built around these factors. In the design of a responsive business model, Pfohl et al. (2007) identified innovation as being core to the design of business models in the emerging market and added that logistics innovation design can be approached in four ways, through two steps, A and B, that can be treated separately or sequentially, as shown below and represented in Figure 22.

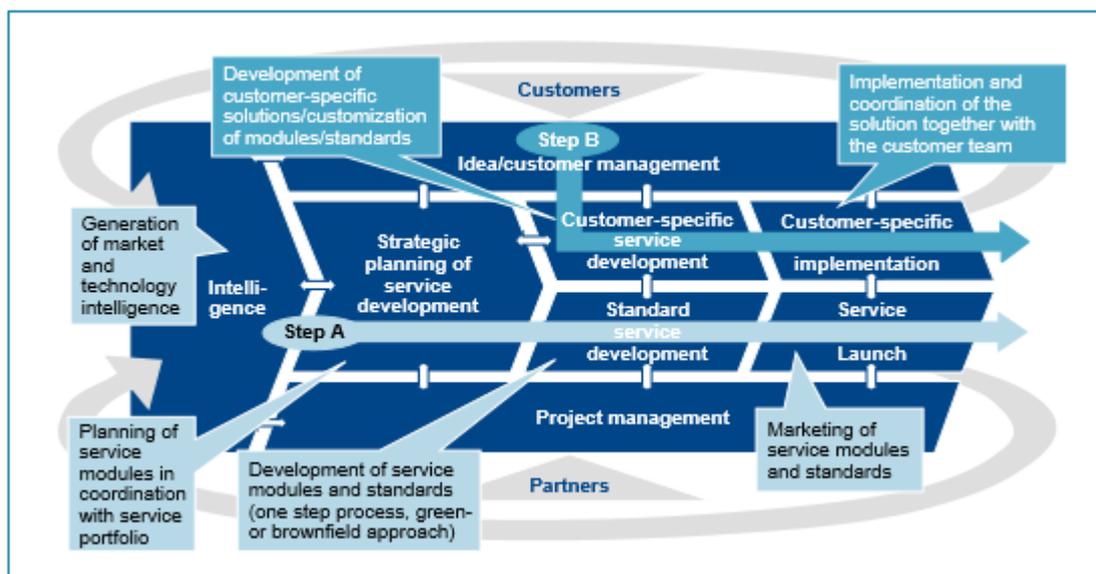
Step A: defining modules/standards in line with customer projects

Step B: customer-specific solution definition

The four ways are:

1. Modules/standard development with no customisation (Step A)
2. Customer-specific solution development without module/standard design (Step B)
3. The development of modules/standards, followed by customisation (Step A then B)

4. The development of customer-tailored solutions, followed by modules/standards (Step B then A)



**Figure 22: Logistics innovation processes and steps. Source: Arthur in international excellence in logistics-value creation of European logistics association (2007).**

Chesbrough (2010) wrote that staying relevant in today’s business environment is very important and cannot be achieved without a high level of innovation or creativity through which the value created becomes difficult to imitate. Having a robust and responsive business model is the best approach and this model should be designed with a preference for collaboration and innovation. Amit and Zott (2012) also added that, to stay responsive, frequent reviews of the business model must be prioritised.

#### 2.6.4 The approach to business model design by large firms

Chesbrough (2010) explained that successful large firms that offensively drive the e-retail market have invested in R&D in order to constantly review their business model designs. He expressed that although not all model designs will be successful, the successful models have positioned the firms (LEs) above the market. He referred to the case study of Xerox, which invested in R&D for business model design and remarked that some designs were thrown out due to the likelihood of failure. He added that even though firms are aware that some of the R&D investment will not bear fruit, the fact that the models are able to inform new approaches has made LEs invest in them. He summarised this by saying that LEs do not wait until they are consumed by competition, instead they are proactive and are able to drive competition. Amit and Zott (2012), in similar research, identified that firms have

realised that product and process innovation is expensive, and since there is no guarantee of success, they have decided that business model innovation is an alternative to product and service innovation. They added that Economist Intelligent Unit (EIU) analysts have concluded that how firms do business is now more important than what they do, and that competition has pushed business model innovation to the top of the agenda. They also added a statement by one of the CEOs:

In the operations area, much of innovations and cost savings that could be achieved have already been achieved. Our greatest focus is on business model innovation, which is where greatest benefits lie. It's not enough to make a difference on product quality or delivery readiness or production scale. It's important to innovate in areas where our competition does not act (Amit and Zott, 2012, p.41).

In addition, with innovative business model design, competitors now find it difficult to imitate and, as a result, innovative model design can be regarded as the approach to gaining advantages in sustainable performance. They added that innovative business models can either create an entirely new market or help to exploit opportunities in the existing market. In order to benefit from all of these opportunities, they suggested six questions that should guide in the design of any business model (Amit and Zott, 2012 p.41).

1. What are the customers' needs to be addressed by the new business model?
2. What novel activities should be incorporated to satisfy these needs?
3. How and in what way will the activities be made novel?
4. Who will be responsible for the activities? "What novel governance arrangement can be found?"
5. How are unique values identified for each stakeholder?
6. How is the revenue model approached to complement the business model?

#### 2.6.5 The approach to business model design for SMEs

In other research, Lee et al. (2012) expressed that although large firms have changed the market structure through innovative business models, the role of SMEs in the economy should not be neglected. The role SMEs play should not be underestimated, and there is a need for them to also change their pattern of business through innovative business models. Lee et al. (2012) established that although SMEs are faced with many challenges that hinder their ability to invest in R&D for business model innovation, there are two determinants

that play a significant role in helping SMEs: internal and external factors. Among the external factors are collaboration, links to knowledge centres, e.g. research centres and universities, and utilisation of support regulations, such as financial support, etc. Lee et al. (2012) and Klewitz and Hansen (2014) added that LEs have shifted the focus of their business model from being product and process focused to having a market-oriented strategic focus; in the case of SMEs, the focus remains traditional (product and process). Klewitz and Hansen (2014, p.63) argued further that because SMEs are “reactive (reaction to external stimuli)” and “anticipatory (time initiative in the realisation of competitive advantage)” in nature, if they had the opportunity to innovate, they would successfully innovate both incrementally and radically, and radical innovation would have a potential influence on the sustainable development of the entire industry.

Since it appears there may currently be no established business model that particularly favours SMEs with regards to the changing retail market, the author thought it would be worth mentioning the study by Pouly et al. (2002) on the approach through which SMEs can drive economies of scale for competitive advantage.

#### 2.6.5.1 A competitor-based strategic network of SMEs

Pouly et al. (2002) explained how a network of enterprises can be organised to drive a series of benefits for SMEs through a strategic network model: a network that is built around competitors that wish to enter a new market, which is something that may not be possible to achieve individually. Two elements are required: the industrial cluster and the virtual enterprise. The industrial cluster is the cluster members or independent firms that will remain competitors within the market, but will partner to access the market they cannot access alone. These members would ideally bring with them some level of technical and economic complementarity; they would possess similar qualities, share a common business approach, and be convinced that an alliance is the solution to the competitive environment. The virtual enterprise is set up around cluster members to fulfil customer satisfaction, where the best-suited firms jointly carry out purchases for a discount, after which the virtual enterprise can be dissolved or used for new orders. The network is based on four major roles of:

**In/Outsource Manager:** is responsible for contacts within the network, manages quotations from brokers, and prepares the bids when interests are indicated.

**The Coach:** evaluates possible cluster members, oversees the information and knowledge transfer management, and has responsibility for conflict management within the cluster.

**Order Manager:** takes charge after quotes are transformed into orders, manages deliveries and post-delivery services. The Order Manager also creates the virtual enterprise by being the unique business contact for the customer/supplier. In this case, “someone working for the company having the biggest share of the order will normally take the role of the Order Manager” Pouly et al. (2002, p. 153).

**The Broker:** handles the sales of the network to potential customers, manages their requests for quotations, and ensures the most economical bid, whilst also managing the transformation of quotations into orders.

**Work Groups:** attend to problems and identify solutions in small groups, e.g. with common purchase or IT problems.

The setup is created with a clarity regarding the customers’ expectations, the specific products and the definition of the industrial cluster.

The network is created and members, through a virtual enterprise, transact and negotiate with suppliers as a single large firm.

A case study of the Swiss Jura region has cited as a good example of the above, where SMEs in the automobile, electronics, and medical sectors, although being technically up to date, could not gain access to large suppliers; this resulted in them being disadvantaged in their sectors, and suffering long and delayed deliveries.

The network was introduced to the SME market through a survey, and ten of the SMEs in the same professional field signed up to form a cluster. However, due to mistrust and fear, around half of the initial cluster withdrew, leaving only four of the most committed members, who then created the Swiss Microtech enterprise network.

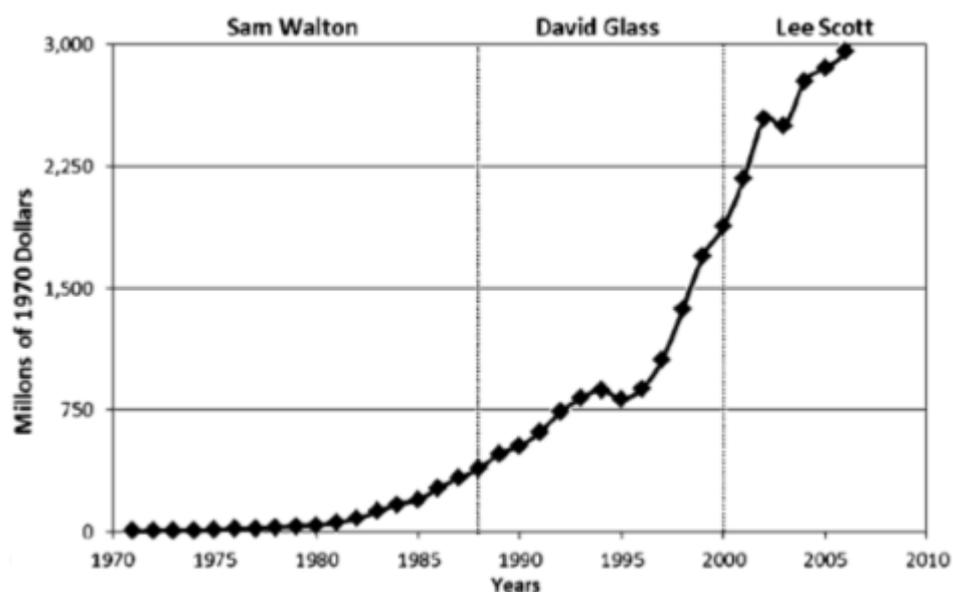
Six months after its creation, an additional ten members signed up, and they started to benefit from reduced production costs through the joint purchase of raw materials, thus benefiting from quantity rebates and economies of scale. The network became highly profitable, so much so that members discovered that the rebate realised from the

collaborative purchases from only three of its members was enough to cover the entire network setup cost.

Pouly et al., (2002) suggested that such a network should be created to benefit future SMEs to encourage partnership, and members should ensure common business ethics, mutual trust and readiness to share confidential information for the success of the network. Studies by Moore and Manring (2009, P.278) buttressed this point, stating that through this network, SMEs can behave like a single larger firm and achieve “market penetration, through a synchronised competency building”.

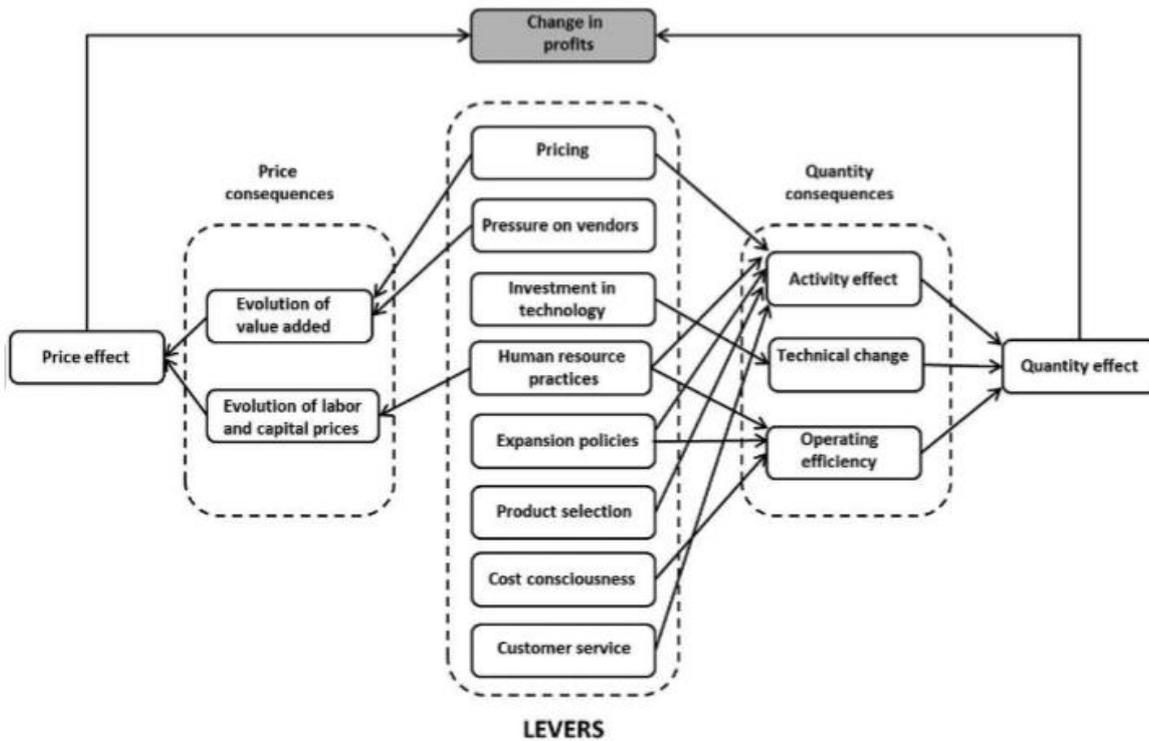
### 2.6.6 Example of a business model

An example of a working business model is that of Walmart. This model has helped them achieve an impressive growth in profit between 1972, when they posted profits of \$1.8bn, and 2008, when they posted profits of \$29.52bn, i.e. an annual growth of 17.82% over a period of 38 years.



**Figure 23: Walmart’s profits from 1972-2008. Source: (Brea-Solís et al. 2015).**

The model reveals that Walmart used 8 distinctive levers from the Porter’s 1985 value chain to drive generic discounts that kept it ahead of its competitors.



**Figure 24: Walmart’s discount retailer business model: Source: (Brea-Solís et al. 2015).**

The model shows that the company influences their merchandise price and drives favourable terms and conditions by pressuring vendors for the regular creation of value added services. They maintain a mutual relationship with suppliers whilst ensuring that products and service quality is maintained without creating any increase in price. A regular reaffirmation of employee satisfaction is used to drive satisfactory business output, loyalty and staff retention. A regular technology investment review is practiced to ensure the latest technology is in use for effectiveness, uniformity and productivity across their network. The expansion (rural and urban) activities or policies are carefully carried out, by situating stores in areas or places that are ignored by others; they always push from the outside in, i.e. opening stores in rural areas and expanding towards urban areas. They emphasize cost cutting through the regular review of superfluous expenses, e.g. managers sharing hotel rooms, and walking rather than taking taxis where possible, while ensuring availability of branded and private products in order to give customers plenty of choice. All customers are treated specially, and as guests, with a series of other value added services, such as special staff training for an effective and professional customer welcome, free car parking, hassle-free returns or exchanges, and engagements in community development services. With these business model levers actively engaged in piloting the business,

Walmart has successfully managed volumes and pricing, through which the profit record has shown astonishing growth between 1972 and 2008.

## **2.7 Chapter 2 summary**

The focus of this chapter began by investigating how the predictions that technology will revolutionise the retail industry have been manifested, the reluctance to adopt technology by business owners and how it is widely accepted by the retail and LSC community. The chapter established how technology, collaboration and innovation have become a major tool to invest in for relevance, profitability and responsiveness in the macro-economically influenced and radically changing environment.

The chapter established that the adoption of e-commerce has revolutionised retail business activities from a traditional retail approach to e-retail; customers' attitudes have changed from waiting to be served to instant service, and requests for small and speedy parcel deliveries have increased and are unpredictable. Retailers have switched from being passive to being the active, and they even pilot novel services as part of their retail business activities, to attract customers. Also, the supply chain has become the core of retail businesses, and improved information exchange has aided supply chain partnership, collaboration and the transparent coordination of activities.

It has been identified that the market is evolving and a lot of changes have occurred: technology has become disruptive; market requirements are changing; volumes of small parcels for delivery have increased; there are more vehicles on the road, many of them being half-filled; and there is a rise in failed home deliveries. In view of these and many other challenges, players have responded through a high level of creativity and innovation.

Finally, the chapter revealed how important it is to invest in R&D and to experiment with new business models, which has resulted in the introduction of value added services such as the same-day delivery service. It has also been revealed that omni-channel retail is growing and should be given urgent attention. Additionally, not only is collaboration important to drive reduced investment in business model design, but increased efficiency will be witnessed when it is technologically and innovatively driven, and is difficult to imitate.

Table 6 below gives a synopsis of the chapter.

<b>Old retail market</b>	<b>Emerging retail market</b>	<b>Emerging challenges</b>
Traditional retail	E-retail	Market relevance
Push of supply	Pull of demand	Delivery inefficiency
Consumers organised delivery	Retailers organised delivery	Partnership and collaboration
Standard parcel delivery	Speedy deliveries	Same-day delivery, omni-channel retail
Self-parcel transport	Increasing delivery requests	High delivery failure rate
Traditional delivery	Increasing small parcel delivery	Increasing delivery vehicle and empty freight
Traditional delivery process	Urban logistics requirement	Strict urban delivery requirements and restrictions
Supply push logistics	Unpredictable shipping requirements	Intelligent delivery infrastructure requirements
Sales competition	Retail logistics competition	Need for reduced delivery costs
Standard business model	Constant and proactive business model review	Lack of resources by SMEs to frequently review business model

**Table 6: Synopsis of chapter 2.**

The next chapter is a continuation of the literature review, but will review the professional trade press in addition to the literature in order to provide a detailed study on new and existing approaches and solutions to retail logistics innovation.

## Chapter 3: Empirical and theoretical reactions to retail market demand

### 3.0 Literature review

With reference to chapter 2, e-retail is seen to have revolutionised the market by changing customers' attitudes and business orientation from waiting to be served to instant/quick action. The retailers' approach to business has switched from being controlled by suppliers to controlling the retail market, and consequently using LSCM to drive competitive strategies through a reliable information exchange platform. Furthermore, there is a ceaseless need for innovation in the approach to drive a responsive and efficient retail logistics market and a great deal of creative and innovative solutions have been and are being proffered, as will be explained below. A wide gap has been identified between research in the academic literature and actual market practice; the market is far ahead of the literature. It is as a result of this gap that the author has recognised the need to include the trade press in this chapter to identify information on the current market situation.

This chapter is therefore divided into three key sections: empirical (Sections 3.1, 3.2, 3.3, 3.4), theoretical (Section 3.5) and the trade press (Section 3.6), which focus on how businesses and academics are responding to the changes in the market, and the chapter closes by identifying the research gap (Section 3.7).

### **3.1 An Empirical response to the evolving market trend**

With the evolution in the retail market, reactions have been identified practically and experimentally that are either in their early stages or are fully implemented. Businesses have had to keep up, and there is a great deal of creativity and innovation in the literature. This section explains the series of reactions that have directly played a significant role in the current retail logistics market, particularly in relation to speedy/same-day delivery, city/urban requirements, and reducing the growing rate of delivery failure.

Ishfaq and Sox (2012) are of the opinion that the hub-and-spoke is a widely accepted parcel distribution system, due to its ability to drive reduced freight costs via economies of scale. They, however, argued that the scheme increases the total distance travelled and the time taken for parcel delivery, which has become a major challenge that LSPs cannot overlook.

As a result, the efficiency of this scheme is being questioned and LSPs now struggle to meet the changing market requirements. The demand for small parcels has increased and the hubs now overflow with parcels, resulting in congestion and delivery delays (Lim and Shiode, 2011). Furthermore, the need for speedy delivery is increasing, there are more vehicles on the road, and many trucks are half filled (Greasley and Assi, 2012).

Ohnell and Woxenius (2003) argued that, in the previous two decades, the need for improved parcel freight increased dramatically, which has put pressure on LSPs to be more efficient, in order to reduce delays caused by hub-and-spoke redistribution, unloading, transshipment and road congestion (Lin and Chen, 2004; Maes and Vaneslander, 2012). This has resulted in LSPs searching for an improved logistics network design that will provide reduced delivery times and costs.

### **3.2 Intelligent speedy/same-day delivery solutions**

This section explains a few of the intelligent distribution solutions in the market and shows how these solutions have contributed and responded to the speedy delivery market through the help of data integration and information exchange technology.

#### **3.2.1 Intelligent logistics vans**

Moreno et al. (2012) carried out innovative research on the implementation of an intelligent logistics van (IVAN) with the integration of radio frequency identification (RFID), ambient intelligent software (AIS) and long-distance ultra-high frequency (UHF) tags to monitor the van anytime and anywhere. The system does not only monitor, but also controls the entire distribution process from loading to delivery, to simplify the workflow by ensuring all loading and deliveries are carried out as stipulated. A passive transponder that contains an Electronic Product Code (EPC) is attached to each parcel and container for tracking. In case of incorrect delivery, the system autonomously alerts the driver of the error by illuminating a red light on the transponder attached to the parcel. Furthermore, on arrival at the warehouse, a communication flow is established between three components: the on-board system (ONB SYS), the mobile device (MOB DEV) and the central server (CTR SRV); the on-board system automatically connects to the central server via Wi-Fi through which information regarding the next trip is fully downloaded via the ERP

system. The information includes the number of containers that must be loaded at each point and the EPC of each transponder to be distributed.

### 3.2.2 Intelligent logistics through the Internet of Things

Guo et al. (2012) investigated intelligent logistics through the Internet of Things (IOT) for the development of an Intelligent Identification Management Platform (IIMP) in a railway logistics system. They referred to e-commerce as the major driver for same-day delivery and suggested that the use of railway logistics now plays a major role in its successful implementation. They explained that the en-route tracking of parcels is essential and the development of the IIMP is similar to that of the RFID. However, the difference is the ability to give real-time information about the current location and still operate effectively, even at high speed. It operates using a tag embedded with a wireless signal that contains information on the goods' identity. The information is wirelessly sent to the reader and the reader forwards the information to the central computer via the repeater. The central computer receives the encoded signal from the reader, processes the data and gives the operators up-to-date information. This application is designed to help carriers track parcels being carried by train in real time.

### 3.2.3 Crowdsourced innovative transformation of delivery

Crowdsourced delivery can be explained as tapping into existing travel routes for parcel delivery or distribution purposes. Gath and Herzog (2015) studied the innovative transformation brought about by Amazon and other top online retailers on their approach to same-day delivery, which has resulted in new logistics challenges. They identified several challenges that affect efficiency, such as variability in the volume, the capability of the vehicles used and the need to process new orders instantly. As a result, research was carried out at the University of Bremen, Germany, and an intelligent scheduling system was set up through a simulation platform called Aimpulse Spectrum, which is used to generate a detailed logistics process that responds to logistics challenges through artificial intelligence. They developed an agent-based automated self-managing courier and express delivery system that enables highly efficient and flexible transport processes. The system automatically locates available drivers via smartphones, taking into consideration their current location, and it even monitors the driver to avert delays and temporary

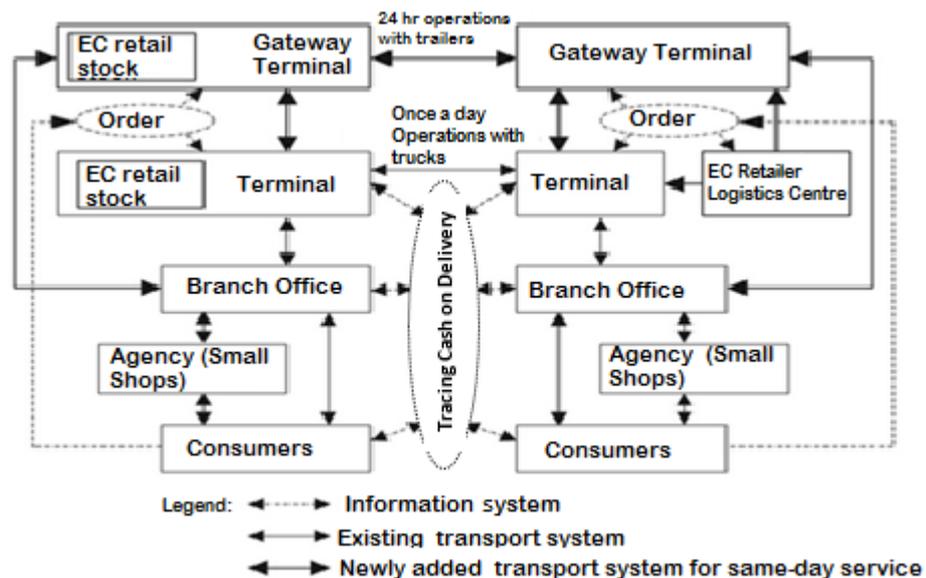
unavailability. In cases of unavailability, the system automatically arranges a rescheduled delivery. Furthermore, the system works intelligently and in real time to monitor the traffic situation and is able to plan the fastest route to delivery as it calculates up to 100,000 routes per day. Also, in cases of traffic congestion, drivers are notified in advance and the journey is immediately re-routed. It operates on an open platform that other courier companies can also subscribe to, allowing them to swap jobs and maximise the urban delivery infrastructure. The research concluded that the “agent-based algorithms are more effective than the established planning and optimisation methods, which rely on central management and static specifications” (Gath and Herzog, 2015, p.29). Many other improvements and benefits over the existing methods were recorded and the prototypes are being developed and integrated into the same-day delivery courier companies’ systems.

#### 3.2.4 Unmanned Aerial Vehicles

Murray and Chu (2015) expressed that constant and frequent change in the retail logistics industry has led to a series of innovative designs and developments by the TOR, one of which is the recent (past 5 years) investment in the Unmanned Aerial Vehicle (UAV) by large retailers and carriers. They highlighted that the UAV used to be a tool restricted to the military, but it has attracted retail and logistics business owners as a way to innovate radically and potentially satisfy market requirements. They stated that the UAV is a tool being explored by the players through different means, either in the case of express delivery or to play an assistant role to traditional truck delivery for parcel distribution. They gave examples of players such as Amazon, who intend to use UAVs for same-day delivery, and the German postal and logistic group Deutsche DHL, who wish to use UAVs for time-critical medical deliveries. It is noted, however, that due to regulatory issues, implementation still faces restrictions, particularly in the United States, where the FAA has stringent rules against its commercial usage. Murray and Chu (2015) went on to acknowledge likely challenges, such as the restriction in parcel size and technical faults and, as a result, proposed a heuristic approach to solve problems of parcel size.

#### 3.2.5 The Yamato same-day delivery system

Taniguchi and Thompson (2014) gave another example, focusing on Yamato, which is the biggest parcel delivery company in Japan with 1.4 billion parcels and 2.2 billion items of mail in 2011, 70 terminals, 3,900 branches and 260,000 agencies (convenience stores and other locations). Yamato proposed a gateway terminal system to involve more e-retailers in the same-day service, as shown in Figure 25 below.



**Figure 25: The new Yamato same-day parcel delivery system. Source: Taniguchi and Thompson (2014).**

This is a 24-hour transport operation system by trailers between gateway terminals, with automatic sorting machines. The system requires that e-retailers leave their goods on the stock floor or transfer ordered goods immediately from their own logistics centres near the terminal. An example of this system is as follows: an order placed by 2am is picked up in the gateway terminal, sorted by destination and loaded, by 5am, into a trailer that is bound for the gateway terminal in Osaka. The freight takes approximately 8-9 hours to reach Osaka and arrives before 2pm. Parcels are immediately deconsolidated at the terminal, transferred to the branch office by 6pm and delivered by 8pm.

After reviewing different factors, Taniguchi and Thompson (2014) deduced that same-day delivery and last-mile issues can be addressed through innovative logistics systems and sophisticated delivery services through the cooperation of e-retailers and carriers, especially where there is a supportive infrastructure. This recommendation is addressed in Section 3.2.6 below.

Similarly, Magoutas et al. (2012) identified that adding more flexibility to instant pick-up for same-day courier services could benefit both the customer and the shipper. This led to the notion that, since collaboration provides room for flexibility, innovation, and expansion, the design efficient same-day business strategy should be investigated through innovative collaboration.

### 3.2.6 Yamato co-modality freight for same-day delivery

This section shows an improved approach to the same-day delivery service explained in Section 3.2.5.

Taniguchi et al. (2016) researched co-modality as an innovative way for quick, cost-effective, efficient and reliable parcel delivery. They explained that the mixed use of passenger and freight transportation has been promising, as most of the time passenger vehicles have considerable space available that could be utilised for parcel deliveries. They referred to the practice by Yamato in Japan who have used trams to deliver same-day parcels to Arashiyama in Kyoto since May 2011. In this scenario, a two-carriage tram is used; one carriage is for passengers and the other for parcels. Once delivered to Arashiyama, electric bikes are then used for the last few miles to the point of delivery. Similarly, subway trains are being used to deliver express parcels in Sapporo, Japan, and also a pilot project is being undertaken whereby, at midday, when patronage is low, deliveries are loaded into the wheelchair spaces of selected carriages of the train. This service would not be a success without Japan having the required infrastructure to drive such a service. It is also noted that a high level of system integration and real-time information exchange is in place from the moment the order is completed, till delivery.

According to Al Smadi (2009), most Japanese firms adopt the Kaizen model to drive their success, especially in cost savings and improved competitiveness. Kaizen is defined as “the process of gradual and incremental improvement in a pursuit of perfection of business activities” (Imai, 1986, cited in Al Smadi, 2009, p.203).

The Kaizen strategy operates on an inspiring theme that “there is always room for improvement”, and it depends on human efforts for improved results through process improvement. Al Smadi added that with this theme, businesses should never be satisfied with the status quo, and with this kind of approach, firms that adopt Kaizen are usually

ahead of the competition. Several other studies (Chase, 1998; Ciferri, 2007; Fishman 2006; Stewart and Rahman, 2007) also put their support behind the Kaizen strategy.

### 3.2.6.1 Service quality improvement through B2B negotiation

In line with the Al Smadi argument, the trend from Sections 3.2.5 to 3.2.6 shows that Japanese firms are keen to improve on the qualities of their services, thereby raising the notion that Japanese firms are possibly always engaging in some form of B2B negotiation through which discounts are achieved (Crew and Kleindorfer, 2012) and, as a result, have managed to drive and present fast, reduced or free express and same-day delivery services to customers. Hua et al. (2012) designed a model to investigate how B2B volume free shipping, quantity discounts and transportation costs influence retailers' decisions. The study revealed that when suppliers offer free shipping, there is usually a decrease in the retail price, and the higher the shipping discount rate, the lower the retail price would be. In addition, they found that with the volume free shipping offer, retailers are usually encouraged to place larger orders, less frequently "to the extent of ordering four times of the optimal order size without free shipping" (p.441). When this happens, suppliers are usually very amenable to cutting handling, production and order fulfilment costs, which implies suppliers and retailers can achieve economies of scale, and customers can also be beneficiaries of free shipping. In addition, an empirical study by Lewis et al. (2006) on how nonlinear shipping and handling fees impact on purchase decisions also reveals that consumers are sensitive to shipping costs/charges, and that the shipping cost influences the purchase decision.

Similarly, Crew and Kleindorfer (2012) explained four types of rebates that could influence competitiveness, i.e. the quantity rebate, turnover-related rebate, total turnover-related rebate and fidelity rebate, where the price reduction is based on a reduced product or service rebate and a zonal pricing rebate.

1. Quantity rebate: this is a form of rebate that drives economies of scale through volume, i.e. a discount is given to customers on the condition that a required minimum transaction volume is met or satisfied. It is often granted in the network industries, through a two-part tariffs of variable component that is volume dependent and a flat component that is volume independent. When demand is high, the fixed cost is spread over more units and the average price is reduced.

2. Turnover-related rebate: this is a form of sales revenue rebate given to individual customers after a specified amount of revenue (usually determined ex ante) is realised within a defined period of time. “The approach induces a pull effect near the defined amount of turnover”; when customers’ needs are below the predicted threshold, incentives are awarded for customer demand to be expanded above the threshold in order to obtain the rebate. As soon as the rebate is applied, the average price of the entire volume purchased is reduced below the average price applicable before the increase in demand.
3. Total turnover-related rebate: this is related to the turnover rebate, but in this case, it is applied to the entire turnover of all products purchased by the customer rather than a specific product. Buying all products from a single supplier therefore induces economies of scale and a higher rebate for customers.
4. Fidelity rebate: this is a rebate that covers the entire demand for services or products by customers, and it is not for a predefined volume. This rebate is given only if customers commit to the seller.

All or some of these strategies, it is believed, could have helped Yamato in its same-day co-modality freight strategy.

It should however be noted that the same-day delivery service works for Yamato because of the available and supportive infrastructure in Japan, but may not work in other places outside Japan without a similar infrastructure in place, and therefore, the creation of new models or strategies may be required.

### 3.2.7 Big data and same-day delivery

Cordon et al. (2016) revealed how firms have begun to realise that their business models are becoming outdated and can no longer cope with the granularity of today’s big data. “Big data is defined as high volume, velocity and variety information assets that demand cost effective innovative forms of information processing for enhanced insight and decision making” (Gartner IT Glossary, n.d., cited in Gandomi and Haider, 2015, p.138). New businesses have erupted with innovative business models to address the challenges brought by the adoption of e-commerce. They gave the example of Uber and its same-day

delivery models: Firstly, UberRUSH, where the services of a bicycle courier company based in New York City is used to pick up parcels within 10 minutes of the completed order and deliver them anywhere in Manhattan. Users of this service can track in real time and even share the tracking map with others. Secondly, there is UberEATS, a food delivery service that was tested in Barcelona. Food is collected from selected restaurants and delivered within 10 minutes. Cordon et al. (2016) compared these services to those of Yamato and other traditional same-day delivery services, and expressed that the business models are different: Uber's model relies on networks of external drivers for its delivery services and it does not incur the additional costs associated with infrastructure maintenance, hence provides a cheaper delivery service; Yamato base their delivery service on the urban network infrastructure with sophisticated systems integration, as explained in Sections 3.2.5 and 3.2.6. They noted that, although Uber relies on big data, they expressed concern on the viability of their success, as traditional companies are of the opinion that customers would prefer to wait a day or two than pay an additional premium. This concern also relates to the issue that Uber is faced with the challenge of keeping food warm, waiting to pick up the parcel, parking illegally for deliveries and waiting up to 30 minutes for deliveries. Another similar service is 'postmate' in San Francisco, whose business model relies on big data and independent bike couriers; it has also launched a \$1 delivery in under 1 hour service. For Uber to be successful, there is a need for combined or multiple deliveries for it to break even.

One observation here is that because there is an existing and operational model in the case of Yamato, a huge success has been recorded. However, in the case of America and Europe, the service has only been recently introduced and is at the experimental stage, where individual business owners struggle to identify a proactive and responsive strategy with prospects. At this stage, it cannot be established whether or not the Yamato model will work in the American and European systems, on the basis that there are no reports that they have access to the same level of infrastructure as Yamato does in Japan, hence the need to investigate a more suitable approach with a lower level of infrastructure.

do Reis et al. (2014) added that supply chain management in the e-retail sector requires an innovative approach and that it should be flexible in order to fit in with all situations. They referred to Toyota in Japan and its innovation in the establishment of the flexible supply chain strategy after World War II, and since then the term flexible supply chain has become

globally accepted. do Reis et al. (2014) stated that, in highly competitive situations like in e-commerce, it is not possible to have a fixed supply chain method and instead segmented or differentiated supply chain strategies should be adopted to tackle different situations.

Balasescu (2013) explained that the future of retail in e-commerce is unpredictable and that traditional retail will continue to shrink towards e-retail. He went further to express that, as market demand and requirements are changing, the entirety of the market (retail and logistics) must consequently change.

### **3.3 City/urban innovative solutions**

The current market has given birth to a series of logistics and transport innovations to satisfy market requirements effectively. Parcel delivery companies are not alone in taking innovative steps. For about five years or more, it has been observed that large retailers who possess strong vertical integration have engaged in the delivery logistics business. Furthermore, it is noted that even carriers who want to remain relevant in the market must innovate, and for those who lack the innovative capability, they must be willing and open to innovative collaboration in order to remain relevant in the market.

#### **3.3.1 Electric freight vehicles**

The market has in the last decade witnessed a considerable increase in the need for small and speedy parcel delivery, which has resulted in higher freight rates and increased emissions. Based on this, Quak et al. (2016) investigated urban parcel delivery with a reduced overall freight cost through the adoption of electric freight vehicles (EFV) and TransMission, i.e. the use of a four-battery electric cargohopper for the purposes of urban delivery. They explained that many companies in different parts of Europe have tried this scenario with a mix of success and failure. In the case of the failures, the following issues, among others, were highlighted: the length of time required for battery charging, battery life being shorter than the manufacturer stated, failing batteries, a lack of equipment availability, a lack of manufacturers to produce the large vehicles, the lack of aftersales support via a dealer network, the high cost of batteries and a limited range of vehicle models. With a poor record of success, the idea could be regarded as being far from perfect and will not be a serious alternative to the internal combustion engine vehicle (ICEV), as

seen in the table below. It is noted that, even though it is not perfect as a replacement, the approach has contributed to promoting environmental and social values, especially for urban small parcel deliveries. The idea is categorised as good and, if improved upon, will be worth the investment by most delivery companies.

<i>SWOT of EFVs compared to ICEVs</i>	
<i>Strengths</i>	<i>Weaknesses</i>
Low fuel costs	High procurement costs
Efficiency of operation in case of government support	Limited loading capacity
Good environmental performance	Limited, unreliable and expensive after-sales support
No noise from vehicle	No better revenues (limited number of customers paying more) for EV deliveries
Positive acceptance by public	Grid issues with large fleet
	Limited availability of vehicles
<i>Opportunities</i>	<i>Threats</i>
New(er) vehicles have higher range	Unclear regulation regarding certification
Well-fitting to the specific niches	Better environmental performance of vehicles running on alternative fuels
Availability of public charging points	Low oil prices, and increasing energy prices
Innovative vehicle/battery leasing schemes	
Decrease in battery price	

**Table 7: Comparisons of EFV to ICEV. Source: Quak et al. (2016).**

### 3.3.2 CycleLogistics

Wrighton and Reiter (2016) reported how the cost of urban and express delivery services can be reduced whilst maximising profit. They studied how CycleLogistics will become an alternative for parcel deliveries by vehicles in cities where congestion is a major problem and how this can reduce the overall cost of freight. They based their report on the analysis that an average of 51% of all motorised trips could be undertaken by bicycle or cargobike; out of the 51%, one third is categorised as commercial logistics and the remaining two thirds as private logistics, as shown in Figure 26 below.

## How CycleLogistics can change the traffic in an average city

In an average European city with 240.000 inhabitants there are about 1.000.000 trips per day.

1,000,000	400,000	600,000	490,000
All trips	Bicycle, pedestrian, Public Transport	Motor vehicle trips	Motorised trips related to goods transport

	NUMBER OF TRIPS PER DAY	NUMBER OF TRIPS TO SHIFT TO BICYCLE & CARGOBIKE	RELATIVE % OF SHIFT WITHIN MOT. TRIPS RELATED TO GOODS
Motorised trips related to goods transport	490,000	250,000	51%
Delivery	100,000	25,000	25%
Service and business	110,000	55,000	50%
Shopping	130,000	100,000	77%
Leisure	90,000	40,000	44%
Commuter	60,000	30,000	50%

Figure 26: Analysis of CycleLogistics. Source: Wrighton and Reiter (2016).

They expressed that the potential for delivery by bike is high as there is growing demand for small parcel deliveries. They also added that it could be a very good idea for large parcel delivery companies to invest in cargobikes for increased profitability, especially for first-mile and last-mile deliveries. It is also noted that most of the private or leisure goods that are usually transported in cars can be professionally delivered by cargobike, at an affordable cost that is likely to be cheaper than the cost of parking delivery cars. As a result, it is further anticipated that online shopping will increase and consequently reduce the average customer's shopping travel time and emission rates. Furthermore, it is believed that the successful implementation of this in Europe will address the following factors:

- Commercial delivery to businesses and consumers
- Transport of goods associated with communal and business services

- Incitement of policy interventions across Europe
- Private goods transport with a focus on shopping traffic

Also, on the basis that the campaign for green logistics is increasing, it will be beneficial for companies to embrace this innovation to benefit from reduced delivery costs and to promote an environmentally friendly approach. They also expressed that it is a worthwhile delivery approach for small businesses or artisans who have urgent needs for their daily business. The advantages are as shown below.

Advantages of Cargobikes	
Cargobikes are unlikely to get stuck in traffic	Cargobikes can use both bicycle infrastructure/bus lanes and regular road space
Cargobikes are not restricted to delivery windows in pedestrian zones	Cargobikes logistics is not associated with emissions or noise
Cargobikes require less space than vans which is a big advantage in inner city areas	Cargobikes are cost efficient
Cargobikes do not damage road surfaces	Cargobikes poses less danger to vulnerable road users
Cargobikes riders don't need a driver's license	Cargobikes are well accepted among the population

**Figure 27: Advantages of cargobikes. Source: Wrighton and Reiter (2016).**

Wrighton and Reiter (2016) also added that there are growing regulatory measures that can promote this idea for use by the logistics companies. Such regulations could be restrictions in parking, congestion charges, sponsorship of cargobikes and the zero emission law. Gruber and Khim (2016) corroborated this with similar research on electric cargobikes for urban first and last-mile deliveries.

### 3.3.3 Large and small carrier partnerships

Heitz and Beziat (2016) considered the increasing need for parcel delivery from a different perspective. They studied the relationship between the location of the parcel industry and that of other logistics activities in the Paris region. They identified that well-established logistics operators are less dispersed than newer operators as they are usually situated in places where land is available and cheap and, as a result, they are not located in dense

urban areas where other logistics activities are situated. Another factor is considered to be the parking challenges faced by freight vehicles in urban areas and, as a result, freight companies would rather tranship to intermediaries with lighter vehicles that can conveniently carry out deliveries within cities. It should also be noted that most pick-ups are done by lighter vehicles and the parcels are then transported to the hub for consolidation. They added that transshipment represents another cost that tends to increase the overall delivery cost and, as a result, logistics companies must strike a balance between the cost of land and that of transport operations. Furthermore, it has also been established that, because of the increase in demand for parcel delivery, the parcel industry has increased its first and last-mile outsourcing to small, local parcel firms with a specialisation in specific geographical areas. In this regard, different forms of innovative collaboration and partnership are being witnessed. Furthermore, as a way of maximising profitability, small delivery companies have also employed a series of innovative solutions such as cargobikes, electric vehicles and the use of information systems for real-time process flow systems. They concluded that the solution to changing delivery requirements is achievable through innovations in logistics.

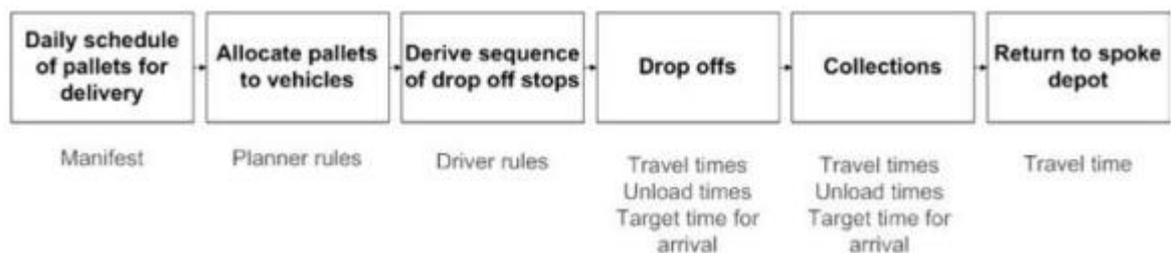
### **3.3.4 Freight bus and the delivery van**

Dell'Amico and Hadjidimitriou (2012) proposed innovative logistics distribution tools, i.e. the eurocargo truck and a small van (with a 3.5 tonne loading capacity) called a 'freight bus and delivery van'. The Freight Bus is loaded with several loading units (LU) at the depot. The LUs are transported to the intermediate transshipment area close to the inner city where they are unloaded and picked up by a delivery van for the last mile of delivery. The innovation here is that the last-mile delivery vans are electric, so they are environmentally friendly and economical. In addition, they introduced a modular 'bento box' system, which operates in a similar way to a parcel locker, has similar benefits and is also regarded as an innovative delivery idea for the current market.

### **3.3.5 Labour hybridisation**

Greasley and Assi (2012) used a case study of a 3PL to analyse a creative approach which uses existing infrastructure to respond to market demand. Pall-Ex is a UK-based company that deals with pallet distribution across mainland Europe; it handles up to 10,000 time-

critical freight deliveries daily. The firm works with regionally based member depots that pick up parcels from customers and ship them to either of the two Pall-Ex transshipment hubs. Parcels are sorted at the hub and transported to those members responsible for the various delivery zones to carry out the last-mile delivery operations from their spoke terminal to the end consumers. Trucks usually arrive at the spoke from the hub in the early morning where the required pallets are offloaded and a series of activities are carried out in preparation for delivery, which starts between 7-8 am. It was noted that, as deliveries are carried out, collections are simultaneously made. A combination of lorries and trucks are used, and freight is arranged and allocated to minimise the total distance travelled and to ensure efficient time management. Drivers are allocated to a given postcode area, after which run sheets are generated. Run sheets help drivers understand the delivery requirements; however deliveries can still be left to the discretion of experienced drivers. The delivery is summarised in Figure 28.



**Figure 28: The Pall-Ex hub-and-spoke parcel delivery arrangement. Source: Greasley and Assi (2012).**

This approach shows how Pall-Ex has responded to the challenge of the increasing demand for small parcel delivery through time compression (reduced overall distance travelled), labour hybridisation (simultaneous delivery and collection) and resource optimisation (filled backhaul). Similar studies can be found in Ganesh and Narendran, (2008), where they designed a mathematical and heuristic model to solve the problem of travelling salesman with simultaneous delivery and collection/pick-up; and Chen and Wu, (2006) with the design of an insertion-based procedure and hybrid heuristic model to resolve vehicle routing problems with simultaneous deliveries and collections.

### **3.4 Approach towards reducing failed delivery**

Research by several authors (McLeod, 2006; Browne et al., 2001; Fernie and McKinnon, 2003; Weltevreden, 2008) has revealed that, although positive reviews have been noted

with regard to the increase in the adoption of e-commerce, particularly relating to an increase in sales, it has negatively impacted on delivery services, particularly for last-mile deliveries, where a rise in failed home deliveries has been recorded; carriers continue to strive for improved last-mile delivery strategies (Gevaers et al., 2011).

### 3.4.1 Identifying carriers' selection criteria

Lin and Lee (2009) shared the view that, because of intense competition in the parcel market, it is paramount for online vendors to prioritise the delivery of customers' goods in terms of speed, reliability and cost. This led to them investigating the criteria for carrier selection by online vendors by conducting a series of case studies, which culminated in the results shown in the table below. For clarity and completeness, the author also compared Lin and Lee's results with other relevant literature, hence the typology below which ranks different selection criteria for carriers by author.

Authors	Lin and Lee (2009) and Aguezzoul (2014)	Abshire and Premeaux (1991)	Coulter et al. (1989)	Bardi (1973), Gencer and Gurpinar (2007)
	Speed and reliability	Reliability of timely delivery	Reliability	Reliability
1	Freight rates	Reliability of pick-up time	Delivery speed	Security
2	Safety	Total transit time	Freight rate	User satisfaction
3	Salesman factor	Response in emergency	Risk avoidance	Availability
4	Service and convenience	Financial stability of carrier	Customer service	Capability
5	Carrier Consideration	Carrier leadership in offering more flexibility rates	Personalising	Transit time
6		Shipping cost	Handling	Business Practice
7				Transport cost

**Table 8: Criteria for carrier selection.**

### 3.4.2 Time-based delivery

Goebel et al. (2012, p.586) expressed that, in order to promote business activities and reliability, firms strive to add new elements to their existing core products and services, especially with the IT presence, such as a time-based delivery (TBD) service. According to

Tammela et al. (2013, p.2), TBD is defined as “the strategy to focus on total cycle time reduction into each phase of product or service creation through delivery to consumers”.

With TBD, customers are able to compare several delivery trade-offs, and are open to options of pre-defined advance delivery time slots, thereby controlling both failed delivery and any extra time commitment required by the consumer. They added that TBD benefits are not only restricted to customers and carriers; retailers are able to “attract new target groups, achieve higher demands, and charge higher prices for convenience”. Goebel et al. (2012) explained that, with TBD, carriers are likely to be faced with demand unpredictability and tight delivery windows, which in most cases would not allow good profit margins.

Trasorras et al. (2009) corroborated this by saying that the best and most professional practice to remain competitive and to attract customers is perceived customer value, i.e. value creation by meeting a customer’s expectations for a quality service and guaranteed delivery time. The rise in anxiety related to the timely delivery of a customer’s order intensifies after the order is placed. A delivery, which is cost effective, timely and reliable is appreciated and leads to customer loyalty and an increase in patronage.

Willis and Jurkus (2001, p.3) established that “the primary goal of TBD is to be able to reduce the time between the moment the customer expresses a need for a product and the delivery to the customer’s location”. It therefore becomes apparent, as shown above, that time is a key factor in retail decision-making and logistics for profitability, competition and customer satisfaction. Tammela et al. (2013) further stated that many benefits are achieved when TBD is the key competitive strategy, e.g. speed and flexibility, increased production scales, reduced lead times, fast and timely distribution and delivery, increased knowledge-information sharing and customer loyalty.

Similarly, Goebel et al. (2012) argued that technology has helped consumers, retailers and LSPs to pay for convenience, attract and retain customers and maximise profits. They based their research on a TBD, where consumers decide on the delivery service to pay for, i.e. what to pay (WTP). The delivery services run on a collaborative platform where the LSP coordinates the delivery time with the consumer and the LSP manages the ‘physical

interface' between retailers and consumers to increase the perception of convenience by the consumers, and consequently increase the attractiveness of the retailers' products and the logistics services offered. The research of Goebel et al. (2012) from three perspectives is explained below.

#### 3.4.2.1 The consumer perspective

Goebel et al. (2012) explained that a sizeable number of consumers regard quick delivery and reliability as very important in online retail, as no consumer wants a failed or unpredictable delivery service. When delivery attempts fail, the effort required for redelivery or collection is usually significant and inconvenient in terms of cost, stress and time. Goebel et al. (2012), therefore, argued that speed and reliability play an important role in consumers' purchase decision-making. They further argued that in order to satisfy these requirements, a time-based delivery "would enable consumers to control this trade-off by being able to select a pre-defined delivery time slot in advance" (p.585), which would thereby reduce consumers' efforts. They further cited Roy (2001, p.7) to corroborate their point regarding TBD, that LSPs "will have to adapt by forming partnerships with customers, providing logistical services, investing in new information and communication technologies, and using real-time decision tools".

Above all, they developed and tested hypotheses with respect to drivers of the perceived attractiveness to establish the following:

- The level of availability to receive a parcel at home decreases the perceived attractiveness of the service.
- The time commitment to pick up a failed delivery from the LSP office increases the perceived attractiveness of a TBD service.
- The number of hours worked by a consumer also boosts the perceived attractiveness of the service (TBD).
- The price that consumers are willing to pay for a TBD service is positively related to the perceived attractiveness of the service.
- The use of a TBD service is positively related to the perceived attractiveness of the service.

### 3.4.2.2 The retailer perspective

Goebel et al. (2012) clarified that TBD is not only beneficial to consumers, but also to shippers. With an effective TBD service, retailers receive recommendations that attract new target groups (customers), they see increases in sales and benefit from commensurate charges for convenience services, such as TBD, and updates on parcel transit (Hum and Sim, 1996; Goebel et al., 2012).

### 3.4.2.3 The LSP perspective

Goebel et al. (2012) also explained that benefits derived by LSPs from TBD concentrate more on profit maximisation as failed delivery attempts are dramatically reduced, and that TBD saves additional logistics costs, such as for handling, storage and administrative activities. Research by Hum and Sim (1996) and Homburg et al. (2005) also confirms that consumers tend to pay a premium for services they find attractive, they make recommendations to friends and family, and they consequently become loyal to such services, all of which results in improved revenue generation for the providers.

### 3.4.3 Collection and delivery points (CDPs)

Weltevreden (2008) talked about the introduction of collection-and-delivery points (CDP), where parcels can be picked up in the case of failed delivery or returned when necessary. He added that it saves costs when CDPs are close to the original delivery point as customers are able to pick up parcels after failed deliveries, thereby reducing redelivery waiting times or costs. Weltevreden (2008) noted that, with the introduction of the collection-and-delivery point (CDP), the problem of re-delivery should be eradicated. Furthermore, it was added that not only will re-delivery attempts be stopped, policymakers are considering the CDP as a means to “reduce freight transport in residential areas”. This could also be a good opportunity for local stores and shopping centres as footfall may increase in shops which engage in the CDP business because consumers may make additional purchases during parcel collection. Weltevreden (2008) conducted a survey in the Netherlands to determine its acceptability, which revealed that many customers are willing to make use of a CDP. Below is a similar research study.

#### 3.4.4. Refrigerated reception box (RRB)

Earlier studies by Tanskanen et al. (2002) and Punakivi et al. (2001) revealed that the problem of unattended delivery has existed for a long time, and one of the attempts to address the challenge was the introduction of a refrigerated reception box, to allow or enable successful unattended delivery. In this case, deliveries are made to the agreed reception box or an insulated delivery box and locked with a code known to the customer. Once orders are collected, the box indicates emptiness and is ready for re-use by another customer. A cluster of these boxes are usually located in office building car parks or in areas of dense population to ensure sufficient numbers households use them. As good as this may sound, the level of acceptance fell below expectation, and the service could not continue.

#### 3.4.5 Comparing other delivery methods

Iwan et al. (2016) studied alternative delivery methods that could reduce the rates of failed delivery to benefit both the carrier and consumer; these are reception boxes, delivery boxes, controlled access systems, collection points and locker-banks and parcel lockers. They conducted a comparison test on these methods to identify the best option.

The test revealed the locker-bank as being the best option “as they favour the reduction of traffic and improve the use of cargo compartments by consolidating deliveries and making them more independent from the available time slots” (Iwan et al., 2016 p.647). It is also beneficial for parcel posting, which implies the shipper can choose the nearest locker-bank and post parcels. Its operation is regarded as simple and is carried out within seconds, as shown below.

	Attended delivery	Reception box / Delivery box	Controlled access system	Locker-bank	Collection point
Who covers the last mile?	Delivery company	Delivery company	Delivery company	Customer	Customer
Customer present?	Yes	No	No	No	No
Types of products	Any	Packages, groceries	Packages, groceries	Packages, groceries	Packages
Failed deliveries	High	Virtually none	Virtually none	Virtually none	Virtually none
Delivery window	Fixed delivery hours	Delivery company operating hours	Delivery company operating hours	Delivery company operating hours	CP opening times
Times at which goods can be collected	Not appropriate	24 hours	24 hours	24 hours	CP opening times
Retrieval time for customer	None	Very short	Very short	Short-Long	Short-Long
Drop-off time	Long	Short	Short	Very short	Very short
Initial investment	Low	High / Medium	Medium	Medium	Low / Medium
Delivery Costs	High	Low	Low	Lowest	Lowest
Possible operational problems	High failed deliveries. Poor use of vehicle capacity	Large number of boxes needed. Need to collect boxes	Customer concerns about safety. Need for suitable delivery location	Customer has to travel to collect	Customer has to travel to collect
Potential reduction in goods vehicle activity compared to attended delivery	—	Some reduction	Some reduction	Greatest reduction	Greatest reduction

**Table 9: Comparison of last-mile delivery systems. Source: Iwan et al. (2016).**

- The internet shopper selects the parcel locker during online shopping.
- After ordering a package for the parcel locker, the internet shopper receives an e-mail confirmation.
- Within two business days, the parcel is delivered to the chosen parcel locker and the customer receives an e-mail and SMS message with the code to open a specific reception box in the locker.
- The customer keys the code into the parcel locker using the touch screen and retrieves their parcel.

- The customer can track the shipment throughout the delivery process.

Iwan et al. (2016) conducted a further survey on peoples' reactions to parcel lockers and positive results were obtained, albeit with the suggestion that lockers should be situated close to homes, so that customers' do not have to travel long distances. In order to ensure the locker-bank's safety and security, they are usually placed at monitored locations such as filling stations and 24-hour supermarkets.

With all these features, Iwan et al. (2016) expressed optimism that the implementation of parcel lockers could greatly reduce failed deliveries, consequently yield economic and environmental benefits, and could be part of the future for an efficient delivery system in cities, especially as a last-mile solution. Morganti et al. (2014b) performed a similar investigation as a way to provide an innovative solution to e-commerce delivery. They investigated Automated Parcel Stations (APS), a similar delivery alternative to a parcel locker that is also equipped with lockers and pick-up-points (PP). They identified the benefits as being cheaper delivery costs in comparison to home delivery and other benefits, as mentioned by Iwan et al. (2016). They added that both shippers and carriers can offer this service, which is widely available in Germany and France where it accounts for 7% and 20% of deliveries, respectively. They went on to highlight trends in the PP network in both Germany and France, as shown in Table 10.

Company	Service type*	Country	No. sites	No. sites 2012	Growth rate 08-12	Parcel volumes 2012
2008	No. sites 2012	Growth rate 08-12	Parcel volumes 2012	2,500	+150%	N.A.
PackStation	APS	Ger.	1,000	2,500	+150%	N.A.
Paketshop (Hermes)	PP	Ger.	13,000	14,000	+7.7%	N.A.
GLS	PP	Ger.	0	5,000	N.A.	N.A.
UPS	PP	Ger.	0	0 (2,000 in 2013)	2000%	N.A.
DPD	PP	Ger.	3,000	4,300	+43.3%	N.A.
DPAG/DHL offices	PP	Ger.	14,000	16,700	+23.7%	N.A.
ByBox	APS	F	Not implemented	170	N.A.	N.A.
Cityssimo	APS	F	20	33	+55%	N.A.
Kiala	PP	F	3,800 (with M.R.)	4,500	+18%	15 million
Pickup Services	PP	F	3,100 (â2pas)	5,200	+68%	9 million
Mondial Relay (Point Relais)	PP	F	3,800 (with Kiala)	4,300	+13%	12 million
La Poste offices		F	17,082	17,000	-0.0	N.A.

**Table 10: Trends for the pick-up-point network in Germany and France. Source: Morganti et al. (2014).**

They further extended their research to consider other delivery options within the same-day delivery service. They acknowledged the 3PL as a viable option being adopted by shippers, such as Shutl and Tiramizoo; operators with a registered presence in Germany and the UK; and 90-minute delivery windows from the point of completed order to delivery.

Morganti et al. (2014b) explained how the adoption of Automated Parcel Stations (APS) with lockers and pick-up points has helped with optimised delivery processes in France, and how it now caters for up to 20% of home deliveries. Weltevreden et al. (2008b) noted that time and money would be saved in terms of a reduction in failed deliveries and travel times for freight companies.

Van Duin et al. (2016), in a later research study, established through a customer survey that home delivery is preferred, and in follow-up research, in an attempt to proffer a solution to failures in home delivery, they came up with the recommendation that customer availability should be established before delivery attempts are made.

### **3.5 Theoretical reaction/response to the emerging logistics**

A number of studies have shown that academics have begun to research delivery optimisation techniques as a means of meeting customers' varied requests.

#### **3.5.1 Area optimisation and management**

Sun and Dong (2013), researched efficient and low-cost parcel delivery through area optimisation and management. They defined good delivery performance as an on-time delivery achieved at the lowest possible cost that is cost effective for the two parties involved (the LSP and the customer). Their research is driven by the LSP's delivery challenges which include: "inadequate monitoring of delivery activities, poorly specified delivery area techniques and lack of effective tools to manage delivery area performance" (Sun and Dong, 2013, p.3730). They embarked on this research to increase delivery productivity through the generation of different monitoring formulae. These formulae are encapsulated in the Delivery Area Optimisation and Management (DAOM) technique. Sun and Dong (2013, p.3731) expressed that, if these formulae are regularly used to monitor parcel delivery activities, benefits such as a "well-proportioned delivery area, productivity targets per delivery area, optimised mix of different courier type utilisation, action list to reduce efforts on non-value added activities and streamlined organisation configuration" will be achieved. They started by defining the key points that make up the formulae, as shown in Table 11 below:

Terms	Definitions
Point	“an individual visit to a customer” cited by Sun and Dong (2013) in Fisher (2002).
Courier Capacity	The number of points required to be performed by the courier, and not “the total number of shipments, total pieces or shipments per point”.
Cycle	“each period away from the service centre”.
Outside Time	The total time expended to complete a cycle.
Delivery Time	A productive time period when parcels are successfully and effectively delivered.
Other Activities Time	The time taken to achieve other necessary activities such as “refuelling, avoiding traffic jams” etc.

**Table 11: Key points for formulae definition. Source: Adapted from Sun and Dong (2013).**

The formulae, shown in Table 12 below, have been generated using the above terminologies.

Terms	Formulae
Come Out Time (COT)	First Point Time - Depart from Service Centre Time
Come Back Time (CBT)	Arrive at Service Centre Time - Last Point Time (LPT)
Delivery Time	Last Point Time - First Point Time
Outside Time	$COT + DT + CBT = \text{Total Cycle Time (TCT)}$

**Table 12: Formulae. Source: Adapted from Sun and Dong (2013).**

As well as the above, they also devised two other formulae for the productivity indicator, as shown below in Table 13.

## Productivity indicator

Points per Outside Hour (PPOH): It reflects the rate of work done in a complete cycle.	
PPOH	$\text{Total Points/Outside Hour} = \text{Total Points}/(\text{Arrival Time} - \text{Departure Time})$
Points per Delivery Hour (PPDH): This determines the actual work done during delivery.	
PPDH	$\text{Total Points}/(\text{Delivery Hour} - \text{Other Activities Hour})$

**Table 13: Productivity indicators. Source: Adapted from Sun and Dong (2013).**

Sun and Dong (2013) further concluded that, for successful implementation, these formulae should be tested and where required necessary modifications must be made; this would be followed by implementation, evaluation and constant management. Their recommendation, however, corroborates Hum and Sim (1996) and Goebel et al. (2012) that research be conducted into how parcel transit information updates and collaboration with customers will help productivity indicators.

### 3.5.2 Distribution network simulation

Lim and Shiode (2011) simulated different distribution networks, such as the point-to-point (P2P), hub-and-spoke (H&S) and multiple hub structure using a case study on the South Korean parcel delivery industry, with changes in parcel demand. The simulation test revealed different demand levels, where each distribution network is efficient and where a mix is also required. They noted, however, that due to the road distribution network being the dominant parcel distribution mode, the research was restricted to the road network, while the rail network is recommended for future research. They also examined how parcel delivery companies can positively react to the parcel delivery boom in two ways: seasonal and long-term increases. The simulation revealed that, when the parcel volume exceeded the hub terminal's sorting capacity, delays are caused to parcel deliveries and this has a detrimental effect on the system's reliability. In order to find a solution to the congestion problem, three adaptive tests were carried out:

1. A short-term, operational-level solution of assigning priorities to parcels headed for terminals further afield.

2. A mid-term, tactical-level solution of promoting regional terminal(s) to a secondary hub.
3. A long-term, strategic-level solution of investing in the main hub to increase its sorting capacity.

The test revealed that scenario 3 resulted in the best return-on-investment while also revealing that the “structure and configuration of the existing physical distribution network would evolve into a more centralized network with an increase capacity at the primary transshipment facility” (Lim and Shiode, 2011 p.746). It is therefore believed that stakeholders can benefit from the outcome of this test to improve their competitive strategies.

### **3.5.3 Cost-efficient parcel delivery through ride sharing**

Li et al. (2014) researched how ride sharing in taxis by people and parcels can be used to reduce urban congestion, alleviate delays in parcel delivery and reduce environmental pollution. They identified and addressed the gap in the research on People and Freight Integration Transportation problems (PFIT problems) with a focus on taxis. Their research aimed to identify the potential benefits and drawbacks obtainable through people-freight integration by taxis and, as a result, came up with two mathematical model designs: SARP and FIP. The ‘share a ride problem’ or SARP is designed using a similar framework as DARP, but incorporates freight sharing; DARP is a ‘dial a ride problem’. DARP is the design of “vehicle routes and schedules for a number of users who specify delivery requests as defined by pick-up and drop-off points” (Li et al., 2014, p.31) and aims for a cost-effective or minimum cost route (Berbeglia et al., 2010). SARP is therefore an extension to the DARP model with freight sharing incorporated within it. SARP is designed to be flexible in a way to either accommodate people and parcels or to turn down certain requests that are unsatisfactory, as various priorities exist in line with the goals of the model. For example, SARP believes that people pick-up and drop-off times are more critical than those for a parcel and that the costs and benefits for people and parcels also differ; as such, some combinations may not be permitted, e.g. even though parcels can be picked up or delivered while a customer is on-board, the detour time for delivery of the parcel may not be acceptable to the customer. In some cases, parcels and passengers may also simultaneously ride in the same taxi and some parcel deliveries are made while passengers wait in the taxi;

passenger pick-up may also be refused in order to service more feasible parcel deliveries. It is also noted that passenger pick-up may be rejected on the basis that passengers randomly pop up while parcel demands are known beforehand and the pick-up and drop-off points and time frames are considered fixed. This is viewed as profit maximisation, and an eco-friendly and optimised approach to parcel delivery.

A freight insertion problem (FIP) is a model devised to ease a major challenge encountered with the SARP model due to its high computational complexities that make it optimally solvable only in certain instances, e.g. parcel requests randomly inserted into peoples' pick-up and drop-off routes. This led to a restricted version of SARP called FIP where routes are partially fixed beforehand, based on passenger requests and assignment to taxis, alongside the service sequence. FIP operates on the principle of only one parcel insertion per passenger service time (between the pick-up and drop-off point of one passenger, or the drop-off of one passenger and the pick-up of another). This approach appears to be reasonably fast and easier to operate. The model acknowledges that the passenger has priority over the parcel and it uses the average time of a taxi trip of 14 minutes in an urban area and the fact that only a small deviation is permissible. FIP is only practiced when there are passenger requests, otherwise SARP is regarded as a more general approach, which implies a model switch possibility by the same set of taxis. Li et al. (2014) later conducted a numerical analysis which reveals a trade-off between the parcel acceptance rate and the taxi company's profit. The result also,

...suggests that it is desirable to analyse the spatial characteristics of requests before implementing a taxi sharing service, because the spatial distribution of requests can dramatically affect the performance of the taxi sharing system (Li et al., 2014, p.40).

They, however, recommended future research into the following areas:

- Development of efficient solution algorithms (exact or heuristic) for the SARP;
- Extending the model (introducing multiple objectives related to profit, environmental impact, etc.) and making it more flexible/realistic (e.g. to consider the uncertainty in travel times, traffic jams, etc.); and

- Improving the dynamic (online) SARP framework by adding a waiting strategy (e.g. postpone the decision in some specific areas or at specific time periods).

### **3.5.4 Approach to effectively utilise the waiting time between same-day pick-up and delivery**

Mitrovic-Minic and Laporte (2004) and Merlevede et al. (2014) researched the dynamic pick-up and delivery problem with time windows (PDPTW) of courier companies that manage same-day letter and small parcel delivery. They compared two versions for pick-up and delivery, i.e. static, where all data problems are known in advance, and dynamic, where data problems occur in real time.

#### **3.5.4.1 Static PDPTW**

All transportation requests are made available day(s) prior to route planning. Pick-up and delivery requests are served by a fleet of vehicles whose initial locations are specified. It operates on the following assumptions:

- Each route starts at a given initial location,
- A pick-up and its associated delivery are satisfied by the same vehicle (pairing constraint),
- A pick-up is always made before its associated delivery (precedence constraint),
- All time windows are satisfied,
- A vehicle is allowed to wait at its initial location or at any pick-up or delivery location, and
- The total distance travelled by vehicles is minimised.

Routing is determined by a pre-defined ordered sequence of locations on each vehicle route, where arrivals and departures have been scheduled and determined. Mitrovic-Minic and Laporte (2004) observed that static PDPTW is operated on the assumption of a sufficient number of vehicles to satisfy all requests. Having sufficient vehicles requires partnering with part-time drivers or even competitors, rather than lose business or customers. Static PDPTW is associated with literature on DARP where certain constraints are identified such as: narrow time windows, tight capacity constraints, upper bounds

imposed on customer journey times, and no waiting permitted while passengers are on board (Cordeau and Laporte, 2003b), but with certain exceptions (Toth and Vigo, 2001). It was noted, however, that PDPTW without capacity constraints has been less widely researched, and only few heuristics have been developed for the dynamic PDPTW (DPDPTW).

#### 3.5.4.2 Dynamic PDPTW

Requests are made dynamically in real time, thereby making prior planning of the day's operation a tough challenge; difficulties in assigning routes, receiving batches of requests and an inadequate distribution of vehicle idle time do not provide for a good solution. These challenges also provoke the intertwining of routing and scheduling decisions and no literature has been identified on this subject.

Mitrovic-Minic and Laporte (2004) approached these challenges using the cheapest insertion and Tabu search procedure (a metaheuristic search method that uses local search methods used for mathematical optimisation). This method handles all new requests. The procedure "determines the overall best insertions for the two locations of a request by examining all possible pairs of feasible slots in each route" (Mitrovic-Minic and Laporte, 2004 p. 639), and inserts a pick-up location into an existing and feasible slot, updates the slack in all routes to check for a feasible delivery slot while the Tabu search does a neighbourhood search by means of an ejection chain, where an improved solution is researched and selected and the inferior one ejected. The process is repeated and the best pair of slots is stored; using the Tabu search helps in optimising the cheapest insertion. A constant check and update for the slack time makes the slot pair for insertion an easily identifiable process: "The slack time of a route location is the difference between the latest departure time and the earliest departure time from the location" (p.639).

#### 3.5.5 The waiting strategy

Mitrovic-Minic and Laporte (2004) also found waiting strategies to tackle the problems. Four waiting strategies were analysed: Drive First (DF), Wait First (WF), Dynamic Waiting (DW) and Advanced Dynamic Waiting (ADW), the latter two being a combination of the first two simple strategies.

#### 3.5.5.1 Drive First

This requires a vehicle to drive as soon as it appears feasible, i.e. to leave its current location at the earliest departure time for a prompt arrival at the earliest arrival time. Vehicles in this category may wait before serving a location if the arrival is earlier than the scheduled location release time.

#### 3.5.5.2 Wait First

This requires a vehicle to wait at its current location for as long as it is feasible. This waiting allows for more requests to come in and be inserted along the same route, thereby leading to route optimisation. In this case, waiting is permissible after serving a location. It was discovered, however, that WF requires more vehicles in comparison to DF because a vehicle has hardly any time waiting at the delivery point since the majority of its time was spent waiting at the start and, as such, subsequent insertions could be difficult. “The WF strategy requires updating of the earliest arrival and departure times because their values constantly change while the vehicle is waiting when it is feasible to drive” (p.643).

#### 3.5.5.3 The Dynamic Wait

This is a combination of DF and WF where requests are scheduled for a fixed route; vehicles drive according to DF to service a zone, and at completion the WF is applied. The vehicle subsequently drives when feasible and waits for as long as possible after a delivery. This method achieves shorter routes than DF and requires fewer vehicles than WF. The method increases waiting time along the routes and therefore increases insertion chances as requests are not previously known and time windows are wide. Most of the waiting time is usually concentrated and could be used up during the first set of waiting, thereby leaving very little time along other routes.

#### 3.5.5.4 The Advance Dynamic Wait

This method relies on route partitioning and aims to increase the waiting time along each route for more insertions to come in, to consequently result in route and vehicle optimisation. The waiting time at the last location of the service zone is determined to be “just a portion of the longest feasible waiting time” (p.649). They added that this method has been revealed to be the most efficient.

## 3.6 Trade press update on same-day delivery

### 3.6.1 The UK report

This section is important to this research work, as a huge gap was identified between the literature and the UK trade press. According to online media, Sky News, the Post and Parcel magazine, BT.com and the Telegraph, four giant retailers have been identified as having established same-day delivery services: Argos, Amazon, Currys PC World and the fashion retailer, Next.

Argos has invested over £10 million in more than 800 stores nationwide, has recently (2015) recruited 3,300 drivers to run a fleet of 800 vans, and has also partnered with eBay to boost volumes. Argos' same-day delivery service is nationwide with 95% coverage and is referred to as 'Fast Track Delivery', for items that are stocked in stores. The service is available seven days a week and has a fixed price of £3.95 for items costing less than £50 and requiring only one-man delivery, while items costing more than £50 are likely to be eligible for free delivery, subject to certain terms and conditions. Orders can be placed until 6pm to benefit from the four delivery slots available:

- 7am-10am
- 10am-1pm
- 2pm-6pm
- 7pm-10pm

According to John Walden (Chief Executive of Home Retail Group), "Argos Fast Track Delivery is the big innovation that transforms traditional shopping into digital age shopping, with customers having up to 20,000 products in their hands, faster than ever before". Also, the recent (2016) successful takeover bid of Argos by Sainsbury's could intensify the competition as Sainsbury's aims to use Argos's delivery facilities to its advantage, engage in nationwide same-day food and grocery delivery with an additional 1,200 stores nationwide, and offer an increased number of products for customers to buy.

Amazon is working hard to expand its coverage as it currently operates out of eight fulfilment centres across the UK and has currently invested £1bn in its UK operations. It currently manages its own delivery system through which it now operates a one-hour

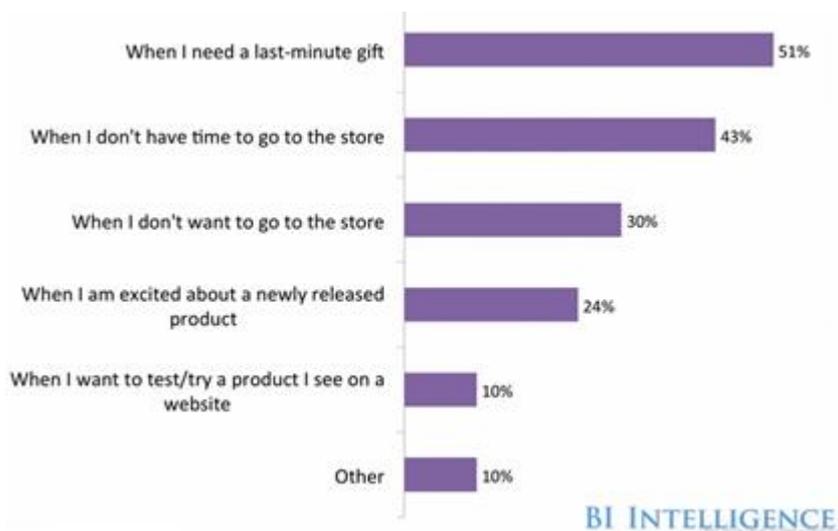
delivery slot to Amazon Prime customers who live in London, Birmingham, Glasgow, Edinburgh, Bristol and surrounding areas. Amazon has a standard minimum order value of £20 and a premium of £6.99 for postage, while Amazon Prime members within these cities who are willing to wait a little longer can benefit from an unlimited one-day free delivery service. Also, there are plans to take deliveries beyond the road, by further investing in small aerial drones for 30-minute delivery. In an attempt to attract shipping volume for the logistics service, and also to respond to potential competition from Sainsbury's-Argos, Amazon has partnered with Morrisons. This partnership, via Amazon Pantry, offers Prime Now subscribers a same-day delivery service for groceries for a premium of £2.99 per box. Similarly, Shutl (an SME same-day carrier) offers a same-day delivery service from £1 within 90 minutes of completed order.

Currys PC World also offers a same-day and next-day delivery service at a premium of £9.99 for small items less than 39 inches in size, such as laptops, TVs and other kitchen appliances, while Next provides a weekday, same-day delivery service fixed at £4.99 for all orders placed before midday from Monday to Thursday and by 11am on Friday.

### 3.6.2 Report on same-day delivery from other countries

To corroborate the UK report, Reisinger (2016) expressed that UPS has started making moves towards a cost-effective same-day delivery package for its clients, by joining “Deliv”, a US fast-growing same-day delivery company, formed with a \$28 million investment, in partnership with several major retail outlets in 17 major cities across the US. Nancee Halpin, a research associate with BI Intelligence analysed the investment move by UPS as a smart approach that would allow them to study and learn more about the on-demand delivery market without risking alterations to their current operations and, should the market grow, further investment can be considered. Uber has also introduced a same-day service ‘UberRUSH’ in Chicago, New York and San Francisco.

However, BI Intelligence through their recent (2014) survey revealed that, although customer awareness about same-day delivery is on the increase, 92% of customers said they would rather wait for days to receive their parcels than to pay extra for same-day delivery, except if the parcel had an attached importance, as shown in Figure 29 below.



**Figure 29: Customers’ reasons for using a same-day delivery service. Source: Meola (2016).**

Similarly, one of their surveys conducted in 2013 and entitled, “Will customers pay extra for the convenience of same-day delivery?” suggests that customers will not, and that out of 1,500 participants, only 9% expressed their excitement about the improvement it would bring to their online shopping experience; 74% indicated they preferred free delivery while 50% cited they preferred lower prices.

It is observed that, despite surveys, reports and analysis showing that customers will not pay a premium for same-day delivery, companies have continued to invest and partner for same-day delivery as shown below.

The report by Shedlock (2016) stated that the US clothing company, American Apparel, has just partnered with Postmates to launch a one-hour delivery service. It was reported that the company will operate the service from its 79 stores across the US, which covers 31 markets and that customers will be able to order up to 50 on-demand basics such as T-shirt and hoodies. They attributed the roll out to a successful pilot in cities like New York and San Francisco, which used RFID technology for tagging and inventory management technology, through which real-time inventory access and availability was linked to the Postmates’ order system. According to the report, participating stores will have access to a stock order and delivery system through an android tablet in store, and associates would be able to retrieve and pack orders while the Postmates driver is en-route. The report further revealed that the delivery system uses a sophisticated and superior technology, where American Apparel integrates its real-time and local inventory system with

Postmates' advanced delivery technology and national footprint. Furthermore, Postmates expressed optimism that, with the one-hour guaranteed delivery time, the process will "save them between 15-20 minutes per order, and consequently result in higher order and improved accuracies."

Andreas (2016) reported another ongoing model design by Luxemburg Post to deliver parcels after work and on the same-day. They started by putting in place 117 parcel pick-up stations around the country to offer a flexible collection service. They have also embarked on investment in intelligent logistics technology through which they have improved their inventory management and delivery services, which has helped to optimise their network by reducing the number of distribution centres from nine to two.

### 3.6.3 Observation

This brief report reveals that competition is fierce amongst the large retailers and the scope is now being extended beyond electronics and household goods to cover food and groceries. Analysts are worried about how small and medium-sized retailers will be able to survive in this market, and have suggested that SMEs should embrace the use of multi-channel retail and electronic marketplaces, as it is believed that, in this way, SMEs could be less concerned about large investment in technology and infrastructure, while still benefitting from different offers by the operators. They are of the opinion that, with the unceasing changes to the e-commerce industry, large retailers, in collaboration with their carrier partners, have intensified their innovative efforts and that soon, a series of same-day solutions will start to emerge, either from e-marketplace owners or carriers, as part of their marketing and competitive strategies.

## 3.7 Literature review summary and identifying the research gaps

From the review of the literature and trade press, the claim by Ducret (2014) that there is a lack of complementarity between academic research and real practice can be confirmed, with the industry moving at a much faster pace than research on the subject; hence, there is a need to acknowledge reports from the professional trade press. Relevant studies have been reviewed for empirical and theoretical understanding of the evolving retail business and to assist in future business strategy/model development. With these, it is believed that

retailers and carriers may be able to gather new ideas to help in reviewing their business approach.

The chapter identified different solutions that currently exist in the market that are either already in use or are at the experimental stage, as shown in Table 14 below.

Old retail market	Emerging retail market	Emerging challenges	Market solutions
Traditional retail	E-retail	Market relevance	Innovative retail strategies
Push of supply	Pull of demand	Delivery inefficiency	RDC/Hub-and-spoke expansion
Consumers organise delivery	Retailers organise delivery	Partnership and collaboration	Supply chain management
Standard parcel delivery	Speedy deliveries	Same-day delivery, omni-channel retail	No clear/standard model, no UK literature
Self-parcel transport	Increasing delivery requests	High delivery failure rate	TBD, CPD, C&C, etc.
Pallet shipping	Increasing small parcel shipping	Increasing delivery vehicle numbers and empty freight	Hub-and-spoke expansion
Traditional delivery requirement	Urban delivery requirement	Strict urban delivery requirements and restrictions	Green and intelligent logistics
Supply push logistics	Unpredictable shipping requirement	Requirement for intelligent delivery infrastructure	Real-time information infrastructure/delivery flexibility/location
Sales competition	Retail logistics competition	Need for reduced delivery cost	Informative and collaborative logistics
Standard business model	Constant and proactive business model review	Lack of resources by SMEs to frequently review business model	Need for a collaborative business model

**Table 14: Technology acceptance, outcomes and their solutions.**

Table 14 briefly summarises the retail logistics market's transition as analysed in chapters 2 and 3 above, and provides solutions to the emerging challenges where one or more exist.

The same-day delivery market is growing in America, Asia and Europe, however, it has been observed that, although little about same-day delivery have been mentioned in the academic literature, a lot has already been published in the media and, as of the time of this report, no literature has referred to or mentioned the practice in the UK, thereby opening an academic research gap. Both the literature and the media have identified that, although customers have a high desire for speedy small parcel delivery, they would rather wait 2-3 days than pay premium prices for the service. Even though no literature can, at this stage, be referenced for same-day delivery in the UK, the author would not disregard media publications, where Amazon and Argos have been identified as the key players pushing for the service in the UK. This, therefore, raises a concern that, out of the large retail logistics market size in the UK, only two large e-retailers and a small carrier are directly linked to the service. As a result, it will be important to understand how much acceptance the service enjoys by the triad, hence the following research questions:

*RQ1 'How much acceptance will the same-day delivery service enjoy in the UK retail market?'*

Also, in line with the arguments that customers would not pay a premium, as many of them do not necessarily require such delivery speed, another concern is:

*RQ2: 'What are the surrounding factors that influence the investment in the B2C same-day delivery service?'*

The practice is seen to be successful in Asia, especially in Japan since 2006 due to the existing supporting infrastructure. However, the practice has just been newly introduced and is still at the experimental stage in America and Europe, especially in the UK, with no indication of a standard approach to the operational model, nor supportive infrastructure, in comparison to Japan.

It is also observed that the unrest in the logistics market is a function of relevance and profitability, and the key channels through which firms can benefit from these two are to either collaborate, innovate, or innovatively collaborate. It is noted that, although there is recent (2014-2016) literature on same-day practices outside the UK, none have referenced SMEs as beneficiaries. Also, in line with the argument by Gessner and Snodgrass (2015) in Section 2.5.4, and analysts' concerns in Subsection 3.6.3 on how SME retailers will survive

the changing market, it is imperative that the author investigates how the same-day delivery market can be leveraged for large players and the SMEs at a cost-effective rate. Hence the research question below:

*RQ3 'How can a business model be designed for a cost-effective UK same-day delivery service?'*

Investigating these research questions will require participation from the triad, as it will be necessary to understand their independent views. Based on this, two research methods will be required: a qualitative research method for business experts (carriers and shippers), and a quantitative research method for customers.

The next chapter will identify the appropriate research methodology, establish the investigation procedures in detail, and will help the following stages of the research.

## Chapter 4: Research methodology

This chapter explains the research methodology and the selection of the appropriate philosophical methods and techniques. The essential background and a review of the relevant research methods and philosophical views are provided, alongside the justification for selection of the mixed method approach. Subsequent sections describe the research settings, the data collection process, which comprises of semi-structured interviews and electronic surveys, and the analysis.

### 4.1 Introduction

The research methodology is a key element in any research project that justifies why the chosen research path has been adopted; it also shows the researcher's awareness of different research methods and techniques that can be used to satisfy the proposed research objectives (Creswell, 2009). Research methodology is defined as the procedure(s) by which researchers go about their work of describing, explaining and predicting phenomena, or the study of methods by which knowledge and facts are gained, and thereafter aims to give the work a research plan that is worthwhile (Rajasekar et al., 2013; Panneerselvam, 2014).

On this basis, the chapter explains some of the relevant philosophical world views and research methods, and how a thorough understanding of these two elements helped in the selection of a Mixed Methods Research (MMR) approach as being the most appropriate research method, and a pragmatic approach as being the most relevant and supportive philosophical stance.

The sections below provide readers with a review of the relevant research methods and philosophical world views, and the rationale and justification for the research method adopted.

### 4.2 Types of research method

The most commonly adopted research approaches are discussed below.

### **4.2.1 Quantitative research method**

As implied by the name, the emphasis is on quantification; it could also be called empirical research or described as the collection and analysis of numerical and statistical data. Wyse (2011) defined it as a method used for quantification via numerical data generation/transformation into usable and measurable statistics. This is done by quantifying attitudes, opinions, behaviours and other defined variables, and consequently generalising results from a large sample. This measurable data helps with fact deduction that reveals the research approach; examples include electronic and paper surveys. Bryman & Bell (2003) explained that a quantitative research method should be viewed not only from the quantification aspects of social life, but also considered from an epistemological (philosophy of how we know things) and ontological (philosophy of what things are) position. A quantitative research method is also characterised as a good approach to investigate sensitive subjects that people may not want to talk about.

Bryman & Bell (2015, p. 160) defined it as:

...the research method that entails the collection of numerical data and as exhibiting a view of the relationship between theory and research as deductive, predilection for a natural science approach (and of positivism in particular), and as having an objectivist conception of social reality.

Bryman (2001) identified surveys, polls and questionnaires as typical tools for a quantitative research method. He, alongside Creswell (2009), added that the data collected may be statistically analysed inductively and descriptively, which allows generalisation and insights into broad phenomenon. The techniques in this regard are either through questionnaire, polls or surveys, where surveys are either electronic or paper.

### **4.2.2 Qualitative research method**

Bryman and Bell (2003) defined a qualitative research method as, more often than not, one that emphasizes words rather than quantification in data collection and analysis. They explained that a qualitative research method, although not always subscribed to by researchers, is inductive, constructionist and interpretive. Wyse (2011) described it to be an exploratory research method that helps in understanding fundamental problems, views and motivations to solve identified problems, or the development of novel

ideas/hypotheses for new research. It is also a technique that reveals trends in thought and opinions, and that dives deeper into the problem. Qualitative data is richer and its aim is to completely describe a phenomenon in detail, as researchers are directly and actively involved in the data collection process (Creswell 2009).

Qualitative data collection methods vary and can use unstructured, semi-structured or structured techniques. Common methods of data collection are focus groups, interviews and participation/observations.

#### 4.2.2.1 Types of qualitative research techniques

The following are recognised as the standard, and most widely adopted qualitative research techniques: ethnography, action research, phenomenology, grounded theory and interview. For the purpose of this thesis, only the relevant technique (interview) is explained.

1. *Interview*: Fontana and Frey (2005) defined an interview as a verbal conversation that usually involves an individual or a group of people where questions are directed at interviewees to provoke facts from their experience or opinion. Zhang and Wildemuth (2009, p.1) defined it as “a widely used tool to access people’s experiences and their inner perceptions, attitudes, and feelings of reality”. Ritchie and Lewis (2003, p.138) further explained that adopting a face-to-face interview is appropriate, especially when the in-depth meaning is imperative, and the research primarily focuses on gaining insight and understanding of the subject area. An interview is categorised into three fundamental types: structured, semi structured and unstructured (Fontana and Frey, 2005).
  - a. *Structured interview*: This could be regarded as a verbally administered questionnaire, with a list of predetermined questions from carefully selected topics (DiCicco-Bloom and Benjamin, 2006). It is similar to a survey except that it is an oral exercise, and all respondents are usually faced with the same set of questions in the same format, thereby making replication easy. The standardization intends to minimise the interviewer’s effect (bias) on the outcome. It also makes it easy for the researcher to contact a large number of respondents quickly and efficiently while gathering a reliable source of quantitative data (Warren and Karner, 2005). A structured interview allows the interviewer to explain or clarify unclear questions while no such leeway is given to respondents.

- b. *Semi-structured interview*: This is more flexible in comparison to the structured interview. Even though there are predefined topics of investigation, it tolerates the exploration of new themes and ideas, rather than purely sticking to the predefined questions and format (Hockey et al., 2005; Garcia-Penalvo et al. 2014; Samra et al., 2015). In terms of delivery it is administered orally, thereby making it analogous to the structured interview. Similarly to the structured interview, the researcher makes use of a standardised format with predetermined/pre-set questions, in order to ease comparison between answers. However, the method permits researchers the scope to probe further for necessary, related and relevant information through additional questions that are usually referred to as ‘prompts on the schedule’. The technique also offers the scope that allows respondents the leeway to express their opinion, even though regulated by the researcher (Galleta 2013; Brinkmann 2014; Palinkas et al., 2015).
- c. *Unstructured interview*: The unstructured interview could be regarded as the opposite of the structured interview as it appears like an everyday conversation and tends to be flexible, free flowing, open ended and informal (Low, 2007). It is referred to as in-depth interview that can be used to elicit information in a way that allows holistic understanding of the argument concerned, by allowing further probing when necessary and/or deemed required by researchers (Berry, 1999; Bryman and Bell 2015, Zhang and Wildemuth, 2009). Although researchers usually have predetermined topics to cover, which serve as guidance and direction, there may not be a particularly pre-set format. The method follows a social and friendly interactive format (Zhang and Wildemuth, 2009). It can be divided into three approaches (Patton, 1987; Doody and Noonan, 2013):
- i. *Informal conversational interview*: This could be referred to as a form of chat, and allows a free flow of questions from the immediate context.
  - ii. *Guided unstructured interview*: Basic checklists or a pre-set list of questions called an ‘aide memoire’ or ‘agenda’ are in this case used as a guide to ensure all relevant topics within the scope are covered (Berry, 1999; Briggs, 2000; Fife, 2005; McCann and Clark, 2005). “An aide memoire or agenda is a broad guide to topic issues that might be covered in the interview, rather than the actual questions to be asked” (Zhang and Wildemuth, 2009, p.2). Through an ‘aide memoire’, unstructured interviews benefit from a certain level of flexibility and consistency across a range of interviews (Zhang and Wildemuth, 2009), where probes are allowed, and interviews are kept within the scope of the research or a set guide.

- iii.* Standardised open-ended interview: This is an approach that uses open-ended questions with careful wording in order to reduce variation and improve comparability. This is found to be effective when there are groups of interviewers, and it is less flexible in comparison to the other two types of interview.

### **4.2.3 Mixed method**

Quantitative and qualitative methods were initially viewed as two distinct research techniques, however, in the mid-1990s a different view on how the two techniques could be linked came to light and a connection was established (Plano and Creswell, 2008).

Mixed methods research can be regarded as the third major research paradigm, along with quantitative and qualitative research. The mixed methods approach is gaining popularity and acknowledgment (Johnson et al., 2007), and is defined as a research paradigm where more than one research method/technique is adopted in a single study. For example, both quantitative (survey) and qualitative (interview) techniques can be used as distinct design components or can be explicitly integrated to gather data for the purpose of answering complex research questions (Caracelli and Greene, 1997; Sandelowski, 2000; Creswell et al., 2003a; Johnson and Onwuegbuzie, 2004; Greene, 2007; Heyvaert et al., 2013).

According to Ramos and Mesquitta (2013), research techniques always have different approaches to reporting the analysis for accuracy and repeatability; this led them to the development of GRAMMs framework to measure the analysis reporting of a mixed method that resulted in eight different typologies of: partially mixed concurrent equal status, partially mixed concurrent dominant status, partially mixed sequential equal status, partially mixed sequential dominant status, fully mixed concurrent equal status, fully mixed concurrent dominant status, fully mixed sequential equal status and a fully mixed sequential dominant status. A full explanation of these typologies can be found in Ramos and Mesquitta (2013, pp.68-72).

Sale and Brazil (2004) identified four criteria to appraise the quality of mixed method research, using the framework proposed by Lincoln and Guba (1985, 1986) for trustworthiness and rigour, as shown in Table 15 below.

Criteria	Appraisal
Truth Value	Credibility vs. Internal Validity
Applicability	Transferability/Fittingness vs. External Validity/Generalisability
Consistency	Dependability vs. Reliability
Neutrality	Confirmability vs. Objectivity

**Table 15: Mixed method quality appraisal. Source: Sale and Brazil (2004).**

### 4.3 Philosophical world view in research

The underpinning ideas or philosophical world view on research projects are generally invisible (Slife and Williams 1995). However, all adopted research methods (qualitative or quantitative) are driven by underlying philosophical assumptions for validity and appropriateness (Myers 2010). Examples of relevant philosophical views that identify with nature and knowledge are positivism, interpretivism and pragmatism (Johnson and Onwuegbuzie, 2004), and are briefly explained below.

#### 4.3.1 Positivism

This is a philosophical view that is traditional and rejects metaphysics, but recognises only that which can be scientifically proven or has a logical or mathematical proof, that is intended for theory testing (Bhattacharjee, 2012), and is often synonymously used with quantitative research methods. The ideology applies deductive reasoning and is defined by empiricism. Positivists are always detached from their research participants, for emotional neutrality and to allow distinctions between reasons and feelings (Carson et al., 2001). It is an approach that generates knowledge, aims to measure existing reality, applies the principle of cause and effect, and positivists are therefore referred to as realists. However, on the other hand, a later philosophical view referred to as post-positivism is that which rejects the central tenet of positivism, and believes all observations are fallible and revisable; in this case, positivists are referred to as critical realists. Based on the critical realist's view that positivist findings are fallible, post-positivism calls for triangulation to obtain more reliable findings/discovery, which conform to reality (Phillips and Burbules, 2000).

### 4.3.2 Interpretivism

Interpretivism is derived on the basis that the researcher is actively involved in the process, which results in the interpretation of the respondent's understanding or shared experience (Creswell, 2009). It is also described as a philosophical idea intended for theory building (Bhattacharjee, 2012, p.23), where research starts with data and intends to derive theory "about the phenomenon being investigated." Although interpretivism is often synonymously used with a qualitative research method, they are different. Interpretivism is defined as

...a research paradigm that is based on the assumption that social reality is not singular or objective, but is rather shaped by human experiences and social contexts (ontology), and is therefore best studied within its socio-historic context by reconciling the subjective interpretations of its various participants (epistemology) (Bhattacharjee, 2012).

Interpretivism employs a 'sense making' approach and it relies strongly on qualitative data, but could at times achieve improved precision through a mix with quantitative data. It uses a theoretical sampling technique, where respondents or cases are selected based on suitability or a fitness factor.

### 4.3.3 Pragmatism

Pragmatism can be explained as the philosophy that helps us to deal more effectively with real-life problems (Conant and Zeglen, 2012). In other words, it is arguable that we are in touch with the world and use the best, and most applicable, approach to deal with matters (Rorty 1982). Pragmatism is therefore defined as a philosophical stance that "sensibly provides intellectual framework that helps achieve innovation and environmental reform and decision-making at all levels, and stresses workable solution to real life problems" (Mintz, 2004).

The pragmatic philosophical stance accepts relevant concepts, only if actions are supported. According to Saunders et al. (2012), pragmatists have the philosophical ideology that recognises there are several ways to interpret the world and undertake research, with the belief that a single point of view may not satisfactorily capture/cover the research

phenomenon, as there may be more facts to uncover, which may be best captured through other methods.

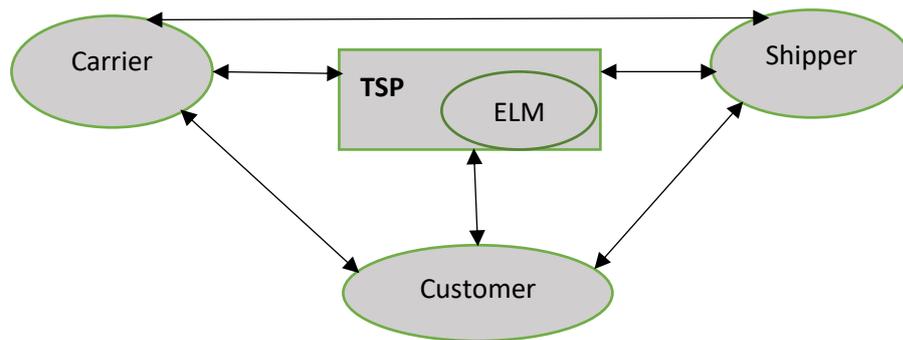
Even though positivism and interpretivism are the most commonly identified philosophical ideologies about knowledge and nature, they are usually adopted separately (Collis and Hussey, 2014). However, there are occasions where researchers need to take a step back to have a paradigm shift, for a new philosophical stance. The shift in philosophical stance is adopting a pragmatic approach in order to use the most applicable methods for the research being undertaken (Collis and Hussey, 2014). Corroborating this, research by Wilson (2010) explained that, although dependent on the research question, pragmatic ideology supports the integration of more than one research strategy or method, and therefore the combination of positivist and interpretivist stances within the scope of a single research work is admissible and permissible. However, pragmatists do not have to use a multiple methods approach, as they can instead use a single method or combination of methods that have been identified as the best fit to satisfactorily answer the given research question(s).

#### **4.4 Discussion and justification for the choice of research method**

##### **Preamble**

According to Norkett (2013), the quality of any research work can be evaluated by examining the intended aim of the project, the suitability of the research technique and the design used.

Also, the author has identified, through the literature review, that changes in the retail market now require players to engage in innovative forms of collaboration; this therefore identifies collaboration as a tool that plays an important role in driving efficient retail and logistics operations, which are facilitated through technology. It is on this basis, and with reference to the research aim: '*...to investigate how collaboration can improve efficiency in the UK logistics sector for same-day parcel delivery services*', that five categories of respondents, i.e. customers (UK online adult customers), ELM: logistics-collaboration specialists and TSPs (experts), and carriers and shippers (business practitioners) were identified and investigated.



**Figure 30: Five categories of respondent.**

In consideration of the UK's large customer population, obtained from the 2015 bulletin of the UK Office for National Statistics and estimated at 22,699,680, the best data collection technique through which an acceptable representative sample size can be achieved was identified to be the survey technique (quantitative research method). In the case of professional expertise, two collaborative experts and two TSPs were identified, with the semi-structured interview identified as being the most appropriate data collection technique. In the case of business practitioners, the community in which the investigation was carried out has many of the two respondent categories (carriers and shippers), and as a result, only a few representatives from each category were selected and investigated. Due to the deep knowledge of the experts, and the need to keep the research within its scope, the most applicable approach to collect detailed data in this regard was the semi-structured interview (Dumelow *et al.*, 2000; Benazzi, 2003; Hockey *et al.*, 2005; Harrell and Bradley, 2009).

Table 16 below shows how the literature findings were matched with different research techniques.

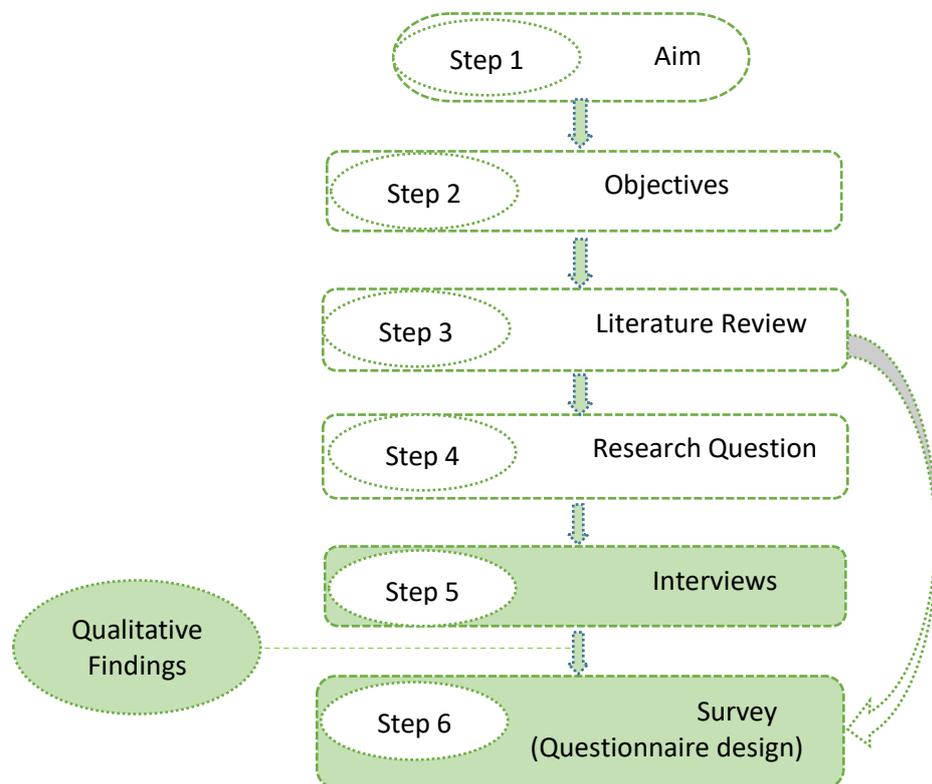
Emerging market	retail	Emerging challenges	Solutions	Research technique
E-retail		Market relevance	Innovative retail strategies	Professional Interviews
Pull of demand		Delivery efficiency	RDC/hub-and-spoke	Professional Interviews
Retailers organise delivery		Partnership and collaboration	Supply chain management	Professional Interviews
Speedy deliveries		Same-day delivery/omni-channel retail	No clear/standard model/No UK literature	Professional Interviews/ Customer Surveys
Increasing home delivery		High delivery failure rate	TBD, CPD, C&C, etc.	Professional Interviews/ Customer Surveys
Increasing small parcel shipping		Increasing delivery vehicles and empty freight	Hub-and-spoke expansion	Professional Interviews
Urban delivery requirement		Strict urban delivery requirements and restrictions	Green and Intelligent logistics	Professional Interviews
Retail logistics competition		Need for reduced delivery costs	Informative and collaborative logistics	Professional Interviews/ Customer Surveys
Unpredictable shipping requirement		Intelligent delivery infrastructure requirement	Real-time Information infrastructure/  delivery flexibility/location	Professional Interviews/ Customer Surveys
Constant and proactive business model review		Lack of resources by SMEs to frequently review business model	Need for a collaborative business model	Professional Interviews

**Table 16: Literature findings and their match to different techniques.**

Overall, the literature, via this table, reveals that different respondents require different research techniques from two research methods and, in addition, some of the qualitative findings from the professional experts are claims about third parties (customers). These findings required corroborative evidence through further investigation, or a form of triangulation with the parties directly concerned (customers), by using a quantitative research method as indicated above (Johnson et al., 2007; Wolf, 2010; Hussein, 2015). In

this case the qualitative findings were used in building the quantitative research phase, and this resulted in a meta-inference approach, i.e. the integration of findings from both qualitative and quantitative strands (Venkatesh et al., 2013). It was as a result of the above that the mixed method was identified as the most suitable approach.

This kind of typology in a mixed method approach is referred to as a sequential exploratory mixed method design (Fetters et al., 2013; Leech and Onwuegbuzie, 2009; Greene, 2007 cited in Bentahar & Cameron, 2015; Creswell & Plano Clark, 2007) wherein the interview result informs the need for descriptive research, i.e. a partial mixed method where a generic customer survey helps the author understand more about peoples' preferences for online shopping and delivery modes (Ramos and Mesquitta (2013).



**Figure 31: Stages of the mixed method research.**

With the above analysis, it is arguable that one research method was not sufficient to uncover the necessary facts. This is in line with the pragmatist philosophical argument by Saunders et al. (2012), as seen above in section 4.3.3, and is found to be similar to Collis and Hussey's (2014) stance that a pragmatic approach should be adopted in order to use the most applicable research methods.

Based on a review of the philosophical world view and the research methods, the author puts forward that this research was undertaken using the pragmatist ideology through the adoption of a mixed methods approach, which is likened to an architectural practice where they make use of whatever strategies or methods for construction as detailed in the plans; pragmatists also adopt any methods or strategies deemed to be a best fit to answer the research questions and achieve the set objectives.

In addition, from logistics supply chain management (LSCM) studies, Golicic and Davis (2012) argued that a review of past journals shows that new knowledge development in LSCM is in most cases dependent on the single quantitative research method, while the mixed research method is rarely used. They argued, in a similar way to Boyer and Swink (2008) that the business environment is now dynamic and LSCM would require the adoption of a mixed research method to keep up with the business environment, and to be able to explain its phenomena.

Recent research by Aldwsry (2012) on 'E-Commerce Diffusion in High-Income Developing Countries' and Mkansi et al. (2011) on 'Management of the E-retail Supply and Distribution Network' are two good examples of LSCM PhD research that has adopted the mixed method approach, and that exhibits a form of positive response to the call for a supply chain mixed method research approach.

#### 4.4.1 Sampling

Sampling according to Trochim (2006) is defined as the random selection of units to be studied as a representation of a target population. The selected unit may fairly represent the target population, and could be used for fair representation and generalisation. Bradburn and Sudman (1988) and Bryman and Bell (2003) expressed that researchers cannot study/observe every individual of the population being researched, but can make use of a subset of individuals (sample) to represent the given population. Nirmala and Silvia (2011, p.92) explained that usually, the "sample corresponds to the larger population on the characteristic(s) of interest" and, as a result, researchers' conclusions mostly relate to the entire population. It is on this basis that Collingridge and Gantt (2008) argued that sample selection requires having a clear rationale that corresponds to the identified research questions. Even though bias cannot be totally eradicated in research work, it can be minimised. It is on this basis that Shield and Alison (2008) and Baker (2002) put forward

that in order to minimise bias, sampling must be representative in nature. Crumbling (2001) stated that if there is no proof for representativeness, such data becomes null and void in project work for effective decision-making. In line with the above justification for the mixed method, it is important to explain briefly the relevant sampling techniques, and how some of them apply to this research. Sampling is classified into two, i.e. purposive/non-probability sampling and probability sampling.

### 1. The purposive/non-probability sampling technique

The purposive sampling technique can be defined as selecting a unit (group of people, organisation or individual) in line with defined purposes that are linked/associated with the answering of research questions. In this regard, the selections are deliberate in order to gain key information, which could not be obtained from alternate choices. The most productive sample of a given population is selected and represented (Coyne, 1997), and that successful sampling is tied to its objectives (Suri, 2011). The samples herein have been selected and tailored to the research questions, and the sampling technique has been adopted across the five categories of respondents in this research, as briefly explained below.

- i. **Representative sampling:** this describes a small proportion of some population whose characteristics represent the given population. Marshal (1996) and Bryman and Bell (2003) defined representative sampling as the sample that reflects the population accurately so that it is a microcosm of the population. It could also be described as an unbiased sampling technique that accurately reflects/represents the entire target population. It consists of several types: typical case sampling, deviant case sampling, intensity sampling, maximum variation sampling, homogenous sampling and reputational case sampling. Due to the large number of carriers and shippers in the UK market, conducting interviews with all of them was not feasible, and the need for fair representation became essential, hence the use of representative sampling. This is found to be similar with the qualitative stage, where the large customer population also required a fair representation. More details on the adoption can be found in the next section.
- ii. **Stratified sampling:** the sampling in this case is used when there is heterogeneity in the target population. The population is categorised into subgroups and the representation of each group is referred to as the strata (Oppong 2013; Robinson 2014; Palinkas et al., 2015). Carriers and shippers are two different respondents that have been identified as having

splits across the subgroups; in order to appropriately represent each group, stratified sampling is deemed most appropriate. Further details can be seen in the next section.

- iii. **Expert sampling:** this is where the researcher searches for individuals with particular expertise who could boost his interest and probably advance his knowledge in the research area (Ghosh et al., 2013; Samuel-Rosa et al., 2014; Davis 2015; Etikan et al., 2016). This sampling approach applies to two respondents, i.e. the ELM expert and the TSP, due to their high level of expertise, skills and experience. The adoption and justification are detailed in the sections below.
- iv. **Convenience sampling:** this is categorised as the least rigorous sampling technique, as it involves the selection of the most accessible subject. Also in terms of time, finances and effort, it is the least demanding (Marshall, 1996; Acharya et al., 2013; Robinson 2014; Bryman and Bell, 2015; Etikan et al., 2016). Even though the community in which the research is carried out is saturated with two categories of experts, i.e. carriers and shippers, gaining access was difficult, and it therefore became imperative to include convenience sampling.
- v. **Snowball sampling:** researchers access this sample via requested suggestions or recommendations from pre-selected or earlier samples, especially from experts or convenience samples (Pattison et al., 2013; Gyarmathy et al., 2014; Palinkas et al., 2015). No referrals were made by the respondents and as a result, this sampling technique could not be adopted.

## 2. Probability sampling technique

It is a sampling technique that involves the random selection of a large number of units from a given population “where the probability of inclusion for every member of the population is determinable” (Tashakkori & Teddlie, 2003a, p.713). The following are a few of the sampling classifications, one of which applies to this research.

- i. **Random sampling:** sampling in which each unit in the target population stands an equal chance of being selected for the sample, i.e. an unbiased representation of the target population where the probability of selecting one unit is not affected by the selection of other units. It is a technique that allows for generalisation and is more likely to be valid (Csikszentmihalyi and Larson 2014; Palinkas et al., 2015; Jacobsen et al., 2016). It can be in different forms, i.e. simple random sampling, systematic random sampling, stratified

random sampling, and cluster random sampling. It serves a dual purpose, and can be useful for both quantitative and qualitative research methods.

There was no intention to use cluster sampling, however, the quantitative data collected revealed some features that made clustering applicable during the analysis process, and it was therefore adopted.

Cluster random sampling involves the selection of a few groups that are divided into clusters of homogeneous units, which are non-overlapping within each group. These naturally occurring groups are known as clusters (Acharya et al., 2013; Dahraei and Adlparvar, 2016). In this case, data are collected from all group members; it can be referred to as a form of economic sampling whereby the features of probability sampling are retained and more heterogeneity within groups is offered (Acharya et al., 2013; Davis 2015; Guha and Mishra, 2016).

#### **4.5 Research settings**

According to Bryman and Bell (2003) and Baruch and Holtom (2008), achieving a high response rate does not come cheap, but requires extra input, such as identifying appropriate respondents, establishing an initial relationship with the respondents, pre-notifying them of an upcoming interview or survey via email, and stating clearly the benefits they stand to gain from the research.

After careful review of research methods and techniques as explained above, a semi-structured interview was identified as the most applicable and appropriate approach (Berry, 1999; Doody and Noonan, 2013). This was to allow an in-depth, and a guided data collection process, particularly with the observed heterogeneity in the business approach and engagement of respondents, and the variation in their exposure, awareness, and engagement in the same-day delivery service. In addition to this was the variation in the size of their business: the level of vertical integration, the deep expert knowledge, and the need to keep the research within its scope (Dumelow *et al.*, 2000; Benazzi, 2003; Hockey et al., 2005; Harrell and Bradley, 2009).

More details about the applicability of the methods are explained in the sections below, as are other requirements also needed for the research.

#### 4.5.1 Ethics

Ethical approval is a requirement for any research work that directly/indirectly involves human participants or raises other ethical issues resulting from its potential environmental and/or social implications.

Even though the research does not involve any important or personal information, it however probes different business strategies and concerns, which could be sensitive and confidential. Based on this, ethical approval was obtained from the University Ethics Committee, and all data were collected and stored accordingly.

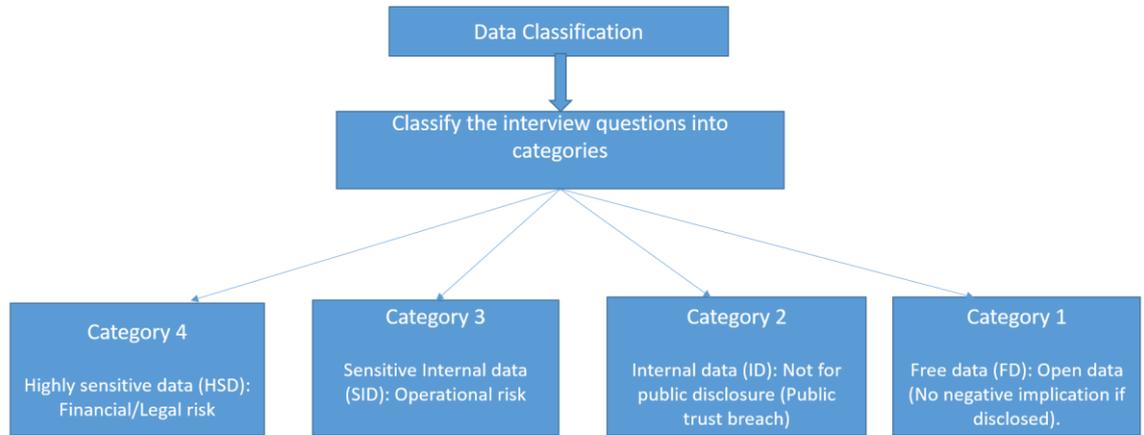
It was ensured that no data were collected without explaining the ethics and governance to the respondents, and what purpose the data would be used for.

Before each interview commenced, the author read the Data Protection Act to the respondents, and this was followed by an interview briefing and introduction.

None of the respondents signed copies of the ethical form, despite the author informing them of its availability, as they believed they would not share any confidential information about their businesses. The research ethics statement can be found below, and the participant consent form found in appendix 9.0

The University of Brighton aims to ensure that its research is carried out to high academic, ethical and financial standards, and that it conforms to good practice in all of these areas. The University also has a legal obligation to comply with various pieces of government legislation, including the Human Rights Act, the Data Protection Act, the Human Tissue Act and the Control of Substances Hazardous to Health (COSHH) regulations. (University of Brighton Ethical Practice in Research, 2010, p.1).

The author also emphasized to respondents that all information obtained would be classified as shown in Figure 32, made anonymous, and no information would be used for any purpose outside academic research.



**Figure 32: The data classification procedure.**

#### 4.5.2 Qualitative research settings and pilot studies

The literature helped identify a new research area for further investigation, through which relevant respondents were identified. Contacts were established with prospective respondents, and they were pre-notified about the intended interview, the interview technique, the subject area, the proposed duration (estimated at between 45-60 minutes), and were informed about ethical awareness and approval from the university. Table 17 below shows the different categories of the qualitative respondents and how the interviews were conducted, including the pilot stages.

Respondent	Pilot interviews	Initial usable pilot data	Completed Main Interviews (CMI)	The same respondent/ company with a few/no new information	Final usable/ merged pilot data	Total usable interviews (CMI + FU)	Unsuccessful interview attempts
ELM experts	1	1	1	1	1	1	0
LSP (Carriers)	2	2	5	1	2	6	3
Shippers	2	2	5	1	2	6	1
TSPs	2	0	2	0	0	2	0
Total	7	5	13	3	5	15	4

**Table 17: Interview respondents.**

Out of the seven pilot interviews conducted, five were relevant, out of which three were merged with the main interviews from the same company (ELM, Carrier 1 and Shipper 1), with only a little new information obtained when the pilot data were compared with the

main interview data from the same respondent (see Appendices 2.0, 3.1.1 and 4.1.1); others were usable as separate data (Carrier 3 and Shipper 2) (see Appendices 3.2.1 and 4.1.2), as shown in the above table. The pilot stages are clearly shown in the respondents' tables below, as the wording 'pilot' has been added to the roles.

The pilot study can be categorised as the footstool of the data collection process; it can also be referred to as a mini version of the full-scale study or the pre-test stage for research tools. A pilot study is deemed important for good research work because even though it does not guarantee success, it boosts feasibility and the likelihood of success, and it may also provide valuable insights to the researcher. Other notable benefits of a pilot study include quick identification of inappropriate instruments or methods, early detection of agents causing possible project failure, and suggestions or recommendations for a suitable approach and/or for respondents. A pilot study works to ensure everyone in the sample does not just understand the questions, but has the same understanding. It also helps researchers identify the questions respondents are not comfortable with (and quickly improve them), the general level of acceptability, and above all, know the average length of time required by respondents to answer the questions. The different categories of respondents alongside their pilot studies and the adopted sampling techniques are explained below.

The pilot study was conducted across the four categories of qualitative respondents: there was one respondent from the ELM category, two from the carrier categories, two from the shipper categories, and in the case of the TSP, the pilot session was conducted in the university with both academic and technical experts in the field. Of the ELM and carriers that granted two interview sessions, the first was conducted using "voice over internet protocol" (VOIP), i.e. Skype, in order to save time and money, and the second interview was a one-to-one session.

#### 4.5.2.1 ELM experts

ELM, being an electronic logistics collaboration platform has been identified as a tool that could help in the design of a same-day delivery system. There are few ELM experts, who have been identified as experts from UK Universities with specialisms in collaborative logistics and with significant experience and expertise in ELMs. Only one expert, with the

following profile, was successfully contacted: a Lecturer in Logistics and Operations, with a research focus on business process (re)engineering and e-collaboration, electronic logistics marketplace/network (ELM), and the use of information and communication technology (ICT) in logistics. ELM is a new area of collaborative logistics research and, as a result, very few articles both in the academic and trade press have been published; a 'Know, How and Why' approach, i.e. an exploratory/qualitative research approach was therefore required. The expert was identified through the literature, and obtaining detailed information, given their significant experience, required a one-to-one interview. Based on this, it was appropriate to employ an expert sampling technique. A semi-structured interview was adopted, as ELM is an evolving area of research that requires a deep insight into the ELM perspective on collaboration for same-day delivery, and as a result imposing too much structure may inhibit the responses, which may result in an insufficient understanding of the topic concerned.

This was the first stage of data collection, and it is termed the exploratory and preparatory interview. It serves as the preparatory stage and as guidance for subsequent interviews conducted on other respondents, as further opinions were shared by the expert as a guide.

#### 4.5.2.1.1 ELM pilot

The ELM pilot interview was conducted with the main interview respondent. The author started by introducing himself, the research project, its aim, objectives and the intended techniques. This was followed by a request for permission to record the conversation.

#### **Outcome**

Eighteen questions were scheduled over 45 minutes. The interview started with the respondent suggesting a reduction in the scheduled time by 15 minutes. A review of the session revealed the need for additional questions, while some of the questions were discovered to have the same responses to previous questions. This resulted in the need to add, remove and rephrase some questions for a simpler but richer content. This exercise resulted in 15 rephrased questions that were clear, concise and easily understandable. The questions were corrected accordingly, and were further tested with a research methodology expert in the university, who made suggestions and additions that were

carefully implemented to prevent changes to the intended meaning. The questions were re-examined by the university experts and approved ready for the main interview.

This pilot interview was usable and was merged with the main interview

#### 4.5.2.2 LSP (Carrier)

In the business world, the role of the LSP cannot be overemphasized, especially as it is the intermediary between customers and shippers. In line with the aim and scope of this research, it became paramount to understand LSP operations and the challenges they face, particularly with regard to evolving IT and the unceasing need for logistics innovations.

Considering time constraints, finances and the large number of LSPs in the United Kingdom, it was not feasible to conduct interview sessions with all of them, and as a result, a representative sampling method was adopted. Dissimilarities were observed in the business operations approach and business perspective of LSPs with reference to the firm size, services, level of vertical integration, and the level of exposure/engagement on same-day delivery services. In order to ensure an accurate and sufficient sample size, they were categorised into groups of SMEs and LEs. Also, in order to better represent the group, stratified sampling was employed. Based on the observed heterogeneity in the business approach, it was observed that a specific set of questions may not satisfy the data requirements across the respondents and, as a result, a semi-structured interview was found most appropriate. This allowed a good level of flexibility during the data collection process, where the author could in some cases probe beyond the context of the pre-set questions where required, but remain within the scope of the research. Although seven interview sessions were hoped for, six were successfully undertaken, inclusive of the final usable pilot. Table 18 below shows an individual representation of the profiles of the carriers successfully interviewed.

Carriers						
Carrier code	Category	Services	Level of same-day operations (SDO)	Vertical Integration Level	Turnover	Respondents portfolio
Carrier 1A (Pilot)	Large	Transport and Warehousing	Low	High	£9,424m (2015)	Delivery Office Manager
Carrier 1B (Main)	Large	Transport and Warehousing	Low	High	£9,424m (2015)	Delivery Director Home Counties North
Carrier 2	Large	Transport and Warehouse	High	High	£112.7m (2013)	Operations Manager
Carrier 3 (Pilot-> Main)	Medium	Transport	Low	Medium	Unknown	Delivery Manager
Carrier 4	Medium	Transport	High	Medium	£2.5-10m (2015)	Express Delivery Services Director
Carrier 5	Medium	Transport	Medium	Low	£18m (2014)	Client Services and IT Director

*SDO: Same-day operations, Low: Minimally involved or not involved at all; Medium: Not the main business, but significantly involved; High: One of the main operations, and significantly involved.*

**Table 18: Features of carrier organisations. Source: Adapted from Lasisi et al. (2015).**

Note: Carrier 1B denotes a second interview from another respondent within the same company (Carrier 1).

#### 4.5.2.2.1 Pilot interviews with the carriers

This was carried out with top officials from one large and one medium UK carrier company. The respondents were identified and contacted through expert and convenience sampling, and a similar approach as with the ELM pilot through Skype was adopted.

#### Outcome

The respondent suggested a one-hour time slot for the pilot interview, and 15 questions were drafted and scheduled to last for between 45 and 50 minutes. Some of the questions were repetitious, thereby necessitating the need to revise and rephrase the questions.

The second pilot with another company revealed a great deal of differences in the companies' business approach, as explained in 4.5.2.2, which needed to be considered in

the design of the interview questions. A consultation was therefore carried out on this development with experienced researchers, who recommended that there should be some flexibility with the interview process, in order to give room for more questions that may not have been pre-set, but are deemed necessary within the research scope.

The two pilot interviews were usable; one was merged with the main interview from the same company and the other was converted into a main interview as shown in Table 18 above.

#### 4.5.2.3 Shippers/Retailers

This refers to any UK business enterprise, be it large, medium or small that sends and receives freight (small parcels). According to the August 2015 update on UK Statistics from Companies House, 3,571,105 companies were registered in the UK while 3,301,706 were active. Conducting interview sessions on this scale was not feasible, but because the nature of this research required an in-depth understanding of UK business and its logistics practice, an exploratory research technique was deemed appropriate in contrast to a descriptive research technique. However, because it was important to understand different business perspectives, in terms of a firm's size (SME or LE) and its approach to business, a representative and stratified sampling technique was adopted. It was observed with the LEs that their business engagement differed based on their views and level of involvement/approach in engaging the same-day delivery service. In the case of the SME shippers, due to the high level of similarities in their views about same-day delivery and the business approach, it was necessary to have very similar questions. Based on these factors, it was necessary to approach the data collection process with a certain level of flexibility where responses could dictate further probing where necessary, and yet be guided by the pre-set questions in order to keep the data collection within the purview of the research scope. Similar to the carriers above, six interviews were completed and the final usable pilot was also added.

Table 19 below shows the respondents' companies in their category and features.

Shippers						
Shipper Code	Category	Sector	Level of same-day operations (SDO)	Vertical Integration Level	Turnover	Respondents portfolio
Shipper 1A (Pilot)	Large	Retail & E-tail	Nil	High	£9,701m (2014)	Deputy Retail Manager
Shipper 1B	Large	Retail & E-tail	Nil	High	£9,701m (2014)	Head of Online Marketing
Shipper 2 (Pilot -> Main)	Large	Retail & E-tail	Nil	Medium	Unknown	Assistant Operations Director
Shipper 3	Large	Retail & E-tail	High	High	£4,095m (2016)	Regional Sales Director
Shipper 4	Medium	Retail & E-tail	Nil	Low	Unknown	Sales Distribution Manager
Shipper 5	Medium	Retail & E-tail	Nil	Low	Unknown	Director of Customer Service

*SDO: Same-day operations; Low: Minimally involved or not involved at all; Medium: Not the main business, but significantly involved; High: One of the main operations, and significantly involved.*

**Table 19: Features of the shippers. Source: Adapted from Lasisi et al. (2015).**

Note: Shipper 1B denotes a second interview from another respondent within the same company (Shipper 1).

#### 4.5.2.3.1 Pilot interviews with the shippers

Two LE managers from different companies, identified through expert and convenience sampling, were the respondents to the pilot interviews.

#### **Outcome**

The first pilot study was carried out with one of the LE managers, with 13 questions drafted for a 45-minute interview. It was observed that the questions did not address some of the research objectives, and there was a need to add more questions and also review some of them to improve clarity. The revised questions were reviewed by the respondent, who expressed that the rephrased questions were simpler to understand, and that respondents should not have any difficulty in responding to the questions. The questions were later used for the main interview with another member of staff from the same company. The revised

questions were also used for a second pilot with another company, during which a similar situation (heterogeneous business approach) as with the carriers was noted, and the same approach of flexibility with the interview questions was adopted. The two pilot interviews, were usable as part of the research data, out of which the first one was merged with the main interview, after a little more information was obtained, and the second was converted into the main interview. However, in the case of the SMEs, only a few adjustments made to the pre-set questions was enough to satisfy the data requirements.

#### 4.5.2.4 Technology service providers (TSP)

In recent times, changes in the demand for technology has pushed many firms, especially LSPs, beyond their breaking point, into liquidation or forced them to radically innovate, but without the assurance of success. In order to identify the roles ELM can play in the design of a same-day delivery system, the need to identify competent and highly skilled logistics TSPs was important. Expert sampling was explored and, as a result, the author attended a series of IT and innovative logistics conferences within Europe to identify TSPs that would be fit to shed light on the development of a prospective ELM model for effective logistics. But since TSPs with ELM or near-ELM expertise are less numerous, only two of the most suitable providers granted the author an interview; these respondents had the following job titles: 'IT Client Director' and 'European Director of Account Management'. Several other efforts were made to identify more providers to interview, but gaining access proved abortive. The views and approach to the logistics and IT systems of both respondents are similar and, as a result, the same data collection approach could be adopted. The pre-set questions were adequate with the two respondents, hence the adoption of a semi-structured interview.

##### 4.5.2.4.1 Pilot interview with the TSP

The first pilot interview was conducted with a university member of staff from the technical department. Thirteen questions were set and reviewed by another academic staff member with technical expertise, who helped with a few grammatical corrections.

Since the respondents were not experts for the target industry, the pilot interviews were not usable as part of the research data.

### 4.5.3 The main interview

Studies have revealed that qualitative data collection is usually hard to obtain, but for effective, reliable collection and analysis, it is important to develop a thorough interview guide: schedule appointments, make adequate and timely preparations for all journeys and ensure a face-to-face interview session.

There are four categories of respondent, and in the case of carriers and the ELM expert, questions were pre-set to serve as a guide for the different respondents and their varied business approaches and specialisations. As with shippers, the pre-set interview questions served as a guide with the LEs, whilst also being the main questions for the SMEs. In the case of the TSPs, it was a similar situation as with the SME shippers, where the pre-set questions were the main interview questions.

As explained above, the interview question formation was informed by the literature findings, and designed with the research questions and objectives as the main focus.

Care was taken to ensure that all the pre-set questions were in line with the research objectives, and were moderated by the university's qualitative research specialists, who approved them, while all the additional probing questions were guided either by the pre-set questions or the scope of the research as required by the different respondents. Fifteen questions were set as a guide for the ELM expert, and thirteen were set for the carriers. Thirteen questions were also set for both large and SME shippers, and for the TSPs. Other questions came up during the interview sessions, and a particular order of questions could not be followed as a result; interviews lasted on average between 80 and 120 minutes. The interview transcriptions can be found in the appendix.

#### 4.5.3.1 Data collection process

All interview sessions were digitally recorded alongside the note taking, and a frequent review of the records and notes was performed, while direct quotes that were deemed relevant were recorded for later analysis in a manner that was faithful and legible to the respondents in order to prevent data loss. The data collection process followed the steps below.

1. A standard way of quick/instant information assembly, data interpretation and analysis was devised.
2. A form was generated to record all the notes with unique identifiers (name, date, time, location of interview, respondents' characteristics/special requirements), which was completed by the end of each day and linked to all audio records and transcripts for reference purposes.
3. A periodic review was undertaken, in order to reflect on the data available, as it may positively influence subsequent stages of the interview.

It goes without saying that the data analysis aspect is the most challenging stage and requires extra care with a reasonable level of expertise and professionalism (Miles, 1979 p.591).

In line with the four paradigms of qualitative research, Folkestad (2008) argued that the interview's naturalistic (positivism) paradigm has been the most dominant. He explained the notion that the paradigm offers some concrete solutions to qualitative data analysis and makes use of quality and standardised procedures for the three forms of interview:

1. Unitizing data
2. Emergent category designation
3. Negative case analysis
4. Bridging, extending and surfacing data

He later cited Lincoln and Guba (1985, p.333) quoted in Erlandson et al. (1993, p.116) where they supported his point by arguing that "data analysis involves taking constructions gathered from the context and reconstructing them into meaningful wholes", and by using similar procedures as above for the reconstruction, the following steps are arrived at:

1. Read the first unit of data
2. Read the second unit
3. Proceed in this fashion until all units have been assigned to categories
4. Develop category titles, descriptive sentences or both that distinguish each category from the others
5. Recommence the procedure

Folkestad (2008) cited another step-by-step approach by Giorgi (1975) and Kvale and Brinkman (2009) for analysing interview data in a phenomenological tradition:

1. Read through all the interview data to get a sense of the whole
2. The researcher determines the meaning unit in its simplest terms
3. The meaning unit is restated as simply as possible
4. Interrogating the meaning units in terms of the specific purpose of the study
5. Essential non-redundant themes of the entire interview are tied together into a descriptive statement

It could be deduced that comparing different procedures, including a naturalistic and a phenomenological analysis, shows some similarities for 'data reduction and focus meaning'. However, a series of studies (Frey 1994; Guba 1979; Neuman 1989; Ebert and Wegner 2010) have shown that the naturalistic paradigm analysis is preferred because of its ease of execution and reliability. It is on this basis that the naturalistic procedure was selected for qualitative analysis through "Thematic Analysis".

#### **4.5.3.2 Data sorting**

One of the four companies from each of the shippers and carriers categories, i.e. Carrier 1 and Shipper 1 granted two interview sessions with two separate respondents to make a total of 15 main interviews, i.e. one ELM expert, six carriers, six shippers and two TSPs. A careful comparison of the two separate sets of data from Carrier 1 and Shipper 1 showed similarities with only a few new pieces of information, and the two separate sets of data from each of the companies were merged to provide 13 transcripts from 15 interviews.

Table 20 below shows the respondents' classifications and features.

Respondent's Code	Category/ Same-day operation (SDO)	Services	Vertical Integration Level	No. of Interview Sessions	No. of Transcripts	Respondent's Portfolio
<b>ELM EXPERTS</b>						
ELM Expert	Academics	Academics		1	1	Logistics and Operations lecturer
<b>CARRIERS</b>						
Carrier 1	Large/Low SDO	Transport & Warehousing	High	2	1	Delivery Director Home County North
Carrier 2	Large/High SDO	Transport & Warehouse	High	1	1	Operations Manager
Carrier 3	Medium/Low SDO	Transport	Medium	1 Pilot	1	Delivery Manager
Carrier 4	Medium/High SDO	Transport	Medium	1	1	Express delivery services Director
Carrier 5	Medium/Medium SDO	Transport	Low	1	1	Client services and IT Director
<b>SHIPPERS</b>						
Shipper 1	Large	Retail & E-tail	High	2	1	Head of Online Marketing
Shipper 2	Large	Retail & E-tail	Medium	1 Pilot	1	Assistant Operations Director
Shipper 3	Large/High SDO	Retail & E-tail	High	1	1	Regional Sales Director
Shipper 4	Medium	Retail & E-tail	Low	1	1	Sales Distribution Manager
Shipper 5	Medium	Retail & E-tail	Low	1	1	Director of Customer service
<b>TECHNOLOGY SERVICE PROVIDER</b>						
TSP 1	Large	Retail & Logistics		1	1	European Director of Account Management
TSP 2	Medium	Retail & Logistics		1	1	IT Client Director
Total				15	13	

**Table 20: Classification of the respondents.**

#### 4.5.3.3 Data transcription and analysis

The author chose manual transcription over voice recognition software on the basis that the software failed to extract slurred speech, words spoken with a strong accent, and it

could not clearly differentiate between speakers. Furthermore, the voice recognition software failed to differentiate speech from the background noise, and therefore could not properly transcribe the interviews.

In order to represent the respondents' views and opinions, thematic analysis was adopted to help in drawing out natural themes from the data, and clearly represent the respondents' thoughts over the author's ideas and bias (Boyatzis, 1998). In addition, the thematic analysis helped the author to interpret the data without the influence of his thoughts and ideas.

#### 4.5.3.4 Data coding

NVivo software was used in the process, and the general process applied is explained below, as seen in Braun and Clarke (2006) and Braun & Clarke, (2012a).

1. Familiarisation with the data: the transcribed data were read repeatedly to gain an in-depth understanding of each respondent, company and category.

Three companies granted two main interviews, while others only granted one.

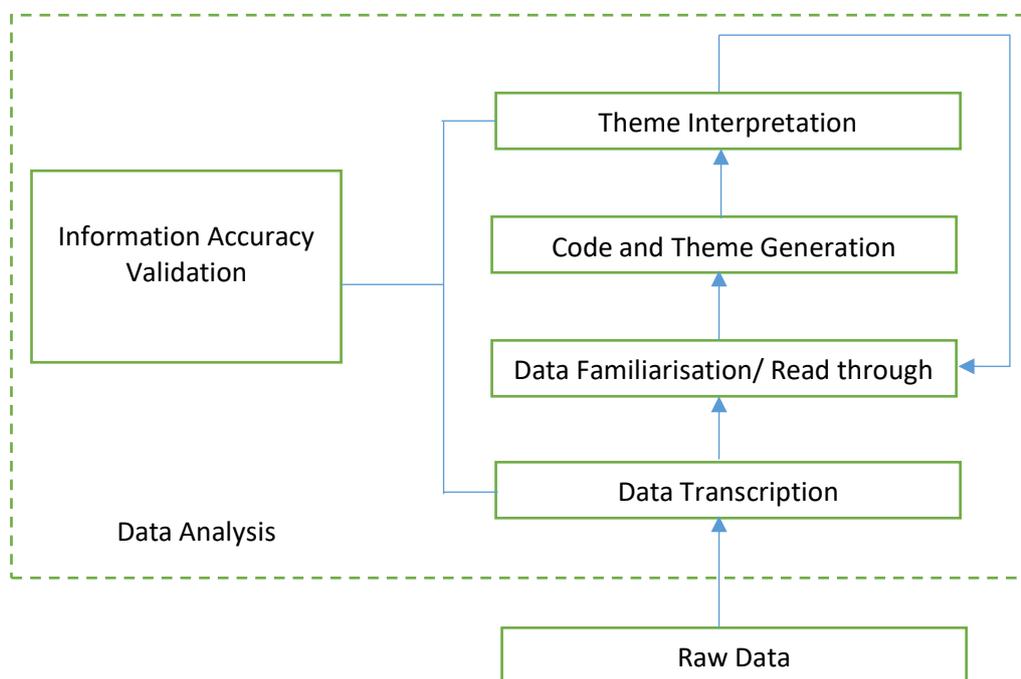
In the case of those who granted two interviews, each transcript was initially treated separately to ensure fairness and concurrence of data. Coincidentally, the data from the three firms are in agreement.

After reading though the transcripts carefully, all initial ideas and potential codes were noted.

2. Coding: the transcripts were imported into NVivo, after which coding was carried out. The entire data set was given equal consideration to identify relevant and similar codes, which could be referred to as the stepping stones to the theme development stage, as shown in appendix 8.0.
3. Theme development: at this stage, the relationship between codes was established, and codes were collated into their potential themes. All relevant, similar codes were grouped together and placed under an umbrella theme. Also, all codes relevant to the research questions were also grouped into themes.
4. Reviewing themes/rearranging nodes: hierarchical structures were created for parent-child relationships. All the themes were reviewed, wherein the codes and nodes were either further merged or deleted.

Thematic maps were created for theme generation. With the map, the relationship between nodes was critically reviewed. Depending on the situation of each node, it was decided whether it became a child node or parent node. When nodes were discovered to be coded in the same way, they were merged. Nodes and themes without sufficient data were discarded. It is at this stage that the coded data were actually coherent, and as soon as this was achieved the themes were reviewed in relation to the entire data set.

5. Define and name themes: themes are considered essential in relation to clear understanding and must convey the target interpretation through their name. Based on this, care was taken to name all the themes, i.e. both parent nodes and child nodes.
6. Analysis report: with the themes generated and carefully named, analysis was carried out, with a few quotes provided in relation to each theme or analysis, and then a full report was generated.



**Figure 33: Qualitative data analysis steps (adapted from Creswell 2009).**

#### 4.5.4 Quantitative research settings and pilot studies for customers

A quantitative technique was employed through electronic surveys to validate some of the findings from the qualitative respondents about customers and their online shopping attitudes; to investigate the findings from the literature about the customers’ perspectives on speedy delivery; to investigate their reaction to same-day delivery becoming

commonplace through different scenarios; to understand the factors that drive/influence their purchase decisions and investigate whether or not environmental factors and other demographics, such as age, sex and employment status can influence the acceptance of same-day practices and delivery preference.

In comparison to the qualitative phase, only one category of respondent was identified, but with a larger population. Finding respondents was easier as all that was required were UK residents with a minimum age of 18 who had online shopping experience.

#### 4.5.4.1 Respondents (customers) and the data collection approach

The 'customer' refers to anybody resident in the UK as far as their orders are dispatched and delivered within the UK. To obtain reliable and authentic data in this regard requires reaching out to people. However, sampling the entire population of a nation would be prohibitive, so in order to generate an acceptable result, it was important to reach out to as many people as possible via representative sampling. Based on this, the best method for data collection was a survey and particularly an electronic survey (Granello and Wheaton, 2011).

Another contributory factor for selection of the electronic survey method is in line with the statistics that show a huge rise in e-commerce and internet usage by UK residents, both individually and in the business sector (Boyer et al., 2001; Marra and Bogue, 2006).

Through the electronic survey, the author aimed for national coverage, and attracted 1,185 responses from a diverse national geographic range over a period of four weeks; the statistics are shown in Table 21 below.

<b>Duration</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>	<b>Total</b>
Response	463	230	370	122	1185

**Table 21: The number of survey responses across four weeks.**

#### 4.5.4.2 Sampling method

In order to gather a high number of respondents, gain easy access to all necessary tools for a successful survey such as: data access download, implementing instruments, flexible result analysis tools, trackers and reminders, etc. different online survey tools were reviewed via the literature and via online trial versions: UK data-bizz.com, survey monkey,

Inquisite, survey Z and Hosted Survey (Marra and Bogue, 2006). Even though these online tools have their differences and commonalities, a recently introduced tool called Qualtrics was chosen. Although Qualtrics may not be the best tool, it comes with a high recommendation from the University of Brighton's members of staff. It also possesses important and necessary features, such as a huge in-built respondent database for some countries including the United Kingdom, direct data extraction to Microsoft Excel and SPSS, auto coding and analysis; it is customisable to bear the name of the university, has customised email options and many other useful and important features. Above all, it is licensed to the University of Brighton and was accessed at a reasonable cost (£5).

Similar to the qualitative research approach, the quantitative research also began with a pilot study, and was conducted in two phases as explained below:

#### 4.5.4.3 Pilot interview phase one

This was categorised as a participatory survey, where twenty respondents (students and staff from the university) were informed of the survey pre-test. At this stage, the researcher intended to study peoples' reactions to the survey, get comments, corrections and suggestions. The target here was also to determine the appropriateness of the questions to the target population. Here a few repetitions were noted, and unclear questions were reported for review.

#### 4.5.4.4 Pilot phase two

This phase sees an undeclared pilot survey, where the survey was administered to twenty respondents as if it was the actual survey. Here, any initial errors and issues have already been effectively solved. However, a comment field was created for respondents to give suggestions for future surveys. A few suggestions were made by respondents including a reduction in the length of the introduction at the start of the survey, and to repeat some questions differently to test the accuracy of responses. The questions were reviewed and adjusted where necessary, and sent for final review by the university's quantitative research specialists, who finally approved them as ready for the actual survey.

#### 4.5.5 Survey and questionnaire design

The data collection process began with the qualitative research, the analysis of which resulted in the need for quantitative research, which corroborates the findings in Section

4.4 on the need to engage customers through a quantitative research approach: an approach that has been used and endorsed by other authors (Darke et al., 1988; Gable 1994). The survey questions were driven by the qualitative research discoveries, and some relevant literature findings that needed further verification.

For effective survey design, the OECD (2012) step-by-step survey design procedure was adopted as the guide, as shown below.

1. Objectives and target groups were established
2. Survey questions were drafted

As a guide to drafting good questions, the OECD (2012) checklist is shown below.

The questions were drafted to address issues that are of major concern to the target population, so that the response can meet the objectives of the survey. It is also important to ensure simplicity of language and avoid technical jargon, while clearly defining all key and technical terms. It was important to avoid asking two or more questions in one for clarity and precision, and to relay the same meaning to all respondents. The checklist is listed below:

- i. Neutrality was ensured with the questions and answer choices to prevent influenced and biased answers.
  - ii. The choice of answers alongside the order and scale of arrangement were clearly defined, made consistent and easily understandable.
  - iii. Care was taken to ensure the right questions were set for the right target group.
  - iv. All questions were screened by repeating the same questions in different ways/formats for a consistent response.
  - v. The author ensured tricky questions were included in the concluding part of the questionnaire to boost respondents' interest and morale to completion.
  - vi. It was ensured that the entire survey was short enough to attract respondents, and ensure completion.
3. Pilot surveys were conducted to boost the standard of the questionnaire.

For a smooth and successful result, two stages of the pilot survey were conducted. These are regarded as the test stages where a sample from an individual or group of people is used to test run the survey questions and application before final deployment. The feedback given helped me to fine-tune the questionnaire and make any necessary corrections.

#### 4. The survey was conducted electronically.

In recent years, there has been a big improvement in electronic survey response rates, which has been attributed to an increase in internet usage. Also, considering the target audience, and in order to have a wider coverage, and reach out to the majority of the target audience, it was important to give preference to electronic surveys. Bryman & Bell (2003, p.510) identified that electronic surveys are more reliable for researchers in the field of business and management, than in other areas. These and several other derivable benefits have contributed to the author's motivation to use electronic surveys to cover a large and disperse population. Examples of different types of questions can be found below.

- i. Close-ended questions and dichotomous questions, e.g. the yes/no or gender selection question, multiple choice and scaled questions, i.e. Likert scale questions.
- ii. Matrix questions: an example of close-ended questions that are arranged in a particular order to form a matrix with identical response options.
- iii. Contingency questions: in this case, questions are designed to depend on given conditions, ensuring that questions are channelled to the right audience, following close-ended questions.

#### 5. Results analysis

In total, eighteen questions were drawn up, which were driven by expert claims from the qualitative research, and supported by findings from the literature. In order to satisfy some of the conditions for the statistical method, some of the responses were merged under careful conditions with no significant effect on the interpretation, particularly with the Likert scale.

Hypotheses testing and descriptive analysis was used to summarise and analyse the quantitative data, by using SPSS. Parametric and non-parametric tests were carried out, with the help of different statistical methods, such as Gamma correlation, Chi Square test, and Kruskal Wallis through the pairwise comparison test. The detailed analysis can be found in Chapter 6.

## 4.6 Research and data validity

Validity and reliability are the measures used to establish the quality of research, alongside the determination of the extent to which findings represent reality (Silverman, 2000). There has been a recurring question on how research findings are adjudged valid and reliable, both in the qualitative and quantitative field, and this has resulted in different scholarly opinion and responses. Joppe (2000, p.1) defines reliability as:

...the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable.

He went further to define validity as the measure that “determines whether the research truly measures that which it was intended to measure or how truthful the research results are”. Kirk and Miller (1986, pp. 41-42) argue that in order to certify a piece of research as valid and reliable, preference should be given to “the degree to which a measurement, given repeatedly, remains the same, the stability of a measurement over time, and the similarity of measurement within a given time period”. According to Thietart (2001) and Stenbacka (2001) validity and reliability involves assessment of relevance and precision of research results, and the extent to which they can be generalised. Mishler (2000) argues that trustworthiness is the main issue, while Guba and Lincoln in the 1980s argued that trustworthiness has four criteria; credibility, confirmability, dependability, and transferability. In addition Polit and Beck (2012) and Elo et al. (2014) argued similarly as Guba and Lincoln on trustworthiness, but with the addition of the fifth criterion i.e. authenticity. However, Johnson (1997) chose credibility, defensibility, and generalisability.

In another instance, scholars have argued that the measures used to test the validity of quantitative research cannot be applied to qualitative research (Sandelowski, 1993; Long and Johnson, 2000; Noble and Smith, 2015; Rolfe, 2006), and that the purpose for the two research techniques are incomparable (Rolfe, 2006). There is, however, another argument that the growing use of mixed methods research could be attributable to the need for validation and measurement of reliability (Creswell & Plano Clark, 2007; Greene, (2007) cited in Bentahar and Cameron, 2015).

Another point to note is the qualitative scholars' stance on the interpretation of the terms validity and reliability, where some of them argued that they should be treated as the same thing. Golafshani (2003) argue that even though reliability and validity are viewed separately in quantitative research, they are viewed as the same in a qualitative research. They explained that "when quantitative researchers speak of research validity and reliability, they are usually referring to a research that is credible while the credibility of a qualitative research depends on the ability and effort of the researcher", and as a result, they use terminologies that encompass "credibility, transferability and trustworthiness" (Golafshani, 2003, p.600). One way to back this argument is the Lincoln and Guba (1985, p. 316) research where they put forward that "since there can be no validity without reliability, a demonstration of the former [validity] is sufficient to establish the latter [reliability]".Schreier (2012) added that there is no clear distinction between validity and reliability, and they are often treated as the same. It will be recalled that the adopted mixed method typology is a sequential exploratory mixed method design, i.e. a partial mixed method as detailed in section 4.4, wherein the survey was mainly designed to substantiate the interview findings on expert claims about customers. It is therefore on this basis that the author adopts the use of the term validity.

#### 4.6.1 Validation techniques

In order to be transparent in the validation technique selection, it is important to have a clear understanding of the various validation techniques. Scholars described different validity techniques, among which are, content validity, construct validity, utility criterion validity, also referred to as concurrent validity, predictive validity, internal validity, and external validity (Rowley 2002; Khotari, 2006; Saunders et al., 2009; Kumar, 2011; Zohrabi, 2013; Noble and Smith, 2015). Content validity is a qualitative measure whereby there is adequate measurement and coverage of the subject concerned (Khotari, 2006; Zohrabi, 2013). This research adopts this technique because it ensures construct validity with "confidence to readers and researchers about instruments", shows representativeness, intricacy, and relevance of the content domain (Yaghmaei, 2003, p. 25). Burns and Grove (1993) stated that content validity can be obtained from the literature where instrument development is carried out. This helps with identifying a clearer picture of limitation, identifying the subject components and dimensions, and establishing precision in defining

traits of interest. Construct validity refers to the extent to which scores, ideas, concepts or behaviours can be translated or transformed into a functioning and/or operating reality (Trochim, 2006; Drost, 2011). Utility criterion validity is aimed at checking the workability of the research findings. In other words, it measures the degree of usefulness of the findings to the stakeholders (Lynch, 1996). Internal validity is a qualitative measure that refers to the appropriateness or congruence of the research findings with reality (Zohrabi, 2013), and could comprise the six recommended methods by Merriam (1998) cited in Zohrabi (2013, p.258): “triangulation, member checks, long-term observation at research site, peer examination, participatory or collaborative modes of research and researchers’ bias (i.e. researcher should ensure impartiality with data collection, analysis and interpretation)”. Examples are focus groups, interviews and observations, and research strategy types are action research, a biography, case studies, ethnography, grounded theory, and phenomenology (Creswell, 1998; Zohrabi, 2013). This technique has been adopted because it helps in determining cause-and-effect relationships, and because of its efficacy, there is potential that research would be conducted under highly controlled conditions (Steckler and McLeroy, 2008). External validity is a quantitative measure that is concerned with the extent to which results are generalised, from samples to a wider population (Rowley, 2002; Nunan, 1999; Drost, 2011). An example is a questionnaire, and a research strategy type is survey. In order to add more quality to the research, this technique was chosen for the survey because it is representative of sample, settings and procedure, and it was used to test the generalisability of some findings from the qualitative research (Steckler and McLeroy, 2008).

Torrance (2012) mentioned that although mixed method research is now used to enhance the validation technique, respondent validation/member checks and triangulation are two key validation techniques that are useful in a mixed method research. He argued that the core justification underpinning the mixed method research technique is validation. This is on the basis that only one technique cannot comprehensively account for a research study, and as a result two techniques are adopted with the notion of achieving the same result.

Zohrabi (2013) similarly argued that data collection through a single technique can be weak, biased, or questionable, and explained that in order to strengthen the validity of data and findings, data should be collected through several sources such as interviews, questionnaires, and observations, and through a variety of techniques. If the results stay

the same with this approach, it could be argued that the data are valid. This can be supported by Creswell & Clark (2007) argument that mixed methods is used to triangulate by seeking convergence and corroboration of results from different methods, while Greene (2007) cited in Bentahar and Cameron (2015) also added that mixed method is capable of generating and validating/verifying theory concurrently within a single study.

Member checks refers to when results or transcripts of the interviews are given to participants for content verification and validation. Triangulation refers to the validation procedure where data are sourced or obtained using more than one research technique, or from a variety of sources.

#### 4.6.2 Validation technique adoption

Table 15 and section 4.4 above show the justification for the mixed method selection, and in order to ensure a credible and valid outcome, this research has adopted the most suitable three of the aforementioned validity techniques at different stages of the research:

1. Content validity was utilised throughout the stages of literature review which includes interview and survey questions preparations.
2. Internal validity through triangulation has been used by:
  - a. Evaluating, and comparing some experts' opinion (qualitative findings) about customers through survey questionnaire (quantitative research).
  - b. Conducting second interviews with another member of staff of earlier interviewed companies.
  - c. Member checks/ respondent validation i.e., interview transcript review by some of the participants.

And finally, in order to validate the quantitative findings:

3. The external validity was used to ensure generalisability (Nunan, 1999; Rowley, 2002; Drost, 2011). Some of the experts' opinion (qualitative research findings) directly concern customers, and since they have not been directly obtained through these customers, it was necessary to directly seek their opinion, from a different source, and through a different technique (quantitative research method) to avoid bias. In this instance, the survey

involved a sample of UK online customers over the age of 18. The 2015 bulletin of the Office for National Statistics showed that there were 29,868,000 adults in the UK with access to the Internet (78% of the adult UK population) and that 76% of them shopped online. A sample of 1185 adults was obtained for the present survey, which was judged to be more than adequate in that it provided a margin of error of less than 3% and provided a 95% confidence level. See section (see section 6.1) for a detailed information.

To provide findings that could be generalised to UK online customers, an electronic survey was conducted with responses obtained from different parts of the country to obtain a geographical spread of data. However, sampling the entire population of a nation would be prohibitive, so in order to generate an acceptable result, it was important to reach out to as many people as possible via representative sampling, as justified in section 4.5.4.1.

#### **4.7 Summary of the chapter**

This chapter shows the author's understanding of research methodology and its components (the research method and the techniques), and how the review and critical study of different philosophical views, alongside the respondents identified (through the aim of the research and the literature), resulted in the selection of a pragmatic approach as the most applicable philosophical stance, and a mixed method of qualitative and quantitative research as the appropriate research method through interview and survey, respectively. The chapter explains sampling, shows and justifies reasons for the adoption of different sampling techniques for different respondents, identifies the number of respondents, and the situation surrounding the data collection. In addition, the chapter explains reasons for a semi-structured interview across qualitative respondents, alongside the adoption of an electronic survey for customers. The data collection, analysis processes and validation techniques were also described.

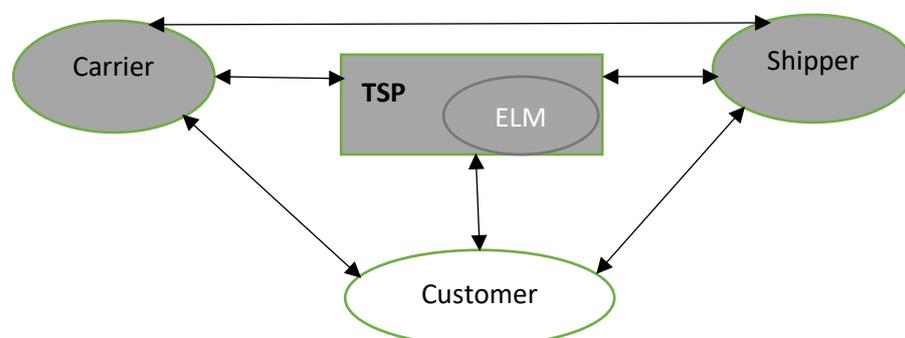
The next two chapters will explain in detail the qualitative analysis and quantitative analysis, respectively.



## 5.0 Qualitative Data Analysis

### 5.1 Introduction

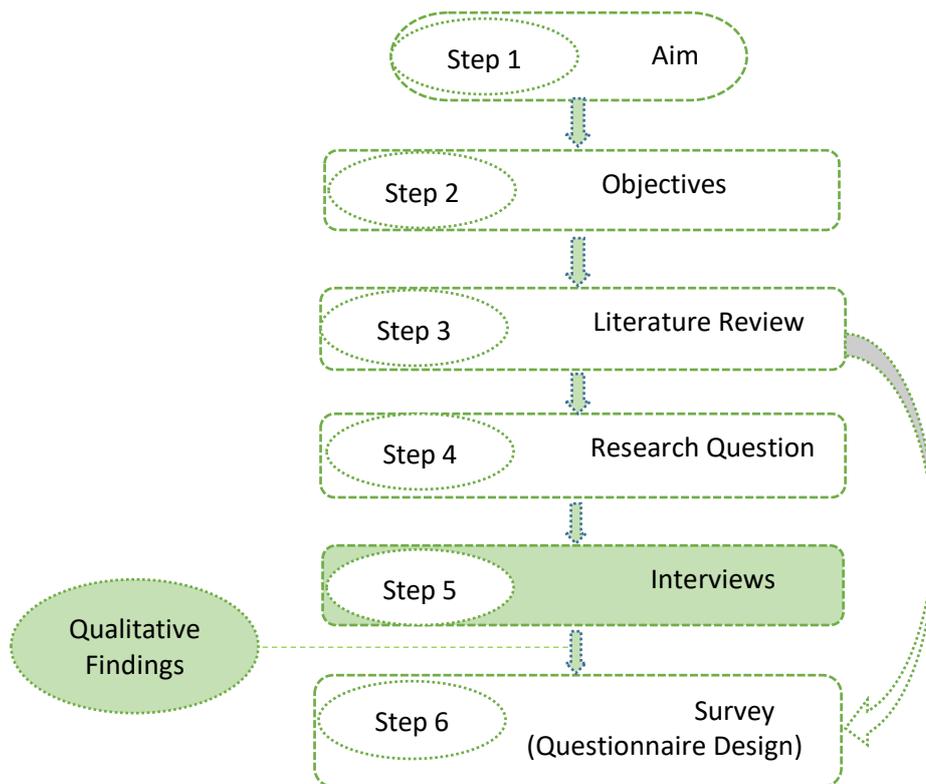
This chapter examines and analyses four experts' views and opinions as highlighted in Figure 34 below on the literature findings, using thematic analysis. Readers will be taken through identification of the factors and players responsible for the drive for a same-day parcel delivery service and the motivations for their actions. It goes on to investigate what experts feel about the introduction of same-day delivery to the retail business, and provides experts' opinions about customers' delivery preferences and their desire for the service. It also reveals the roles that technology and collaboration can play in attempts to design a same-day delivery platform, alongside identification of the likely challenges, and hypotheses to be tested.



**Figure 34: The interrelationship of the triad with the customer.**

#### 5.1.1 The research design

Bearing in mind that the entire focus of this research work is to achieve the main aim, all sections of the project have been developed in a hierarchical format as shown in Figure 35 below to depend on one another, in order to build up and satisfy the main aim and objectives.



**Figure 35: The mixed method qualitative research process.**

### 5.1.2 Analysis

The interview transcriptions from the groups were compared with the aid of a variety of parameters to determine the data within these parameters. Text searches and text frequency queries were conducted to identify frequently occurring themes and related meanings, where results are displayed in the format of context, a word tree and a summary list.

Text search queries were used before and after coding all data, as they help in the analysis procedure by using some of the newly discovered themes, which helps with additional coding deemed relevant by the researcher, and to discover other relevant ideas that arise naturally.

The analysis resulted in five main themes as shown in the table 22 below.

Themes	Codes
Competition	Factors driving same-day, demand for same-day, competition
Pressure	Business solutions, changing business focus, competitive strategy, need to be proactive, pressure, and the need to innovate
The need to collaborate	3PL, collaboration, innovative technology, integration, and partnership
Volume	Volume, consolidate, demand, and hub-and-spoke
Delivery preferences	Delivery types, failed delivery, and home delivery.

**Table 22: Themes and Codes.**

Note that the two words, partnership and collaboration, are used by respondents in different forms or are used interchangeably, and this prompted the author to investigate and understand how they conform to the aim of the research work. They are seen at different stages in this analysis, and based on the interviews, the definitions below emerge.

**Collaboration:** the coming together of two or more individuals or organisations in an open or inclusive process to resolve common problems that are of concern to them, but which are beyond the control of an individual. In this case, autonomy is retained by each participant and they are not legally bound by their actions.

**Partnership:** a form of contract between two or more organisations to combine assets and carry out business activities for profit and loss sharing; they are legally bound by both individual and joint obligations.

Below is a quick reminder of respondents and their sizes where required.

Respondents	Size	Respondents	Size	Respondent	Respondent
Carrier 1	Large	Shipper 1	Large	TSP 1	ELM expert
Carrier 2	Large	Shipper 2	Large	TSP 2	
Carrier 3	Medium	Shipper 3	Large		
Carrier 4	Medium	Shipper 4	Medium		
Carrier 5	Medium	Shipper 5	Medium		

**Table 23: An Overview of the Sizes of the Respondents**

It should be noted that some of these findings directly concern customers, and since they have not been directly obtained through these customers, it was necessary to directly seek their opinion to avoid bias. The sections below show the analysis in details.

## 5.2 Competition

Respondents have argued that ever since customers unconditionally embraced online retail, e-retail and parcel delivery have continued to grow, and TORs have utilised the opportunity to intensify their competitive effort. This has resulted in disruption in the industry, especially on the part of the carriers, as the market ceaselessly changes its business focus and direction, e.g. the transition from 4-8 days for standard delivery to the click and collect service, and the same-day delivery service by Amazon and Argos.

### 5.2.1 Competition strategy from top online retailers (TORs)

Until recently (2012 to date) when same-day delivery was introduced to the B2C market, respondents believed same-day delivery had always been a B2B service that was deployed for time-critical parcels, and that it would usually attract a premium. It was seen as a point-to-point (P2P) service that required the dedication of a vehicle, without volume shipping, and would be expensive to run.

<i>ELM expert</i>	<i>It is usually a delivery service commonly used in the B2B setting. (ELM expert)</i>	<i>Same-day delivery will usually be on a special demand with a lot of premium to be paid (ELM expert)</i>	
<i>Carriers</i>	<i>Most of the speedy delivery requests are for business purposes, except a few important ones from customers... (Carrier 1)</i>	<i>There is no delivery success without volume shipping, except for time-critical parcels that attract a special premium. (Carrier 2)</i>	<i>I will explain it as a time-critical form of delivery that is usually patronised for business purposes. (Carrier 3)</i>
<i>Shippers</i>	<i>If same-day becomes commonplace, the value attached to speedy delivery/time critical parcel is worthless, and where will the profit margin come from? (Shipper 5)</i>		

Same-day delivery can therefore be explained as an old and existing B2B delivery system that has just been introduced to online B2C retail business by the TORs, as one of their new competitive strategies. In another sense, it can be explained as the TORs taking advantage of the growing adoption of e-commerce, through the rising frequency of online shopping, by using their deep-pocket approach and reinventing an old service differently, but in a way that is difficult for others to imitate, i.e. e-commerce has resulted in a rising number of small parcels being ordered, and an increasing demand for speedy delivery. All these are opportunities seized by the TORs to introduce same-day delivery to the B2C market, and this has been referred to by respondents as a radical or offensive competitive strategy, which would require a huge investment by other players to respond to.

<i>Carriers</i>	<i>Shippers are to blame for the increase in demand for same-day delivery, and this can be traced to the boom in e-commerce. (Carrier 1)</i>	
<i>Shippers</i>	<i>So I think the drive for it is competition by the giant online retailers. (Shipper 4)</i>	<i>I will simply refer to it as a radical competition approach amongst large online retailers who would stop at nothing to champion the market. (Shipper 5)</i>

In addition, it was explained that TORs are in a race to dominate the market and because they are privileged and also benefit from a pool of resources, they have continued to explore and invest in technology and vertical integration for competitive advantage. It is

through these they try to make same-day delivery service one of their strategies to compete, and they would stop at nothing to dominate the market, especially as delivery speed has become a key factor in customers' purchase decisions.

<i>Carriers</i>	<i>In the real sense of it, there are no demands for same-day market, except that it is being pushed by top e-tailers. (Carrier 2)</i>	<i>My submission on this is that Amazon started pushing for this to dominate and disrupt the market using a radical delivery strategy that is difficult to imitate. (Carrier 4)</i>	<i>Customers are not responsible for this, but the retailers are, particularly the giant players who have recently devised this as their new way to compete. (Carrier 5)</i>	
<i>Shippers</i>	<i>...the major factor driving increasing demand for same-day delivery is competition amongst retailers, and the responsibility would in my view be placed on the top online retailers. (Shipper 3)</i>	<i>...since it is not one of the demands by customers, but a competitive strategy, it is being competition driven, rather than being customer driven. (Shipper 3)</i>	<i>In recent time, only two companies have come out boldly with attempts for a same-day courier system, i.e. Argos and Amazon. I think this is a form of online retail competition between the two large players. (Shipper 4)</i>	<i>I've heard it is a new delivery service that Amazon intends to invest in as one of its competitive strategies. (Shipper 2)</i>

Respondents further argued that TORs plan to make the same-day delivery service a competitive strategy, simply because they can afford to invest in the required infrastructure, and because they benefit from volume purchase discounts, through which they cover or subsidise delivery costs.

<i>Carriers</i>	<i>This could be referenced to speedy delivery as being a target competitive strategy that has resulted in a huge technology infrastructure being invested in by large online retailers. (Carrier 2)</i>	<i>It is also all over the internet that a huge technology infrastructure is being invested in by the giant online retailers. (Carrier 4)</i>		
<i>Shippers</i>	<i>We have invested in it, made the cost highly attractive and it's been positive. (Shipper 3)</i>	<i>...and because we have the ability, and the required infrastructure, we have made it a value added service. (Shipper 3)</i>	<i>...in most cases, large retailers benefit from volume purchase discounts from suppliers, and this has helped them compete with the cost or free delivery charges. (Shipper 4)</i>	<i>Large retailers enjoy a large rebate through volume purchase, and can spread the rebate on to reduce costs and delivery charges in order to compete. (Shipper 2)</i>

However, there is a general view that even though customers now shop online more frequently, they would not pay a high premium for express delivery services, except for high-value goods that are urgent; a willingness to pay a premium can also be dependent on a customer's economic status and their geographical location. Respondents therefore argued that since customers would give preference to speedy deliveries, and are not willing to pay premium, it is unlikely they would patronise a same-day delivery service unconditionally, except it was offered as a free service or at a near-zero charge.

<i>Carriers</i>	<p><i>...customers wouldn't pay for express (next-day) delivery except if it was an inclusive package by the retailer.</i></p> <p><i>Different economic situation or customers' geographical location can also influence willingness to pay for the service (Carrier 5)</i></p>	<p><i>Although customers have become frequent online shoppers, they still want free delivery services, and if same-day delivery is not made affordable or a free service, it will struggle amongst other free delivery services. (Carrier 3)</i></p>	
<i>Shippers</i>	<p><i>Since customers wouldn't unconditionally pay for speedy deliveries, they should not be linked to the drive for same-day delivery. (Shipper 1)</i></p>	<p><i>Customers have become regular online shoppers, but when such an item is not highly valued and not very important, they would not pay an additional quid for delivery (Shipper 3)</i></p>	<p><i>Experience has shown that customers would not pay a high premium for speedy deliveries, when they can get free next-day and standard delivery. (Shipper 4)</i></p>

### 5.2.2 Findings

The analysis shows that the increasing frequency of online shopping by customers has resulted in delivery speed becoming one of the major factors in purchase decision-making by customers, which has possibly influenced TORs to introduce a same-day delivery service to the B2C market, and to make it one of their competitive strategies. This is found to be synonymous with the literature findings (Langley et al. 2005, 2006; Comi and Nuzzolo 2016; Lee and Whang 2001) in Sections 2.4.3, 2.5, 2.5.3 amongst other sections, that the increasing adoption of technology by players for business activities and by customers through rising online shopping has resulted in increasing competition among market players, through value added services such as speedy deliveries. Similarly, Goebel et al. (2012) in Section 3.4.2 added that speed and reliability play an important role in consumer purchase decision-making.

The findings, being third-party claims about customers, the hypotheses below and other relevant analyses will be tested in the next chapter to confirm whether or not frequent online shopping has influenced customer desire for speedy delivery, the frequency of

patronage, conditions of patronage, and under what conditions or circumstances will an additional premium be paid.

*H1: The more customers shop online, the more enthusiastic they are about speedy delivery.*

Respondents argued that TORs may be able to drive affordable speedy delivery services because they benefit from volume purchase discounts, deep pockets, and a wealth of resources and infrastructure. They have, as a result, invested in same-day-delivery services as a radical and offensive competitive strategy that could help them gain control and dominance of the retail market. This argument is synonymous with the literature (Miyatake et al. 2016; Al Smadi, 2009) findings in Sections 2.5.2 and 3.2.5, that large players have benefitted from B2B negotiations to drive volume purchase discounts and reduced operations costs for competitive advantage. It is also in line with Oke et al. (2013) in Section 1.4 that companies with the technical know-how strive to reduce their dependence on partners, and implement technologically driven innovative strategies or vertical integration for enhanced performance.

Respondents expressed the concern that even though TORs now invest in a same-day service, the high labour and operations costs would not allow them to offer a free delivery service. In addition, it has been deduced that although customers have become regular online shoppers with a preference for speedy delivery, they will not pay a premium for speedy deliveries, except when desired, e.g. in urgent and or very important situations, or when driven by economic status and/or geographical location. It is therefore unlikely that customers will unconditionally patronise an express or same-day delivery service that attracts premium charges. This is traced to the literature findings by Savelsbergh and Woensel (2016) in Section 2.5.4 that even though e-retailers have started to invest in same-day delivery strategies, end consumers are not willing to pay an extra premium as many of them do not necessarily require such delivery speed. Lewis et al. (2006) in Section 3.2.6 also found that consumers are sensitive to shipping charges, and that these charges influence their purchase decisions. A similar finding by Cordon et al. (2016) in Section 3.2.7 corroborates this, in that traditional companies are of the opinion that customers prefer to wait a day or two for delivery rather than pay an additional premium.

These being third-party claims or views about customers, it is now necessary to directly investigate them with customers through the hypotheses below, and other relevant analysis in the next chapter.

*H2: The more frequently customers shop online, the less willing they are to pay a premium for parcel speedy delivery*

*H3: The greater the customers' desire for express delivery, the more they are willing to pay a premium charge for high-value parcels*

### **5.3 Pressure**

The analysis reveals that, generally, players feel pressured by the ceaseless competition in the retail logistics industry, and not only from the drive for same-day delivery services. However, one view expressed by some players was a lack of pressure from the drive for same-day delivery services, and in another view some players put forward that they feel pressured, and they have had to review their business approach.

The theme is divided into two opinions, i.e. 'lack of pressure' and 'felt pressure', and are explained from the two perspectives of shippers and carriers.

#### **5.3.1 The lack of pressure**

The majority of the respondents expressed a lack of pressure from the drive for same-day delivery services in the retail market. However, they are of the belief that in the past decade there has been a lot of pressure to constantly review business approaches in the retail logistics industry, which is attributable to the increasing adoption of technology by both customers and players. Respondents in this category put forward that TORs now use their deep-pocket approach for radical competition by investing in new infrastructure, e.g. Amazon's investment in drones for their same-day delivery service, while adding that it would require other players to be equally innovative in order to remain relevant and competitive, as far as same-day delivery is concerned. They warned that care should be taken to react to the changing market, and business models should not be reviewed unless the need for it arises, and these needs are classified as important.

<i>Carriers</i>	<i>Business should be driven by customers' wants; you don't change your business strategy unless it is important. (Carrier 5)</i>	<i>Business strategies should not be revised unless there are critical changes to the market requirements. (Carrier 3)</i>
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It is generally understood that there is always pressure from competition in the retail market, but some respondents have expressed that there is no demand for a same-day delivery service from customers, and therefore they are not obliged to consider the service for their business.

<i>Carriers</i>	<i>...pressure is felt from general retail competition. (Carrier 5)</i>	<i>...even next-day delivery does not get much patronage as compared to standard delivery, let alone same-day. (Carrier 3)</i>	
<i>TSPs</i>	<i>This is because the demand is not there in the market, so they are not under any pressure to worry about introducing such a service (TSP 2)</i>		

Respondents argued further that should there be a need to engage in a same-day delivery service, it will require changes to infrastructure alongside an advanced level of collaboration, where all sectors of the market, i.e. large players and the SMEs can operationally integrate. It was revealed that such a move would require large players to be the initiators, and finding one could be difficult when there is no market demand.

<i>Carriers</i>	<i>It will be a difficult task to get same-day to work for all without a high degree of collaboration, and the collaboration may have to effectively engage large carriers and SMEs. (Carrier 2)</i>	<i>Even if it will work, companies must partner and invest in new technology and some other infrastructure. (Carrier 3)</i>
<i>Shippers</i>	<i>I think such a service would require collaboration, and considering the high-level collaboration that will be required, it will be difficult to find carriers who would invest in it. (Shipper 4)</i>	
<i>ELM expert</i>	<i>...so what actually is critical now is someone has got to take the initiative and whoever takes the initiative has got to take the responsibilities of making the market, hosting the market and attracting users. (ELM expert)</i>	

Carriers 1 and 4 also added that pressure by the TORs to make same-day delivery commonplace is extreme, and that before reacting to the requirements and pressure of the contemporary retail market and new inventions, care should be taken, particularly when a high investment would be required. Stakeholders should also think beyond innovation and be proactive in their operations. This is because the demands of the market have been inconsistent and unpredictable, and, in order to avert the frequent changes to business strategies and models, the need to be proactive is important. They advanced that some large carriers may have all it takes to initiate the service, but Carrier 1 (large carrier) indicated that they will not invest in a same-day delivery service, if there are no assurances of prospects and continuity.

<i>Carriers</i>	<i>...except it is set out to be a premium service, no carrier would consider investing in same-day delivery to become a regular service. (Carrier 1)</i>	<i>No business owner would invest in a service without a high chance of success. (Carrier 5)</i>
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Carrier 5 referenced the different strategies by Amazon to remain at the forefront of the market, and thought that should same-day service become affordable, the competition will be intense and other top online vendors and large carriers may have to react.

Carriers	<i>...and if it appears there are future prospects, other LSPs may work with their TSPs to extend their business models to accommodate the service. (Carrier 5)</i>
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In addition, Carrier 5 put forward that, mostly, general market pressure is not favourable to SMEs because of the financial and infrastructural requirements, but Carrier 5, in some cases, has reacted to pressure through collaboration and partnership with third parties. For example, they cited that in attempts to drive volume shipping, they partner with other carriers.

Carriers	<i>We partner with other carriers to pull volume... (Carrier 5)</i>
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Carrier 1 also added that besides ensuring a wise investment, they are careful to react to market pressure, and are cautious of their competitive actions because of regulatory implications and the knock-on effect it may have on other players.

Carriers	<i>That will be deemed anti-competitive and a huge fine against us. So in choosing any strategy that we use, it has to be in line with the regulation. (Carrier 1)</i>
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### 5.3.1.1 Shippers' perspective

Shippers 1, 3, 4 and 5 also expressed that they have felt no demand pressure for a same-day delivery service, and they do not see the service taking over or outstripping the next-day and standard delivery services in the near future.

Shippers	<i>With regards to a same-day courier, we have not felt any pressure whatsoever from our customers, and I doubt a high volume in same-day demand. (Shipper 1)</i>	<i>I don't see a same-day service taking over from the existing standard and express delivery services, so the business will not likely feel the impact in this regard. (Shipper 4)</i>	<i>Customers will always go for any available service, but in most cases, they choose standard delivery because it is free, so I can't see any pressure for a same-day service, when no one will pay for it. (Shipper 2)</i>
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They also show concerns about the pressure on carriers, and stated that to meet changing specifications has never been easy, but this particular demand for a same-day delivery service appears unachievable for many carriers and shippers.

Shippers	<p><i>Since the demand is not there, and carriers don't have the required infrastructure for such a service, I don't think it is something we should worry about, and no negative impact will be felt on our business after all, neither will there be pressure on us to offer the service. (Shipper 5)</i></p>	<p><i>Until it becomes market driven, and there is demand from customers, then we can start to think of getting involved. But with this current market, same-day delivery is the least of what we will consider to incorporate into our business. (Shipper 2)</i></p>
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### 5.3.1.1.1 Adoption of same-day delivery

In a similar view, Shipper 3 explained that although they do not feel pressured by the need for a same-day delivery service, they decided to engage in the service to remain competitive. They see it as a proactive way of responding to the rising demand for speedy delivery, which has become one of the key factors in customer purchase decision-making. Shipper 3 added that with shippers' direct engagement in the same-day delivery service, there is increasing awareness about its affordability.

Shippers	<p><i>This is simply a highly competitive industry where players need to proactively and innovatively prepare... We have invested in it, made the cost highly attractive and it has been positive, with a record of rising demand for the service. (Shipper 3)</i></p>	<p><i>It will amaze you that many customers no longer walk in to stores like before, they instead treat their purchases as urgent, and place same-day delivery orders that get delivered within 4 hours. This I think is in consideration of the travelling stress, and may be parking in some cities or city centres. (Shipper 3)</i></p>	<p><i>... If we look at the market trend, most especially the online shopping and retail-logistics competition, it is evolving and should be smartly and creatively responded to. (Shipper 3)</i></p>
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## 5.3.2 The pressure felt

### 5.3.2.1 Same-day carriers' (SDCs) views on pressure

In another perspective, the drive for same-day delivery is seen as a proactive and an innovative competitive strategy by the TORs, which has started to put pressure on shippers

and carriers to review their business approach. It has been noted that respondents with this view are carriers who engage in same-day delivery as one of their major delivery operations, i.e. Carriers 2 and 3.

The carriers are of the opinion that the pressure by the retail market has both negative and positive impacts on their operations, the positive impact being that carriers must be innovative and proactive to stay abreast of the competition, while the negative impact is the disruption brought about by changing market demands, changing requirements, and the frequent changes to business focus. An example is the case of Carrier 4, where they put forward that even though the same-day service is not yet commonplace, the business started to feel pressured by a series of new delivery solutions (such as click and collect, local shop delivery, Doodle etc.) from large players (carriers and shippers), and new entrants. Carrier 2 also added that due to rising competition from new entrants, their same-day delivery service may experience some setbacks, especially in London.

<i>Carriers</i>	<i>We also have a high record of B2C same-day delivery customers nationally, but more in the London metropolis, and the problem here is that this service may experience set back with the pressure from companies like Amazon.(Carrier 2)</i>	<i>We do get same-day delivery requests from individual customers, especially the working class with tight schedules, but not as much as from the B2B. (Carrier 4)</i>	<i>...but with the introduction of pick up from local stores, click and collect, Collect Plus, the demand for it (same-day delivery service) is not as high anymore. (Carrier 4)</i>
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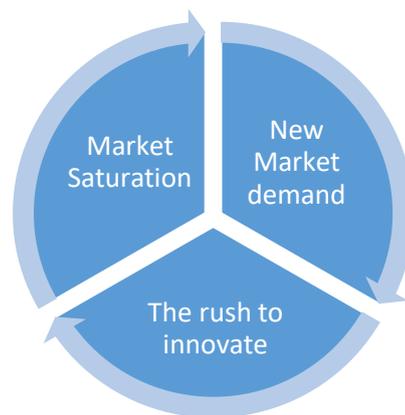
In addition, Carrier 4 revealed that even though the operation of a same-day service is their primary business, the direct engagement of the TORs in same-day delivery through vertical integration has put more pressure on their (Carrier 4's) performance. As a result, they have had to review their business approach and become a subsidiary to a larger player in the industry.

<i>Carriers</i>	<i>...same-day courier is our primary business, but the impact of the recent pressure by the giants in the retail industry has contributed to the company's buy out to become a subsidiary to a TOR (replaced). (Carrier 4)</i>
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Carriers added that, unfortunately, the current market trend has undermined logistics operations, does not favour SMEs, and whoever wants to remain relevant in the industry must be open to collaboration, or be ready to be acquired.

Carriers	<i>Since SMEs are not likely to tick the boxes required to satisfy the changing market, they may be able to benefit through partnership and collaboration. (Carrier 2)</i>	<i>...and in our case, the proactive approach was to put the company up for sale. (Carrier 4)</i>
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Furthermore, it has been pointed out that to make same-day services work, it is necessary to go beyond traditional collaboration to embrace an intelligent technology-driven collaborative system. But as the disruption in the retail market continues, companies may start to give in to pressure, and will have to invest and innovate in directions never before imagined (i.e. radically). For example, assuming the same-day delivery market becomes commonplace and more saturated, new sets of requests will start to flow in from shippers and the market will become flooded with new innovations again. This, according to the author, could be referred to as the market demand impact cycle and is represented in the figure below.



**Figure 36: The market demand impact cycle. Source: S. Lasisi.**

**5.3.2.3 A reaction to the pressure**

It is possible that the financial and infrastructural capability of large carriers has positively impacted on their business strength through vertical integration. This can be explained as the determination by Carrier 2 to review their business approach through a possible

collaboration or integration with other players for network expansion, and for national network coverage.

Carrier 2 explained that they will expand their network strength through collaboration. Even though the expansion project was not primarily intended for a same-day service, with the current pressure from TORs, they've had to plan a review of the business model and they may need to consider a retail B2C same-day delivery service for small parcels. This model, if successfully designed, is believed could allow SMEs to benefit from the advantages of a same-day delivery service, through a vertical integration system that will engage all sizes of business, i.e. large players and the SMEs, in the delivery process.

Carriers	<i>...but with plans in the pipeline to make it more popular and affordable through collaboration that should actively engage the SMEs and large carriers. (Carrier 2)</i>	<i>We have hugely invested in collaboration, wherein we merge, partner and acquire other large carriers, medium carriers and small local carriers and this could be useful for same-day delivery purposes. (Carrier 2)</i>
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Having studied several medium carriers and their geographical coverage, Carrier 2 claimed they continuously engage in negotiations, mergers and collaborations: an approach they've always used to boost their national network strength. Also, with regards to last-mile delivery, Carrier 2 claimed it had started to partner with small local carriers, and expressed optimism about the development of an intelligent network system that it is believed will facilitate all collaboration and integration processes.

Carriers	<i>...through which we are increasing our distribution channels, and we have successfully partnered with medium carriers and are still negotiating with small local carriers who specialise in last-mile deliveries. (Carrier 2)</i>
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It was added that it is believed the successful implementation of the new network system would drive a real-time, seamless and uninterrupted information sharing amongst partners.

### 5.3.3 Findings

Respondents identified two different views about the theme pressure, i.e. the lack of pressure and the pressure felt.

On one hand, the majority of the respondents argued that they did not feel under pressure, and would not invest in the same-day service on the basis that there were no demands from customers, neither were there prospects for a same-day service, in comparison to other delivery services, and also because most of them lack the required infrastructure. They added that the possibility of a same-day service becoming commonplace was bleak, and a feasibility study should be carried out to ensure a worthwhile investment regardless of whether there was demand for it or not.

On the other hand, one of the shippers showed interest in the service, and referred to it as being an innovative response to the increasing preference for affordable speedy delivery by customers, while adding that customers' awareness about the service is growing, important parcels can now be treated as urgent, and the demand for same-day delivery has risen, especially as the shipper is able to deliver within a 4-hour window. Also, small and medium-scale carriers, who engage in same-day delivery as one of their delivery operations, indicated that the direct involvement of TORs in a same-day delivery service could result in them losing some of their same-day delivery customers and they have, as a result, been under pressure to review their business approach through partnership and collaboration with other carriers and retailers. These findings can be linked to the literature (Abshire and Premeaux 1991; Lin and Lee 2009; Bretthauer et al., 2010; Wee et al., 2010; Trkman et al., 2015; Tanco et al., 2015) in Sections 2.2.3, 2.5.8 and 2.6, where the pressure of a same-day service is seen to be linked to the actions of TORs who are making a same-day delivery service a radical competitive strategy.

There is, however, the general opinion that because of the complexities and the high-level infrastructure required for service implementation, only a few players with the ability to vertically integrate or initiate advanced-level collaboration can implement a same-day delivery service.

## 5.4 The need to collaborate

This section is divided into two as shown below:

1. The impact of collaboration on the retail logistics industry.
2. The experts' suggested approach for the development of a same-day delivery service.

All respondents acknowledged collaboration and partnership as a key approach for growth in the current retail logistics sector. They expressed that collaboration comes in all forms, and the size of the business determines the type and level of collaboration, the role played, and that most of the successes in today's retail logistics businesses are linked to collaboration.

### 5.4.1 The impact of collaboration on the retail logistics industry

The responses gathered corroborate the claims encountered through the literature and professional/trade press, that recently the retail logistics industry has shifted focus from stand-alone business to a cooperative approach. This goes further as one of the primary competitive strategies by retailers is logistics, and also carriers have begun to use speed and reduced costs to attract clients and shippers. It is unlikely that an individual approach will satisfy the demands of the competition, and as a result, the stakeholders (carriers and shippers) have embraced partnership and collaboration for their delivery services. Most retailers now either engage in vertical collaboration or partner with 3PL for their logistics operations, while a similar approach of vertical collaboration can be seen amongst carriers, for shared resources and to drive volume for freight capacity utilisation. It has also been observed that collaboration has helped most carriers mitigate the issue of empty backhaul, and this has consequently improved their profit maximisation and further helped in discounting shipping costs for their retail partners and customers.

<i>Carriers</i>	<i>I think one major reason for collaboration is profit maximisation through the drive for volume. (Carrier 2)</i>	<i>Collaboration in the freight industry has become a necessity for profitability. (Carrier 4)</i>
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The ELM expert explained how ELM can be beneficial to all forms of logistics collaboration, by describing ELM as an evolving electronic collaborative platform, with an open

framework that is modifiable to suit different business needs. The expert defined ELM as a hybrid collaborative system of horizontal and vertical collaboration that supports physical logistics facilities for freight and technology-based collaboration, whilst also providing a low-cost channel for information flow between parties.

**5.4.1.1 ...for nationwide coverage and improved flexibility (E-Theme)**

The ELM expert explained that same-day intercity delivery, although difficult to achieve, requires a robust framework through which multiple collaborative avenues can be considered, in order to build synergy between several players of different sizes. Putting this in place will attract good volume to the various destinations and drive cost reduction. It should be noted that the UK logistics system is highly regulated, so to have a consortium of LSPs in this regard, a platform must be carefully set up to either address the B2C or B2B for compliance reasons.

Many benefits have been attributed to partnership and collaboration, as having a partner helps to fill gaps in resources and services in each partner organisation. It is interesting to note that through collaboration and partnership, the delivery challenge experienced by carriers and shippers for a long time in the rural community is being reduced, without attracting additional investment from stakeholders.

Shippers	<i>I think the partnership has been a phenomenon to our business and has helped us with improved flexibility towards responding quickly to the changing market, while collaboration has helped us through an expansion of our coverage. (Shipper 1)</i>
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Through collaboration, firms have access to a geographically spread hub/distribution network with reduced risk, and this can be achieved without the need for significant investment. Furthermore, collaboration has helped in making provision for a supplementary supply chain in regions where stakeholders are not physically present, without requiring a full commitment to open new distribution centres or stores.

Shippers referred to the role that partnership plays on their businesses as “huge”. They explained that the retailer and carrier partnership is key to the retail logistics business for improved flexibility through which all stakeholders benefit.

Shippers	<i>...partnership has really worked for us in terms of flexibility for our delivery services. (Shipper 1)</i>
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It was observed that with improved efficiencies and reliability in stakeholder services, these shippers have recorded sales increases, which imply repeated patronage (customer loyalty) and likely referrals. They also attributed the increase in customer satisfaction to the improved level of professionalism and flexibility derived through 3PL partnership. Below are scenarios from the respondents:

#### **5.4.1.1.1 Respondent-related scenarios**

Shipper 1 uses its own logistics service for local delivery services, while long distance delivery services are carried out through a partnership with 3PL. Shipper 1 expressed that the partnership with 3PL was very beneficial to them as it provided wider coverage capabilities. With the partnership, the shipper benefits from the 3PL's parcel consolidation to drive economies of scale for lower/reduced freight costs. They added that when selecting 3PL partners, care should be taken to ensure nationwide coverage and their ability to drive economies of scale for their delivery operations. It is as a result of this that Shipper 1 partnered with large carriers with records of success in terms of coverage, volume and delivery speed, which has helped them with customer retention and flexibility in handling the varied delivery requirements of their customers.

<i>Shippers</i>	<i>Partnership, to us as a shipper is a welcome development particularly for coverage expansion. (Shipper 1)</i>	<i>...partnership has really worked for us in terms of flexibility for our delivery services... (Shipper 1)</i>	<i>...collaboration has helped us through the expansion of our coverage. (Shipper 1)</i>
<i>Shippers</i>	<i>This has further helped us reduce the operations cost of reaching out to rural communities where our service may ordinarily struggle, or instances when we are unable to satisfy a timely delivery commitment. (Shipper 1)</i>	<i>...I think the partnership has been a phenomenon to our business and has helped us with improved flexibility in responding quickly to the changing market. (Shipper 1)</i>	

Additionally, Shipper 1 has, through collaboration with other shippers, benefited from an increased number of distribution centres and a wider network, which has brought them closer to customers than they could achieve individually. This implies that parcels can be dispatched from the nearest store or distribution centre to the delivery point, thus reducing operations costs. Above all, they expressed satisfaction with the flexibility achieved through partnership and the ability to respond to the changing market.

In another instance with Carrier 2, where they have given consideration to B2C same-day delivery on their design of a collaboration process, it is believed the business will benefit from a wider coverage, gain access to more resources, and become more flexible in its delivery services.

<i>Carriers</i>	<i>3PL partnership helps retailers with flexibility and nationwide coverage, the result of which is customer retention. (Carrier 2)</i>
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Carrier 4 put forward that although its services cannot individually extend beyond the confines of the city, with a partnership they have benefitted from nationwide delivery by engaging in first and last-mile parcel collections and deliveries.

<i>Carriers</i>	<i>Through this, we have enjoyed improved profitability and access to infrastructure. (Carrier 4)</i>	<i>...collaboration has helped improved network coverage and reliable delivery speed. (Carrier 4)</i>
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#### **5.4.1.2 ...for customer retention**

Shipper 1 expressed that they have partnered with carriers primarily to stay abreast of the competition. Ordinarily, this shipper’s green van is not used for a ‘long distance single parcel’ and fast delivery services due to cost implications. However, Shipper 1 partnered with 3PL for longer distance and fast delivery services, through which the shipper believes it can retain customers.

<i>Shippers</i>	<i>Partnership has helped us to keep a lot of customers, especially in relation to next-day deliveries. (Shipper 1)</i>
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Shipper 3 partnered for same-day delivery services in order to attract and retain customers. The shipper explained that although the partnership has since been suspended, due to coverage and infrastructural constraints by the carrier, it benefitted from increased sales and customer retention during the partnership period. It added that although there is currently no partnership for the purpose of a same-day service, a future partnership cannot be ruled out, depending on the kind of package the carrier offers.

<i>Shippers</i>	<i>Our partnership with Shufl for same-day delivery was good...most especially to attract and retain new and old customers who want, and would pay for, speedy parcel deliveries. (Shipper 3)</i>
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In addition, respondents have through partnership benefitted from cheap deliveries that are derived through consolidation, and this has helped them remain competitive and gain customer loyalty. Shipper 5 explained that they are in partnership with more than one carrier, as a way of negotiating the best delivery deal, in order to reduce any monopoly by carriers and stay in control of the market. As a result, they have put in place an automated

comparison system that selects the fastest and the cheapest available delivery options for customers.

<i>Shippers</i>	<i>The partnership has brought about a reduction in operations costs over the years, and has helped immensely in improving competitive strength for customer retention. (Shipper 4)</i>	<i>...through partnership, we have been able to offer our customers the cheapest delivery price, which has yielded increased patronage. (Shipper 5)</i>
<i>Shippers</i>	<i>With partnership in place, our business has benefitted from customer loyalty. (Shipper 5)</i>	<i>We have also partnered to add flexibility to our retail delivery service. (Shipper 2)</i>

### 5.4.1.3 ...for volume shipping

A major factor driving success in parcel delivery is volume, and in order to drive volume, carriers collaborate for shared resources, through which they benefit from consolidated parcel delivery.

Carriers have expressed that their ability to collaborate and partner with small and large firms has greatly contributed to their profitability, through parcel consolidation. This has led to a network of carriers, through which a huge volume of parcels are consolidated, and has resulted in most of their trucks being more than half full per delivery trip. Furthermore, they established that the consolidation has helped to eradicate the empty backhaul problem for both small and large stakeholders.

Carriers believe that through consolidation they have been able to reduce the number of delivery trucks on the road and, as a result, overall operations costs have reduced, and this has further helped them to flexibly react to changes in market demand, without incurring additional costs.

It has also been revealed that even medium and small shippers who, in some cases, are unable to meet the collaboration's requirements have enjoyed the benefits of parcel aggregation through partnership with the 3PLs.

<i>Carriers</i>	<i>Carriers partner with many shippers to drive volume and collaborate for consolidation. (Carrier 2)</i>	<i>We collaborate for volume shipping, through which the problem of poor freight capacity utilisation is reduced. (Carrier 2)</i>	<i>Intercity delivery requires a huge infrastructural investment to drive volume. (Carrier 4)</i>
<i>Carriers</i>	<i>Large firms with their own logistics unit collaborate and consolidate to drive volumes, and also share resources such as the hub, transport fleet, warehouse and manpower/labour. (Carrier 5)</i>	<i>When parcels are consolidated, problems of empty freight are reduced. (Carrier 3)</i>	
<i>Shippers</i>	<i>...we collaborate with other retailers to drive volume for reduced operational costs and improved customer service. (Shipper 3)</i>		
<i>ELM expert</i>	<i>For any platform to work, you have to have sufficient transaction volume to justify it exists. (ELM expert)</i>		

## 5.4.2 Opinions on the possibility of a same-day service

There are different perspectives from respondents on the possibility of the successful implementation of a same-day service and its likely challenges.

Three themes are identified to possibly drive a same-day success possibility; collaboration, technology and innovation, and are explained below.

### 5.4.2.1 ...through an agent-based collaboration platform

The ELM expert argued that the two ELM forms, i.e. open and closed ELM could be helpful in the design of a collaborative platform that will accommodate businesses of all sizes, especially when collaborating for an intercity same-day delivery. Out of these platforms, the agent-based open platform was suggested. An agent-based system simulates the actions and interaction of autonomous individuals or organisations, for shared or combined resources. The system has the capacity to pull together the required infrastructure from

participating members for a significant reduction in investment cost from each member. It helps meet demand and supply with no bounds, and has the ability to dynamically adapt to changing requirements, mediate between parties and regulate the marketplace.

An example is given as Anyvan.com where no restrictions are placed on users. It is a reverse auction internet marketplace that supports both B2C and B2B, with the concept to minimise unused haulage or delivery space. In this case, customers list items to be shipped with detailed information such as location, size, maximum price and any flexibility in timescales, while shippers bid on these requirements in a reverse auction setting.

<p><i>ELM expert</i></p>	<p><i>The platform itself should be a neutral one, and should be managed by the TSP. Have you seen Anyvan operation through open market place? If you look at that, it could be a good example. It also works for C2C. If any marketplace platform is set up, there would be a need for publicity, popularity, etc. (ELM expert)</i></p>
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In another instance, the expert suggested the use of a closed ELM system, where there is an existing consortium of shippers and carriers, with a clearly outlined operational model, business model and data ownership, for visible and efficient planning. It should be noted that the closed ELM is classified into three types: private, shared and collaborative. In this case, the ELM expert recommended the collaborative type as being suitable because it can proactively seek benefits from stakeholders’ horizontal collaboration, and also establish synergy in the distribution network. However, in order to achieve this, some companies will have to take the initiative as the community leader, identify potential partners and decide on the collaboration design, and the business and operational model.

<p><i>ELM expert</i></p>	<p><i>I want to argue that you have to define the operational model, business model, ownership before you can access the return investment. But I would say in your case, some companies have got to take the initiative like a leader of the community. (ELM expert)</i></p>
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#### 5.4.2.2 ...through partnership with news agencies

A form of partnership between newsagents and retailers, e.g. the Amazon and Smith News partnership approach was suggested as another smart approach that could drive intercity same-day delivery at a reduced cost.

It was noted that the ambition of Amazon to make same-day delivery commonplace has made them take several innovative steps, such as the ongoing drone deployment trial, a partnership with Smith News and deployment of their own logistics system. However, since Amazon has no local stores across the country, a realistic approach for national coverage was the partnership with the newsagents due to their frequent deliveries to the high street.

<i>Carriers</i>	<i>If you look at what Amazon has done in the UK with a same-day offering, they use a company called Smith News, the newspaper agent; a customer orders today, they pass it on to Smith News, Smith News gets it delivered to newsagent and customers pick up from newsagent. (Carrier 1)</i>
<i>TSPs</i>	<i>Amazon obviously uses Smith News network to deliver parcels same-day. (TSP 1)</i>

They went on to suggest that studying the newspaper agents' (Smith News) delivery model is innovative and could be a worthwhile approach to intercity same-day delivery. They expressed that transforming this model will also require a lot of investment, but may not be as costly as developing a brand new collaboration system/platform. However, if their partnership becomes stronger, Amazon may have to situate distribution centres near Smith News' distribution centres just like the case of John Lewis and Waitrose, where their distribution centres are strategically located beside each other. This opinion further led to the thought that because the delivery model will not require as much investment as it would with a new collaboration system, it may attract partners quickly, and at the initial stage, home delivery may not be the point of focus; instead, parcels will be delivered to local stores where customers can easily collect them. However, and as time goes by, this model can be improved upon for home delivery.

TSPs	<p><i>...companies like Amazon and Argos are retailers that are able to but not on the delivery network (...) they own lots of stores across the UK and are able to support and offer same-day delivery across the UK most especially with services like shutl. Amazon obviously uses Smith News network to deliver parcel same-day. So I think the growth for the same-day delivery will come from what network truly exists and in a sensible cost model because it requires additional vehicles or dedicated vehicles on the road, and that is a huge cost. The newspaper agent is another interesting industry to explore because they deliver within hours and will be interesting to work with (TSP 1).</i></p>
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#### **5.4.2.3 ...through innovative collaboration technology**

TSPs put forward that although the design of a same-day delivery service will require a large investment, recent information technology developments and designs are the likely solution to advanced and innovative collaboration platforms for an affordable same-day delivery service.

TSPs are of the opinion that achieving a commonplace intercity same-day delivery service will be difficult through traditional collaboration, unless there is the adoption of high-level information technology. They explained that collaboration in the retail logistics industry has hugely benefitted from technological advancements, which have facilitated reliable next-day delivery and information updates. In line with the above arguments, TSPs highlighted that with IT infrastructure in place, data integration and demand aggregation are easily achievable, and larger profits are achievable when warehouses of the collaborating partners are in close proximity to each other, e.g. the case of John Lewis, Waitrose and Amazon in Milton Keynes, UK. They added that in the case of same-day intercity delivery with nationally dispersed warehouses, the infrastructural requirements are far beyond what the current systems (existing distribution platforms) hold. High-level data management is required, but it could be achievable through a complex and intelligent IT system, where different carriers' and shippers' logistics systems will be fully integrated for demand aggregation and intelligent freight mapping. Such systems would make use of track and trace tools that monitor parcels and their transit progress, by using the RFID and

transponder. In the case of delays or missed deliveries, the track and trace system alerts users of the situation and automatically reschedules delivery for the next available journey, whilst also updating customers about the estimated delay in delivery time.

<p>TSPs</p>	<p><i>...it goes back to: can you aggregate demand? For example if you have a very big warehouse, e.g. in Milton Keynes you have Amazon and John Lewis together, here you can aggregate demand together, so that's more of data integration. But with technology, it's easy to do, but you will have to get someone to invest. So if I am able to get trucks full, then that's making me a lot of money otherwise, it won't be profitable and that is where you will come in i.e. capacity utilisation. I know IT can help with that, which is where we have capacity utilisation. This could work for same-day delivery with the design of a high level data management system that makes use of intelligent and sophisticated technology equipment. (TSP 1)</i></p>	<p><i>...technology will help intercity same-day delivery through innovative collaboration, alongside data or information aggregation from large retailers with national presence or with strategically located regional distribution centres. (TSP 2)</i></p>
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Furthermore, they stated that an intelligent system could be designed to incorporate order processing management, with the use of order catalogues, to support inventory management. In this case, all parcels are aggregated and intelligently matched to the freight en-route. The system intelligently aggregates the truck loads and the estimated available spaces through to the point of sorting, rerouting and delivery. With this data management system, new orders can be mapped and matched with the available space, using the route monitoring system from the shipping location to the delivery postcode to determine eligibility for same-day delivery. This will make it possible to incorporate same-day parcels with next-day or standard-delivery parcels that are ready for delivery, thereby making intercity same-day delivery a possibility through a complex IT system that will require someone to invest in it.

TSPs	...it is a possibility only when there are investors, possibly large retailers and carriers that are willing to engage in a technologically driven innovative collaboration. (TSP 2)
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**5.4.2.4 ...through intelligent innovative collaboration**

TSPs explained that most of the success stories within the logistics sector have been linked to information technology, and the retail logistics industry has gone beyond traditional collaboration to embrace innovative collaboration.

Several avenues have been explored and collaborative technology has been identified as the key to logistics efficiency. Also, information sharing has played a huge role in the success of many businesses, and with a good IT system in place, unquantifiable benefits are achievable.

Carriers and shippers are known for their multiple relationships and constant changes, which have left their logistics operations in flux and, as a result, they will have to contend with different policies, environmental factors and regulations, which vary depending on the kind of contract. All of these have left logistics TSPs with no alternatives but to closely monitor the market for new inventions that will address the situation.

Due to the dissimilarities in these different relationships, TSPs have come up with multiple collaborative solutions, since a one-size-fits-all approach does not apply. These solutions have presented robust collaboration features that bind all kinds of network-enabled collaboration services into a single platform without restrictions.

The need for innovative collaboration is very important to meet these changing requirements, which has resulted in firms having to deal with advanced technologies. One example is the intelliTrans-icargo logistics platform that supports freight and logistics operations for multiple players through various modes. It adapts to changing freight conditions and dynamic route planning of cargo and vehicle, and has an infrastructure system that possesses a databank for real-time services, resource and information sharing from and between different stakeholders. It also has features that support multimodal freight, parcel consolidation, carrier collaboration, end-to-end real-time tracking, dynamic

and intelligent transport re-planning arising from real-time tracking information and low-cost transportation.

TSP	<i>I sent a file to your mail about intelliTrans-icargo. It is one of our new designs for intelligent logistics for collaboration of multiple players, and across various transport mode. I am sure it will be a good material for your work. TSP1</i>
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Another solution is the development of an accelerated ‘time-value electronic collaborative platform’ that supports a multimodal logistics community through which firms of different sizes can connect and collaborate for different logistics operations. This platform drives transparent operations amongst collaborators, and manages information flow with real-time tracking features and messaging systems.

TSP	<i>There is this new platform, accelerated time-value electronic collaborative platform. Both multimodal and intermodal services are coordinated here. It is a transparent collaboration platform, where you are able to negotiate deals before agreement. It is an intelligent system that supports real-time tracking, information update through automated messaging. TSP2</i>
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Another recent development is the integration of the Freight Forecast API into a collaboration platform to help collaborators with optimized inventories and transportation forecasts.

TSP	<i>Another system is the freight forecast API that can be integrated into an electronic logistics collaboration system, helps collaborators with optimized inventories and forecast transportation, and drives economies of scale. TSP 2</i>
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In general, more benefits are derivable from collaborative technology.

#### **5.4.2.5 ...through delivery management technology (DMT)**

TSPs described DMT as an agent-based logistics collaboration system that operates through an open platform. It operates primarily as a mediator, between shippers and carriers,

through which the infrastructural investment requirements from the parties concerned are reduced. It helps resolve the issues associated with traditional collaboration, where a bilateral relationship is usually desired. In this case, the collaboration could be regarded as independently based, as part of a strategic relationship, with the participants collaborating minimally. This could also be referred to as a decentralised and ubiquitous system with interoperable features that support different kinds of platform. The system uses technology to map and assign parcels between shippers and carriers, where a batch of parcels ready for collection and delivery are received by the system and mapped to carriers. This system uses some API integration with Google Maps for auto-delivery price generation, alongside integrating different carriers' facilities for parcel consolidation and to drive improved freight capacity utilisation.

<i>TSPs</i>	<i>The DMT maps parcels between shippers and carriers, and also uses API from Google map, to help in delivery price generation. (TSP 1)</i>
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Through this platform, technology drives the volume and it has, over the years, processed different parcel delivery requests, ranging from slow to speedy, and next-day and same-day delivery. Although this system could support a same-day delivery service, it will be expensive to implement, and can only be profitable with assured shipping volumes.

#### **5.4.2.6 ...through a vertical integration system**

Carrier 1 argued that intercity same-day delivery could be possible through collaboration with a carrier that has the capability and already possesses the required infrastructure. Carrier 1 referenced Carrier 2 alongside itself as being carriers in the UK with such ability and tenacity, and that as Carrier 2 is fully committed to a same-day courier service, it has already engaged in a series of collaborations and partnerships.

<i>Carriers</i>	<i>...so to create volume, we find people like Carrier 2 (replaced) as a retail logistics provider buying up a lot of the regional same-day business to try and create that differentiator and a differentiator in any organisation collects and delivers parcels and mails in volume. (Carrier 1)</i>
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Carrier 2 also argued in line with Carrier 1 that the company is currently involved in a collaboration review project, which could make same-day delivery a possibility. Although the respondent failed to mention how much progress had been made, he argued that same-day delivery may, in the near future, become commonplace through collaboration, could be cost effective and would require less effort, compared to the current situation. He added that the company, being a leading same-day courier company, has embarked on vertical integration through partnership, merger and collaboration with medium, small, and local freelance carriers. Partnership with local freelance carriers is usually a zero-hour contract with carriers, which specialise in speedy or same-day delivery in areas where Carrier 2's delivery infrastructure is not strong. He added that there have been ongoing plans to partner with the national rail service provider (UK Network Rail) as a way to bolster their speedy delivery infrastructure. Carrier 2 stated that their plans to increase the number of distribution centres in the country has started to pay off through the integration process that formed a single unit for seamless and uninterrupted information flow, where partners and/or collaborators share resources. The respondent believes that as soon as the integration process is completed, and the service is fully functional, it may become more attractive, and become an affordable nationwide B2C same-day delivery service, which may likely be the first of its kind from a UK national carrier.

It is worth noting that in order to be creative in its approach, Carrier 2 did not embark on a novel infrastructural investment, but intends to achieve these plans through a collaboration process that is believed would save time, costs, manpower and infrastructural investment. It is fascinating to note that this ongoing collaboration project by Carrier 2 will offer partners, regardless of their size, opportunities to engage in individual businesses, take full responsibility for their service performance and manage their own team. This is categorised as an avenue to create more opportunities for small and local carriers who would like to drive volume or traffic to their delivery services.

#### **5.4.2.7 Additional views on the vertical integration approach**

Some other respondents also supported the vertical integration approach through different dimensions.

<i>Shippers</i>	<i>An example could be partnership of a large retailer with Shuti, and only in cities where Shuti operates. (Shipper 1)</i>	<i>For example, I know of Manchester same-day courier, Shuti and City Sprint; all these carriers could deliver same-day parcels locally and cost effectively. (Shipper 3)</i>
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Shipper 3 argued that although a same-day delivery service is not customer driven, neither is it demand driven, it is competition driven, and can be innovatively implemented. This could be by large retailers who are in possession of geographically spread distribution centres and nationwide retail stores. Shippers in this category will have the finances and infrastructure required, and can take the bull by the horns to either manage delivery services in-house through a radical approach, or partner with local carriers for an incremental approach. In this instance, parcels will be shipped from the nearest retail stores or distribution centres to the point of order, with a considerable profit margin. This is a working approach for Shipper 3.

<i>Shippers</i>	<i>...but our approach has started to change customers' orientation, and we have started to experience increasing demand. Imagine sitting down in the comfort of your home, or at work, you place an order and are able to choose a convenient delivery time slot and location, and your item is delivered at a price even cheaper than the cost of a car park or bus ticket. (Shipper 3)</i>
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### 5.4.3 Findings

It could be generalised from the respondents' perspectives that, through collaboration and partnership, shippers gain access to logistics experts who help them with excellent supply chain solutions, at reduced cost, with professionalism, and economies of scale via resource sharing and volume shipping discounts. It could also be said that firms have been able to concentrate on their core competencies, flexibly responding to changing markets without major disruptions or financial commitment to the distribution system, and they also benefit from scalability, continuous optimisation, combined and streamlined truck routes and reduced empty backhaul. These discoveries are similar to the literature findings (Mason et

al., 2007, 2013; Kotler 2007; Audy et al., 2012; and Lehoux et al., 2009), as seen in Sections 2.3, 2.3.1.

From the literature (Gol and Catay, 2007; Jayaram and Tan, 2010; Anderson et al., 2011), in Section 2.3.6, it was found that respondents have argued that with the presence of 3PLs, most firms have partnered and outsourced the logistics aspect of their business to concentrate on other business activities. In addition, from the literature (Audy et al., 2012; Kamath and Roy 2007; Nyaga et al., 2010; Zare, 2009), in Section 2.3.1, and through respondents, it was found that some players have collaborated through the use of advanced technology to benefit from consolidation and improved inventory management.

It has been established that the retail logistics industry has greatly benefitted from technology, and has moved collaboration from being traditional to being intelligently innovative. These findings are similar to the findings from the literature (Horvath, 2001; Sahay 2003; Chopra and Meindl 2007; Jonsson et al., 2007; Meredith and Shafer 2009; Dachry et al., 2013; Ma et al., 2015), as in Sections 2.3.2, 2.3.2, 2.3.3, and 2.3.4. It has also been established that data aggregation is better managed with technology integration to generate seamless communication. However, investment in a complex IT system that supports new features, such as track and trace, order management, freight space management and transponder integration, with more intelligent system designs could be worthwhile for the successful development of a same-day delivery platform. These discoveries are found to be in line with the literature (The Department for Transport, 2008; Zhang et al., 2008; Wang et al., 2007), in Section 2.3.5, that contemporary logistics operations would be at their best with the creation of electronic collaboration platforms.

## **5.5 Likely challenges of collaboration for the design of same-day delivery**

### **5.5.1 Multimodal collaboration challenges**

Technology has facilitated collaboration in many ways and, as such, facilitating same-day delivery would not be a problem. It has been expressed that ELM design for same-day delivery may be achievable within cities or for local deliveries, but will likely face difficulties at intercity or national level, where a multimodal freight system of road, rail, air and water may be required, but with likely complexities in its design or implementation. The expert noted that 80% of UK freight is carried by road, and this may hinder the success of same-

day intercity delivery due to environmental factors, such as road maintenance and traffic congestion. But in order to improve on this, it will be necessary to consider other transport modes, especially the rail network option in the collaboration design, for speed and reliability.

However, the ELM expert identified a potential problem with UK Network Rail, i.e. there is a belief that they are usually not open to negotiation, as several attempts by them (the ELM expert’s team) to work with UK Network Rail have been unsuccessful.

<p><i>ELM expert</i></p>	<p><i>...we were trying to speak to the rail freight, when I was talking to the Welsh government that let's do multimodal freight transport, through road, rail, combine with Cardiff Port for a more sustainable environment, they don't speak to you whatsoever. (ELM expert)</i></p>
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The expert also added that if access was granted for business negotiations by Network Rail, it would likely be to a large carrier or shipper, or a large consortium of carriers and shippers whom they felt possessed the following attributes: funds for investment, a guaranteed volume for shipping, strong negotiation skills, advanced infrastructural facilities and vertical integration capability.

Another potential problem could be the regulatory restriction on the mix of freight and passengers, unless they are willing to put in new measures to relax this restriction. Gaining access requires a link through an insider, and there may be the need for a captivating and innovative business proposal/idea, that will convince the Network Rail to change their position. It should also be noted that with a multimodal freight system, companies will struggle to deliver same-day small parcels without critical mass; this comes alongside the problems of multiple handling, transshipment, and likely complexities in the processes involved.

<p><i>ELM expert</i></p>	<p><i>When you want consumers to connect, you have to have the critical mass. For any platform to work, you have to have sufficient transaction volume to justify it exists. (ELM expert)</i></p>
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The expert identified the required form of collaboration to be ‘many-to-many’, and added that, in this situation, the following factors (the type of collaboration, collaboration drivers, cost bearer and the cost and benefits sharing system) are essential, in order to facilitate a collaborative system that is equipped with an evaluation system, and for a robust return on investment. Identifying the cost and benefits sharing system could be difficult due to dissimilarities with participants’ contributions in terms of size and function, and the incorporation of many complex functionalities like real-time tracking, telematics, telecommunication and simulation, which can further complicate the cost and benefits sharing system.

### 5.5.2 Regulatory challenges

Carrier 1 acknowledged creativity in collaborating with fellow carriers to drive the service but explained that through its own wealth of resources, it is already in possession of the infrastructure required to drive the service and would not need to collaborate. As a way to further justify the reasons to not collaborate, Carrier 1 added that unfortunately, due to its market position, its activities are being closely monitored to prevent anti-competitiveness. Based on this, Carrier 1 believes that rolling out such a same-day delivery service or initiating collaboration for this purpose will not be tolerated by the regulatory body, Ofcom, who feels that Carrier 1’s deep-pocket approach is capable of knocking other competitors out of the market.

<i>Carriers</i>	<p><i>... so in choosing any strategy that we use, it has to go in line with the regulatory to be sure it is not anti-competitive.so we have the legal team that actually works closely with every product we choose, either new product or the existing ones.</i></p> <p><i>(Carrier 1)</i></p>
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In addition, the company (Carrier 1) wants to be in charge of its services and not feel obliged, but should they collaborate, third parties may be actively involved in the delivery process, which is against their policy of being accountable and to claim responsibility for all deliveries.

### 5.5.3 Volume

Some of the respondents argued that many factors will hinder same-day delivery, a few of which could be the lack of volume, the time and infrastructural commitments required to

consolidate, traffic congestion and the high cost of implementation. All these put together will result in high operations costs. With reference to the argument above that customers only conditionally pay a premium for delivery services, Shippers 4 and 5 added that if the volume problem is not resolved, collaborating for intercity same-day services cannot be economical, and could amount to a waste of resources, since the processing time and operations cost will not justify the investment, and there will be no profit margin.

<i>Shippers</i>	<i>...but I don't see customers driving the required volume that will make Carrier 1(replaced) want to offer such a service. (Shipper 4)</i>	<i>When there are no assurances of volume, it will be difficult to get any carrier to invest in such a service. (Shipper 2)</i>
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Carrier 1 argued that collaboration could be a good tool that would enhance same-day services, and also added that the market is new and may have a lot of potential. They however explained that achieving fast delivery has over time required a high level of infrastructural transformation, and in the case of same-day delivery, the challenge of volume shipping must be overcome before investment in infrastructure can take place. There is also extremely low demand for the same-day delivery service, and it can only be added as a service to a large niche market.

<i>Carriers</i>	<i>Until there is volume, no mail or parcel delivery business can be successful, except if a premium is paid. (Carrier 1)</i>
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Shipper 5 is of a similar opinion and believes that the delivery of intercity same-day parcels is complicated. An example cited is the huge cost that would be required to invest in technology and collaboration, in comparison to the size of market demand or an assurance of future success of the service. It was explained that such investment would be worthless, and there would be no carrier/player to drive or initiate the required collaboration.

<i>Shippers</i>	<i>Outside time critical deliveries, all other forms of delivery require</i>	<i>I believe a lot of complexities will be involved. In reality, all I can imagine is complications. I believe there are still many other issues to be</i>
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	<i>volume shipping, which is key to maximise profit. (Shipper 5)</i>	<i>looked into by carriers than to worry about inter-city same-day delivery. Collaboration will require an initiator, but I don't think any carrier will want to initiate such. (Shipper 5)</i>
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Some of the respondents also highlighted that it would be difficult to attract volume to the same-day service, and could therefore be difficult for it to become commonplace.

<i>Shippers</i>	<i>In order to be profitable, there would be a need for volume shipping. (Shipper 4)</i>
<i>TSP</i>	<i>...even if Amazon achieves this, it wouldn't make it commonplace, neither will retailers nor carriers invest in it. (TSP 2)</i>

#### **5.5.4 Hub-and-spoke and same-day incompatibility**

This section identifies experts' opinions on the challenges of transforming the hub-and-spoke structure to accommodate a same-day delivery service.

According to the TSPs, same-day delivery will be a challenge as next-day deliveries using hub-and-spoke are usually processed, sorted and transported overnight within 10-12 hours; overnight delivery is easier as there is less road congestion, a reduced chance of accidents and fewer road maintenance issues. However, achieving deliveries during the day is neither feasible nor realistic as it will require the same process as above for lesser volume whilst external forces, such as congestion and road maintenance etc., will likely affect a free transport flow. Based on this, TSPs argue that the contemporary hub-and-spoke system will not be suitable for a same-day delivery service.

TSPs	<p><i>From 10 o'clock tonight, the LSP has got to sort all parcels at the hub, and I can easily make a 9-10am delivery, since I've got 10-12hrs to deliver, which gives me enough time; also I've got less congestion overnight, less accidents and less road work. But with same-day, I will have to compress all this within a very short time, so it seems to me really difficult. (TSP 1)</i></p>	<p><i>I don't think it will work with hub-and-spoke, but it has to be through networking A-B, B-A but it's going to cost much because it is very cheap with hub-and-spoke. I can't really see it working. (TSP 2)</i></p>
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Carrier 1 argued in line with the above point that the hub-and-spoke system is designed for a specific function and attempts to transform it for same-day delivery imply that the same-day delivery of parcels will need to be compressed within a reduced amount of time. Even though the hub sorting systems are now being improved to sort more parcels at a quicker rate, using the same process and infrastructure for a small volume of same-day parcels will not be profitable and, as a result, the possibility of same-day delivery through the hub system may be difficult.

Carriers	<p><i>The current distribution centres are not structured to sort parcels for same-day delivery. (Carrier 1)</i></p>
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### 5.5.5 Findings

Even though the multi-modal freight system has been identified as a likely approach to a successful intercity same-day delivery system, gaining access to the UK Network Rail for collaboration has been deemed difficult; the restriction on the mix of passengers and freight could be a potential problem, alongside multiple handling, and the absence of critical mass. Also, based on dissimilarities in the collaborating parties in terms of size and function, the design of a cost and benefit sharing system could be challenging.

In addition, it was established that a lot is achievable through collaboration, but there must always be assurance of success before investment. It was also established that only with premium charges can same-day delivery services without volume shipping be profitable.

Even though the hub-and-spoke system is efficient for parcel consolidation, and also capable of sorting parcels for fast deliveries, it cannot be an economical system for sorting same-day parcels because of the low parcel volume. This can be linked to the literature (Fernie et al., 2004; Tran and Haasis, 2015; Ishfaq and Sox; 2012; Lin and Chen, 2004; Maes and Vaneslander, 2012) findings in Section 2.2 that the hub-and-spoke system consolidates parcels for volume shipping, poor capacity utilisation and to enhance economies of scale.

## 5.6 Delivery preferences

A common view from respondents shows that although several delivery types have been in use, customers would always give preference to home delivery over other delivery types. They acknowledged the growing adoption of different delivery types, but argued that home delivery has always been a customer's preference.

<i>Carriers</i>	<i>Maybe until the service is formally launched. All I know is that home delivery is mostly preferred. (Carrier 1)</i>	<i>In recent times, the demand for other delivery types is increasing, but that has not changed the preference for home delivery over every other delivery type. (Carrier 2)</i>	<i>Customers have always given preference to home delivery. (Carrier 3)</i>
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On the assumption that same-day delivery becomes commonplace, some respondents are of the notion that carriers will likely give preference to other delivery types. This could be due to the UK system, where the majority of customers will be at work during the day, and most carriers would not do late-night deliveries. In view of this, some customers would prefer a workplace delivery, while some would prefer to collect from a local shop. For example Carriers 2 and 4 expressed as follows:

<i>Carriers</i>	<i>...but in the event that same-day becomes popular, there would likely be a switch to parcel pick-up or click</i>	<i>...in this instance, since most customers work during the day, and carriers would not work overnight, should same-day delivery become</i>	<i>If all vendors include other delivery options, I think there would then be preference for other delivery types over home</i>
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	<i>and collect. This could be because the majority of online customers are working, and would want to pick up the parcels on their way home. (Carrier 2)</i>	<i>commonplace, I am sure there would be preference for other delivery types over home delivery. (Carrier 5)</i>	<i>delivery. The reality here is that people are not always home for parcel delivery, and the delivery time is not always known, except for a few companies. Carrier 3</i>
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Additional support for alternative delivery types is that if carriers can start to offer more than one delivery type, or more flexibility with the delivery time, customers who work during the day will give preference to other delivery types and delivery times. Also, carriers would rather support other delivery types in order to reduce or eliminate the problems of unattended delivery. Carriers are of the opinion that if alternate delivery types are given preference over home delivery, they will be able to save time, cost and space, i.e. time and cost of redelivery, and the warehouse and van space for the parcel.

<i>Carriers</i>	<i>There has been a huge loss to the carrier industry, resulting from first time failed home delivery. In terms of space and cost of return, I am sure carriers would prefer to drop/deliver parcels to local shops and would not worry about failed home delivery. (Carrier 5)</i>
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Carrier 4 took a neutral stance and put forward that the different delivery types and times available would be explored, depending on the customers' schedules.

<i>Carriers</i>	<i>...all available delivery types will become useful depending on customers schedules. Also if carriers can be more flexible with delivery times. (Carrier 4)</i>
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### **5.6.1 Plans to reduce home delivery failure**

Failure of home delivery is a major challenge acknowledged by all carriers and could be due to many factors that are beyond the control of customers. In most cases, there is no precision and no information updates with regard to the delivery time, which makes it difficult for customers to make adequate preparation for delivery. It is because of this that

carriers have put in place alternate delivery arrangements to reduce the failure rate, by engaging in delivery to local shops or by using click and collect.

<p><i>TSPs</i></p>	<p><i>Now in the UK, there is an infrastructure being put in place so that within every mile, there would be a collection point, and this will reduce the challenge of first-time delivery. (TSP 1)</i></p>	<p><i>Have you heard about follow my parcel by DPD? This technology does not only help drivers plan deliveries, it identifies the fastest route, whilst also informs and updates customers about the status of their parcel from the point of order till delivery. (TSP 2)</i></p>		
<p><i>Carriers</i></p>	<p><i>...so for most of the carriers, a lot of the things that are happening in the marketplace like click and collect, locker banks, parcel stores, Collect+, the new DPD pick up, all of that is a business factor because you have to have it as part of your portfolio cos if you don't, customers like Amazon, e-tailers and big retailers will look for customers who have the service. (Carrier 1)</i></p>	<p><i>We make use of the Collect+ service, to deliver to local stores. (Carrier 2)</i></p>	<p><i>Although, with other last-mile delivery services outside same-day, we deliver to local stores, using the Collect+ service. (Carrier 4)</i></p>	<p><i>...our system now supports delivery to local shops. (Carrier 5)</i></p>

Carriers put forward that there are rare cases of failed delivery with time-critical parcels, and it is attributable to the fact that such parcels are highly valued and customers are usually prepared for the delivery. In addition, there are estimated delivery times and parcel transit updates, which allows customers adequate preparation for parcel collection.

<i>Carriers</i>	<i>Most parcels in the case of same-day delivery are highly valued, and there would usually be an estimated delivery time, so customers know when to expect their parcels, and they are prepared. (Carrier 2)</i>	<i>...because our same-day service is usually a 90-minute delivery service. It is difficult to miss a delivery that you are aware will take place in less than two hours. (Carrier 4)</i>	<i>...because they are important parcels, they are rarely missed. (Carrier 3)</i>
<i>Shippers</i>	<i>Anybody who places a same-day order would in most cases be available for its collection. In our own case, there are four time slots for you to choose from. This would allow a convenient delivery time. We also have in place the delivery update system that keeps you in the loop from order completion till delivery. Yes, it will be difficult to miss delivery in this regard. (Shipper 3)</i>		

### 5.6.2 Findings

It was established through respondents that customers give preference to home delivery over all other delivery types, and this agreed with the literature (Weltevreden, 2008; Gevaers et al., 2011; Morganti et al., 2014b; Van Duin et al., 2016; Iwan et al. 2016), see Section 2.5.3; home delivery is the most patronised and most preferred delivery type.

It was also found that speedy deliveries are usually for high-value goods and they mostly benefit from successful delivery. However, should additional delivery types be introduced, carriers believe other delivery types may gain prominence. This was also found to be in line with the literature by Li et al. (2006) in Section 2.5, that the advent of e-commerce has also greatly contributed to the requirement for market flexibility, as clients now want customised goods delivered at high speed and with flexible options.

Respondents also linked delivery preference to the usual British daily routine where most customers are at work during the day, and that customers may prefer to pick up parcels on their way home, from the local shop, through click and collect or organise for delivery to their office. This therefore implies that delivery type and time preference may be dependent on economic status. Also, because of the possibility of reducing or eradicating

the increasing failure rates in home delivery, carriers prefer the alternative delivery arrangement.

In order to confirm the relationship between economic status and preference of delivery type, a hypothesis test and other related analysis will be conducted through customers:

*H4: There is a preference for home delivery over alternative delivery types, regardless of a customer's economic status.*

## **5.7 Summary**

The chapter has revealed through expert opinion that a same-day delivery service is not a customer or market-driven service, but is competition driven. It was revealed that even though customers desire speedy deliveries, and would mostly prioritise delivery speed in their purchase decisions, they would not pay extra for the speed, and would rather stick to standard delivery times. Based on this, most carriers would not prioritise investment in a same-day service, but would instead monitor its progress to identify any future prospects in order to determine whether or not to invest in the service.

This research has identified and confirmed that partnership and collaboration play vital roles in the retail logistics industry, and collaboration is seen as the highest strategic priority with joint initiatives that go beyond their normal course of day-to-day business, with the intent to deliver a significant improvement over the long term. The analysis has shown the positive outcome of collaboration, through which it revealed that most of the companies engaged in collaboration have over time had their businesses improved, and have been able to remain relevant in this highly competitive environment. Furthermore, it was observed that the changes in the market have now gone beyond the requirement for traditional collaboration to innovative collaboration. Be that as it may, a cause for concern is that successful implementation of commonplace same-day delivery (free same-day delivery) will leave carriers with a reduced patronage on existing fast deliveries, and will reduce the uniqueness of other express delivery services. Two factors of economic status and geographical location have been identified to likely influence customers' delivery preferences. It was established that with information technology, numerous benefits are derivable that will aid and enhance logistics operations. It is also arguable that the size of a firm influences business strategies and large carriers stand a better chance of adapting

through vertical integration. However, in the case of same-day delivery becoming commonplace, infrastructural, environmental and operational factors will likely hinder its smooth design and implementation. Experts also expressed concerns about the design of an intercity same-day delivery system and identified the following factors as the likely challenges to be faced: multiple handling, access to UK Network Rail for multimodal freight, possible regulatory challenges and cost and benefit sharing in multiple collaborations due to dissimilarities in sizes and functions.

Home delivery is identified as the most preferred delivery type, while other delivery types may gain prominence if included as alternate delivery methods by carriers.

The research identified that an increase in strategically located retail distribution centres could be helpful for large retailers in the implementation of a same-day delivery service, but established that the hub-and-spoke may not be a suitable approach for the implementation of an intercity same-day service. It was established that even though different design ideas have been identified, a free same-day delivery service is unlikely.

Above all, the chapter has helped with an experiential understanding of the retail logistics-rich context on parcel delivery operations, gained an insight into respondents' views on the acceptability and practicability of same-day delivery becoming commonplace, and how innovative parcel delivery business models that support same-day delivery can be designed.

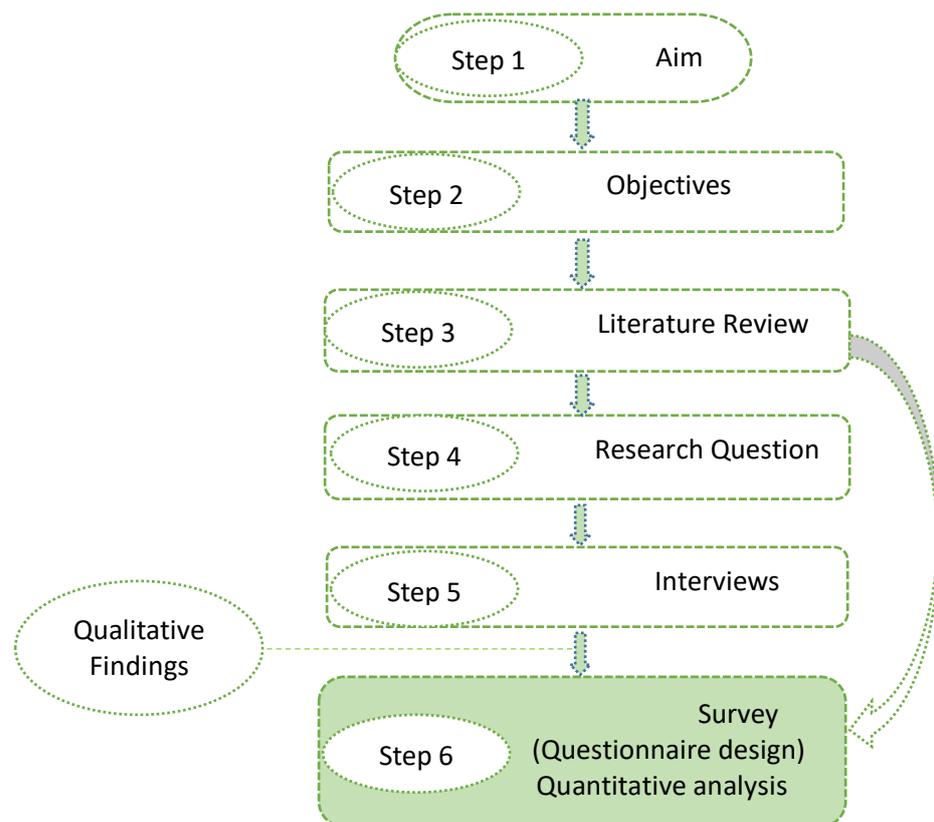
Four hypotheses were identified concerning the relationship between online shopping frequency and delivery speed, customers' willingness to pay a premium and customers' preference for a particular type of delivery.

The next chapter will present the hypotheses tests, and the descriptive analysis of other relevant delivery features and factors identified through the literature and qualitative research.

## 6.0 Quantitative Data Analysis

This chapter concentrates on the quantitative validation of some of the findings in the literature, one focus being on previous findings of exploratory qualitative analysis.

Figure 37 represents the flow of how the research work will achieve the main aim, with all sections of the project developed in a hierarchical format to build upon and depend on one another in order to satisfy the main aim and objectives; the current stage of the research is highlighted.

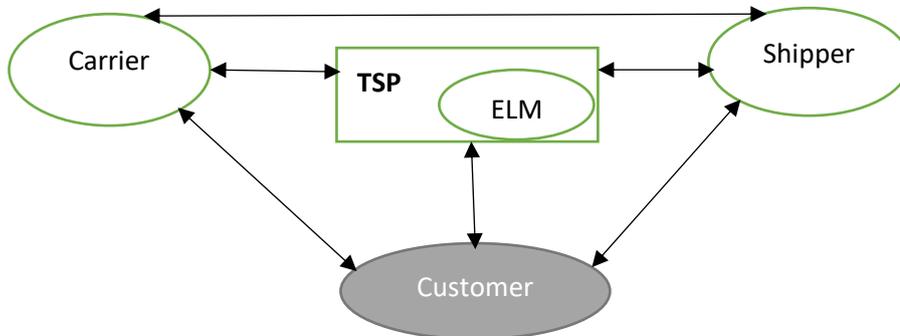


**Figure 37: The mixed method quantitative research process.**

Using simple descriptive statistics, the chapter starts by providing an overview of the sample, then previews the statistical methods used and their features, before testing the hypotheses put forward, and analysing the quantitative data set to provide contextual information with respect to geographical and economic factors.

In order to meet the underlying aim, the chapter presents a relatively large amount of statistical information evaluated in graphical and written formats.

It should be recalled that few findings in the literature stem from data collected from customers, but despite this many qualitative analyses seek to draw inferences with respect to customer-related issues; the present chapter seeks to rectify this situation by statistically analysing data obtained directly from customers. Figure 38 shows that out of the five categories of respondents, only data from customers will be analysed at this stage.



**Figure 38: The triad with an emphasis on the customer.**

## 6.1 Survey sample size, description and comparisons

The survey involved a sample of UK online customers over the age of 18. The 2015 bulletin of the Office for National Statistics showed that there were 29,868,000 adults in the UK with access to the Internet (78% of the adult UK population) and that 76% of them shopped online. A sample of 1185 adults was obtained for the present survey, which was judged to be more than adequate in that it provided a margin of error of less than 3% and provided a 95% confidence level (see Equation 1).

$$n \geq \frac{z_{\alpha/2}^2 \hat{p}(1-\hat{p})}{\epsilon^2} \Rightarrow n \geq \frac{1.96^2 \times .5 \times .5}{0.029^2} = 1142$$

### Sample size equation

The formula in the above equation is very conservative in assuming a worst-case scenario for a binary outcome: a proportion of 0.5 in each category. Such proportions would result in the maximum possible margin of error, with the error decreasing as proportions depart from 0.5.

To provide findings that could be generalised to UK online customers, an electronic survey was conducted with responses being obtained from different parts of the country to obtain a geographical spread of data. The survey link was sent to contacts from different universities and non-academic industrial concerns living in different towns and cities, these contacts assisting with further distribution. The following subsection details the demographic composition of the sample.

### 6.1.1 Overview of the survey responses

Responses were obtained from 1185 people, of whom 1175 said they shopped online. While ten respondents did not respond to the survey question asking whether they shopped online, it was apparent from their other responses to the questionnaire that they did.

### 6.1.2 Sample gender distribution

Table 24 shows a slight difference in gender numbers, with the majority of responses being received from female participants. This was slightly at odds with national statistics showing that more men than women make online purchases, although the gap is narrowing year-on-year, falling from an 8% gap in 2008 to 2% in 2015 (Office for National Statistics, 2015).

<b>Gender</b>	<b>N</b>	<b>%</b>
Male	565	47.72%
Female	619	52.28%
Missing	1	
<b>Total</b>	<b>1,185</b>	<b>100.00%</b>

**Table 24: Gender distribution table.**

### 6.1.3 Age distribution

To avoid ethical issues, the sample was restricted to people aged 18 and above. Table 25 presents the age distribution of the sample, and it can be observed that the most common age group was for respondents aged from 25 to 34 years, followed by respondents aged 34 or under, and the smallest age group was that for people aged 55 and over.

Age Group	N	%
18-24	126	11.07%
25-34	407	35.76%
35-44	261	22.93%
45-54	242	21.27%
55 and over	102	8.96%
I prefer not to say	34	
Missing	13	
<b>Total</b>	<b>1,185</b>	<b>100.00%</b>

**Table 25: The age distribution of the sample**

#### 6.1.4 Employment distribution

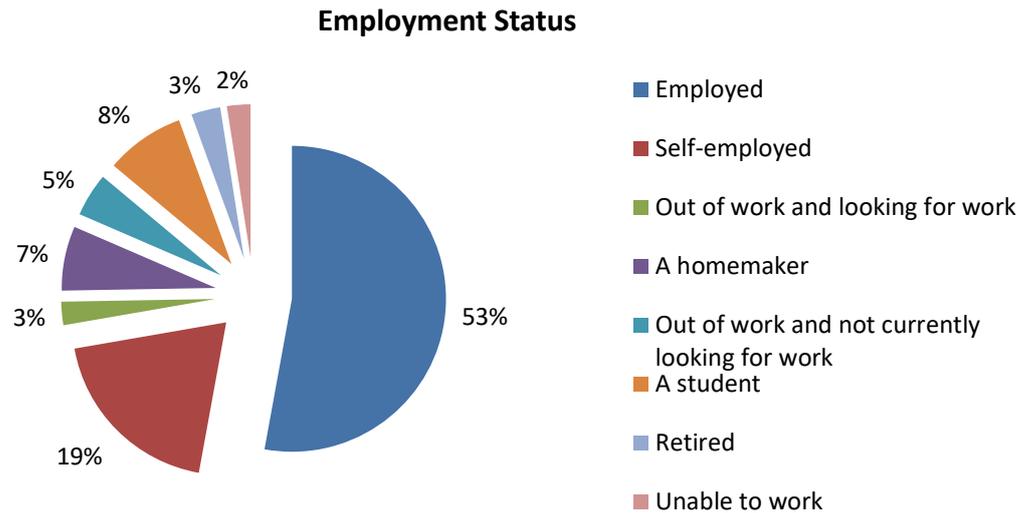
The research sought to understand how employment status can influence or motivate customers' attitudes and decisions with respect to online shopping. Just over half of the sample was employed, with the second largest grouping being the self-employed.

Employment status was simplified for the purposes of analyses. This was done based on two factors: whether respondents were likely to be available to receive deliveries and their economic status. Thus, the groups formed were: Employed, Other Economically Active or Retired and Not Economically Active. Table 26 and Figure 39 show the sample distribution.

**Employment Status**

Response	All		Employed		Other Economically Active or Retired		Not Economically Active	
	N	%	n	%	N	%	N	%
Employed	621	52.85%	621	100.00%				
Self-employed	228	19.40%			228	58.31%		
Out of work and looking for work	29	2.47%			29	7.42%		
A homemaker	80	6.81%					80	49.08%
Out of work and not currently looking for work	54	4.60%					54	33.13%
A student	98	8.34%			98	25.06%		
Retired	36	3.06%			36	9.21%		
Unable to work	29	2.47%					29	17.79%
Missing	10							
<b>Total</b>	<b>1,185</b>	<b>100.00%</b>	<b>621</b>	<b>100.00%</b>	<b>391</b>	<b>100.00%</b>	<b>163</b>	<b>100.00%</b>

**Table 26: Employment status.**



**Figure 39: Exploded pie chart depicting employment status**

### 6.1.5 Location distribution

Table 27 and Figure 40 show that, with respect to location, most respondents were residents of towns and city suburbs, with these comprising around one third each of the sample. In the analyses presented, the location classifications were simplified to City (Centre and Suburbs), and Town and Rural (Village and Countryside). This resulted in half the sample (50.04%) being classified as living in a city, one-third (33.36%) in a town and 16.59% in rural locations.

Location distribution					
Location	<i>N</i>	%	Simplified	<i>n</i>	%
City Centre	224	19.06%	City	588	50.04%
City Suburbs	364	30.98%			
Town	392	33.36%	Town	392	33.36%
Village	87	7.40%	Rural	195	16.59%
Countryside	108	9.19%			
Missing	10		Missing	10	
<b>Total</b>	<b>1,185</b>	<b>100.00%</b>	<b>Total</b>	<b>1,185</b>	<b>99.99%</b>

**Table 27: Location distribution.**

### Which of the following best describes where you live?

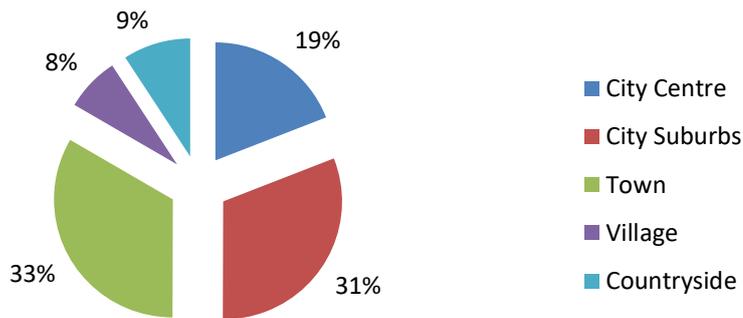


Figure 40: Location distribution chart.

## 6.2 Inferential analysis: testing of hypotheses relating to delivery preferences

The primary (qualitative) analysis presented in Chapter Five identified the hypotheses tested below as being important issues for investigation.

Four hypotheses were tested. Since variables were on ordinal or nominal levels, gamma statistics, Kruskal-Wallis tests with pairwise comparisons, and chi-square tests of association were conducted as appropriate.

Note that where there were only small numbers of respondents for some response categories (e.g., in the case of price willingness or frequency of patronage) it was necessary to collapse categories to make categories large enough for analysis.

For some of the analyses below the following abbreviations are used: Employed: Emp, Not economically active: NEA, At home, economically active or retired: AHEA/R.

### 6.2.1 Hypothesis 1: The relationship between online shopping frequency and importance of speedy delivery

Because the variables involved in Hypothesis 1: 'the more customers shop online, the more enthusiastic they are about speedy delivery' were both on a five-point ordinal scale, the gamma statistic (which is preferred to Spearman's rho when many ties are likely to exist; Siegel & Castellan, 1988) was used to test whether a positive relationship existed between online shopping frequency and importance of speedy delivery (H1). The analysis revealed

a moderately strong and significant positive correlation, importance of delivery speed increasing as frequency of online shopping increased ( $G = .564, p < .001, N = 1166$ ), thus supporting H1: the more customers shopped online, the more important they considered speedy delivery to be. Figure 41 illustrates the relationship between the two variables, the length of bars towards the right of each distribution (indicating increasing numbers of greater importance ratings) tending to increase from distributions on the left to those on the right (i.e. as frequency of online shopping increased).

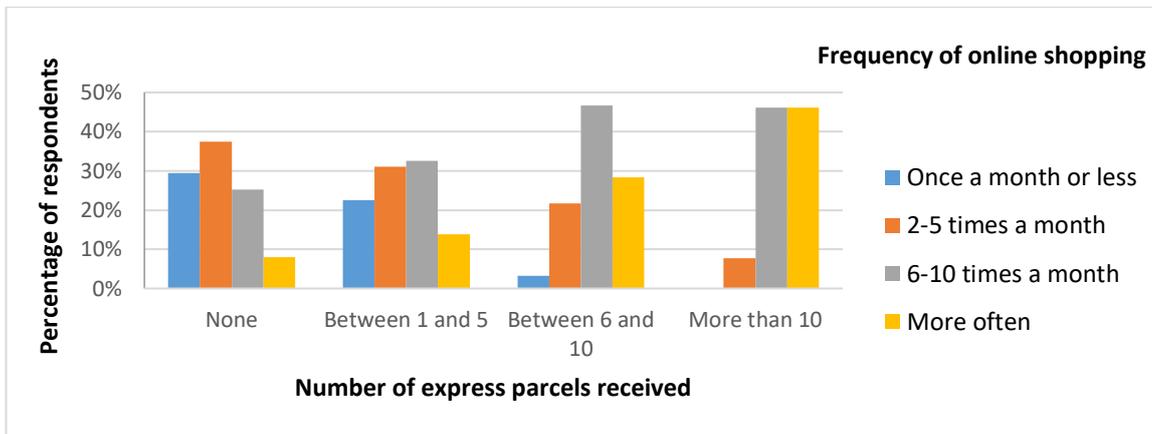
Note that because none of the respondents answered 'Never' to the question 'How often do you shop online?', response categories on the horizontal axis of Figure 41 start from 'once a month/less'.



**Figure 41: A bar chart depicting the relationship between online shopping frequency and importance of speedy delivery.**

#### 6.2.1.1 Online shopping frequency and the number of express parcels received in the last eight weeks

A further gamma statistic was computed to test the relationship between how often people shopped online and how many express (next-day) delivery parcels people had received in the last eight weeks. This revealed a significant positive relationship ( $G = .299, p < .001, N = 1103$ ), with Figure 42 showing that the higher the online shopping frequency, the higher the number of express parcels received in the last eight weeks. This supported H1, which hypothesised such a relationship.



**Figure 42: The relationship between online shopping frequency and frequency of express parcel patronage in the previous eight weeks.**

6.2.2 Hypothesis 2: The relationship between online shopping frequency and willingness to pay a delivery charge premium

The variables in the case of H2: ‘the more frequently customers shop online, the less willing they are to pay a premium for parcel speedy delivery’ were similar to those for H1 in that there were two ordinal variables with a small number of possible responses and, as a result, a gamma analysis was again conducted. This showed a significant negative correlation between online shopping frequency and willingness to pay for same-day delivery ( $G = -.165$ ,  $p < .001$ ,  $N = 1167$ ). This supported the hypothesis (H2) that the more frequently customers shop online, the less willing they would be to pay a premium for a speedy delivery. The distributions across groups are shown in Figure 43 below.



**Figure 43: The relationship between online shopping frequency and willingness to pay for same-day delivery.**

Looking at the results in more detail, Figure 43 shows that in each group, around 86% or more respondents would pay less than £5 or £5 for same-day delivery and a small

proportion would pay up to £10. Almost nobody indicated a willingness to pay £20 and none of the respondents said they would pay up to £30, therefore the higher payment categories were grouped into a single £10 or more category for the above inferential analysis.

Figure 43 depicts a pattern whereby those who shopped online frequently were more likely to pay less than £5 for speedy delivery, with people in the 'More often' (than 10 times a month) category exhibiting the most responses (72%) indicating a willingness to pay only the smallest amount (less than £5); people in the 'once a month or less' category exhibited the smallest number of responses (39.6%) with respect to being willing to pay only this smallest amount. This illustrates the negative relationship between online shopping frequency and willingness to pay for express delivery, i.e. an indication of the unwillingness of customers who shop online frequently to pay a high premium for speedy deliveries.

#### 6.2.2.1 The relationship between online shopping frequency and importance of delivery cost

As there were two ordinal variables with a small range, the gamma statistic was again used to test for a relationship between online shopping frequency and the importance attributed to delivery cost. This relationship was statistically significant ( $G = .290, p < .001, N = 1163$ ), with Figure 44 showing that the higher the frequency of online shopping, the more customers regarded delivery cost as important. This analysis therefore supported H2, with delivery cost appearing to play a significant role in online shopping patronage (although, of course, causality cannot be inferred from this merely correlational analysis).



**Figure 44: The relationship between online shopping frequency and the importance of delivery cost.**

### 6.2.2.2 The relationship between online shopping frequency and willingness to pay a premium for a relatively important item

A further gamma analysis showed a significant relationship between online shopping frequency and willingness to pay a premium for the delivery of 'Two tickets costing £25 each (£50 total) to take a close friend to a music concert this evening' ( $G = .329, p < .001, N = 1164$ ). This indicated a moderately strong positive correlation as depicted in Figure 45, which shows that the higher the frequency of online shopping, the greater the willingness to pay up to a £10 premium for delivery of an important item.

Overall, a large proportion of respondents in each category were willing to pay a premium of up to £10, with the 'more often' category showing slightly more willingness than the others. Willingness to pay up to £10 is likely to be attributable to the relative importance (a close friend) and urgency (this evening) attached to the parcel.



**Figure 45: The relationship between online shopping frequency and willingness to pay a delivery premium for two tickets costing £25 each (£50 total) to take a close friend to a music concert this evening.**

### 6.2.2.3 The relationship between online shopping frequency and willingness to pay a delivery premium for a precious but less important item

There was also a significant and moderately strong positive relationship between online shopping frequency and willingness to pay a delivery premium for 'a precious but not very important item' ( $G = .464, p < .001, N = 1165$ ). Figure 46 shows that the higher the

frequency of online shopping, the greater was a customer's enthusiasm to pay a higher premium, but with most customers only being willing to pay a maximum of up to £5.

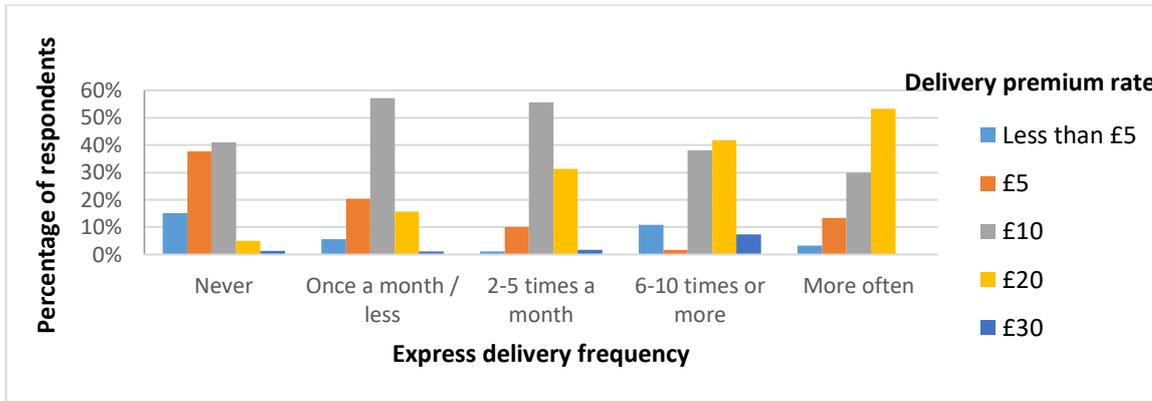
This outcome could be linked to the lack of importance (not very important) and lack of urgency in the description of the parcel.



**Figure 46: Online shopping frequency and willingness to pay for the delivery of a precious but not important item (e.g. the latest book, costing £25, by a favourite author).**

### 6.2.3 Hypothesis 3: The relationship between express delivery frequency and willingness to pay a premium for urgent delivery

Similarly to H1 and H2, with two ordinal variables, a gamma analysis was again conducted to test H3: 'the greater the customers' desire for express delivery, the more they are willing to pay a premium charge for high-value parcels'. This showed a moderately strong, statistically significant, positive correlation between express delivery frequency and willingness to pay a premium for an item costing £100 that was needed urgently, e.g. a gift for a special friend whose birthday was the next day ( $G = .486, p < .001, N = 1149$ ), thus supporting H3: the willingness to pay a premium for an urgent or important parcel did increase with express delivery frequency. The response distribution is shown in Figure 47.



**Figure 47: Distributions of willingness to pay a premium for urgent delivery within and across different levels of express delivery frequency.**

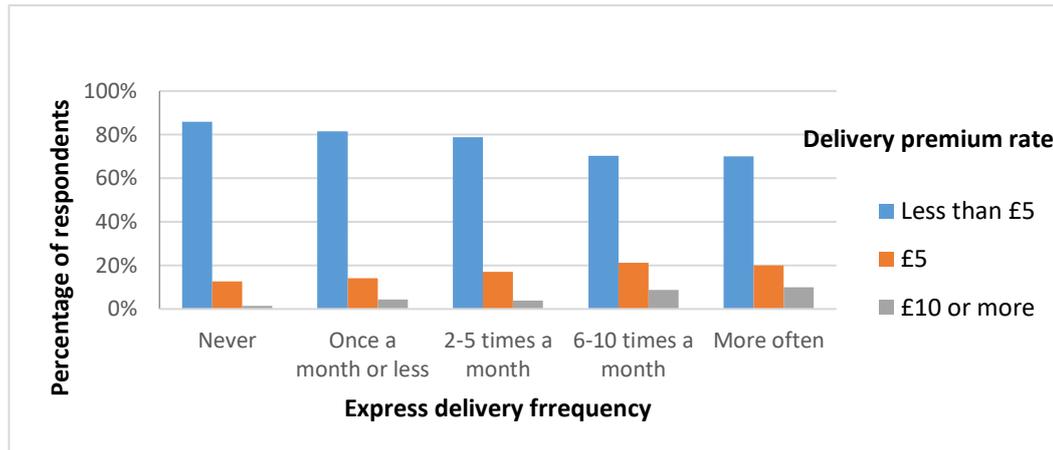
Figure 47 shows that, irrespective of express delivery frequency, the urgency attached to parcel delivery was associated with a large percentage of respondents in each category indicating a willingness to pay up to £10 for delivery. There was also a trend whereby willingness to pay £20 increased from ‘Never’ to ‘More often’; this can also be explained by the observation that a drop in willingness to pay £10 for express delivery equates to an increase in willingness to pay £20 for people responding ‘Once a month/less’ and ‘More often’ with respect to express delivery frequency. This illustrates the support for the hypothesis that the higher the preference for express delivery, the more enthusiastic customers were to pay an additional premium for the delivery of urgent and important items.

### 6.2.3.1 The relationship between express delivery frequency and willingness to pay premium for an urgent but less important parcel

With two ordinal variables, a gamma analysis was again conducted to test other H3-relevant scenarios. One analysis showed a strong statistically significant, positive correlation between express delivery frequency and willingness to pay a premium for clothing costing £100 that was wanted for wearing at a job interview ‘tomorrow morning’, ( $G = .182, p = .002, N = 1146$ ). This positive relationship supported H3. Overall, willingness to pay a premium dropped for this urgent but less important parcel. Here, Figure 48 shows that due to the low level of importance of the parcel, customers’ enthusiasm for express delivery did not influence willingness to pay an additional premium for a speedy delivery and, as a result, most customers indicated a preference for paying less than £5 for delivery.

A trend was observed with express delivery frequency, i.e. the higher the patronage for express delivery, the less willing respondents were to pay a premium. Note that the scale

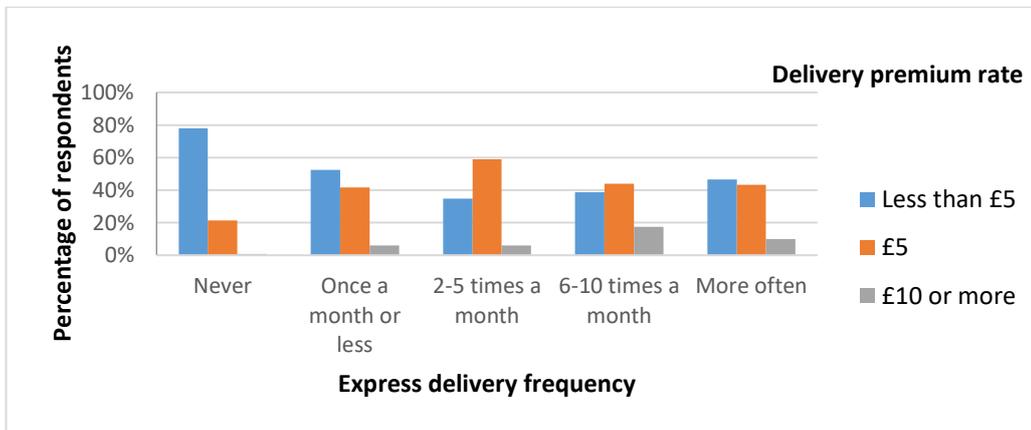
of payment was up to £30, but because very few or no respondents indicated willingness to pay beyond £10, higher amounts were all grouped together as £10 or more.



**Figure 48: Express delivery and willingness to pay for the delivery of an urgent but less important parcel.**

#### 6.2.3.2 The relationship between frequency of express delivery and willingness to pay a premium for a non-urgent and less important parcel

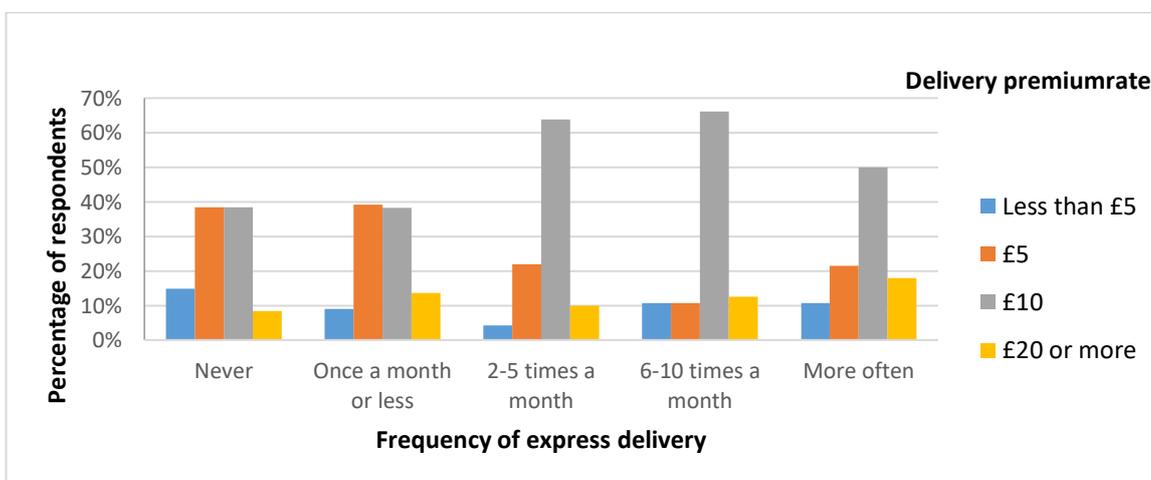
A test of a further H3-relevant scenario showed a moderately strong significant, positive correlation between express delivery frequency and willingness to pay a premium for a precious but not very important item, e.g. the latest book by a favourite author costing £25 ( $G = .418, p < .001, N = 1146$ ), and with a positive relationship showing support for H3. Figure 49 shows that in this case for a less important and non-urgent parcel, a maximum of only £5 would be paid by the majority of customers across the different delivery frequency groups. Note that a similar situation as in the above section occurred here, and that the higher payment values were again grouped into a category of £10 or more.



**Figure 49: Express delivery and willingness to pay for the delivery of a non-urgent and less important parcel.**

### 6.2.3.3 The relationship between express delivery frequency and willingness to pay for the delivery of an urgent and important parcel

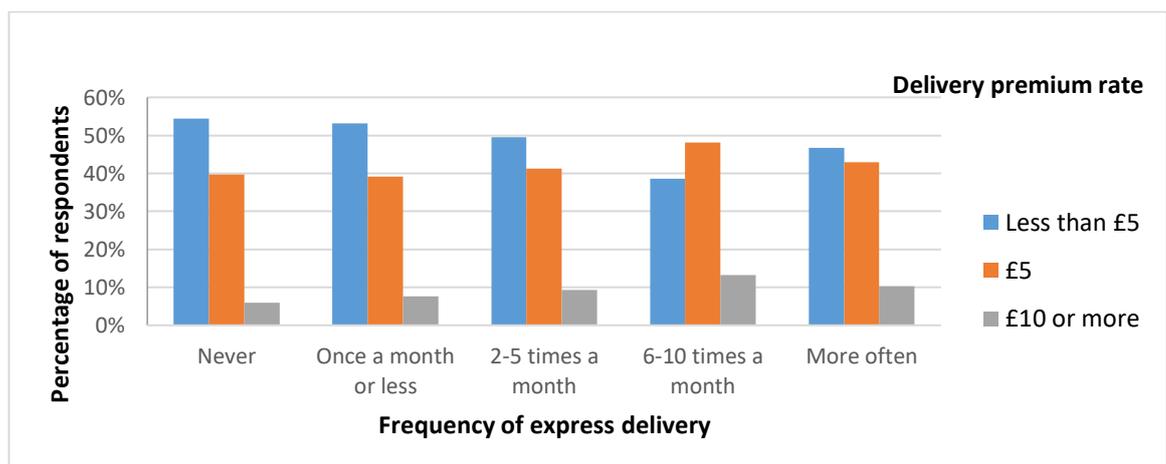
Yet another gamma analysis showed a moderately strong, significant positive correlation between express delivery frequency and willingness to pay a premium for two tickets costing £25 each (£50 total) to take a close friend to a music concert ‘this evening’ ( $G = .243, p < .001, N = 1144$ ). Figure 50 shows that here, willingness to pay a premium increased, with the majority of people being willing to pay up to £10, and some people being prepared to pay up to £20. Hence, there was support for H3. Since nobody indicated a willingness to pay up to £30, higher categories were grouped as £20 or more.



**Figure 50: The relationship between frequency of express delivery and willingness to pay for the delivery of an urgent and important parcel.**

#### 6.2.3.4 The relationship between frequency of express delivery and willingness to pay for the same-day delivery of a less important parcel

A final gamma analysis showed a significant positive correlation between express delivery frequency and willingness to pay a premium for the same-day delivery of a regular parcel ( $G = .120, p = .005, N = 1150$ ). This shows support for H3 in the context of the relationship. The distribution of responses here (see Figure 51) indicated that although very few respondents were prepared to pay a premium of £10 or more for same-day parcel delivery, the majority would have paid less than £5 and £5. This therefore implies that even respondents with a high enthusiasm for speedy or express delivery will not pay an additional premium for the same-day delivery of a less important parcel.



**Figure 51: The relationship between express delivery frequency and willingness to pay for commonplace same-day parcel delivery.**

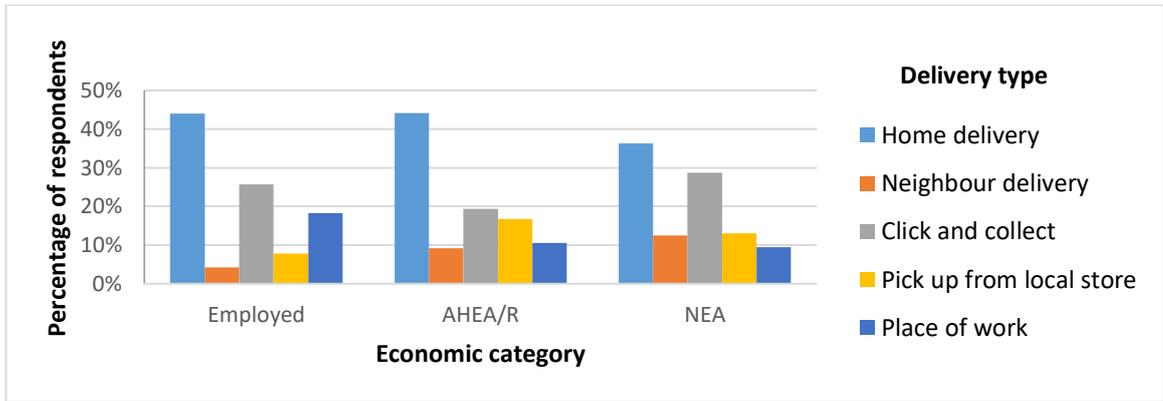
#### 6.2.4 Hypothesis 4: The association between customers' economic status and preferred type of delivery

Hypothesis 4: 'there is a preference for home delivery over alternative delivery types, regardless of customers' economic status' involved two nominal variables and a chi-square test was adopted. The test of association between economic status and delivery type revealed a significant result ( $\chi^2 = 53.48, df = 8, p < .001, N = 1153$ ).

<i>Economic Status* Preferred delivery type</i>						
<i>Employed</i>	<i>Home delivery</i>	<i>Neighbour delivery</i>	<i>Click and collect</i>	<i>Pick up from a local store</i>	<i>Place of work</i>	<i>Total</i>
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
<i>OBS</i>	269	26	157	48	112	612
<i>EXP</i>	262.2	43.0	147.6	70.6	88.6	612
<i>zRES</i>	.4	-2.6	.8	-2.7	2.5	
<i>At home economically active or retired</i>						
<i>OBS</i>	168	35	74	64	40	381
<i>EXP</i>	163.2	26.8	91.9	43.9	55.2	381
<i>zRES</i>	.4	1.6	-1.9	3.0	-2.0	
<i>Not economically active</i>						
<i>OBS</i>	57	20	47	21	15	160
<i>EXP</i>	68.6	11.2	38.6	18.5	23.2	160
<i>zRES</i>	-1.4	2.6	1.4	.6	-1.7	

**Table 28: Contingency table showing the association between economic status and preferred type of delivery.**

Given that the significance criterion ( $p < .05$ ) for standard residuals ( $zRes$ ) is  $\pm 1.96$ , Table 28 reveals that employed respondents were significantly less likely to prefer pick up from a local store than would be expected if there were no association between economic status and preferred type of delivery. Likewise, employed people were significantly less likely than would be expected to prefer delivery to a neighbour, but had a significant preference for delivery to their place of work. At home economically active or retired people had a significant preference for picking up from a local store, and were significantly averse to click and collect (and, naturally, taking delivery at a place of work). Finally, non-economically active people were significantly more likely to prefer delivery to a neighbour. There was therefore no support for H4 which stated that: there is a preference for home delivery over alternative delivery types, regardless of customers' economic status, since none of the residuals for home delivery was greater than (+) 1.96. This is despite Figure 52 which indicates that across the three categories, the majority of respondents preferred home delivery.



**Figure 52: Response frequencies for economic status and preferred delivery type.**

### 6.2.5 Summary

The hypothesis tests and frequency analyses showed an association between the frequency of online shopping and perceived importance of delivery speed: the higher the frequency of online shopping, the more respondents rated delivery speed as important. The results revealed that although delivery speed is seen as important, payment of an additional premium for less important parcels is dependent on level of enthusiasm for express delivery. Some express delivery enthusiasts indicated a willingness to pay up to £20 for important and urgent parcels, but most people were only willing to pay up to £10. Furthermore, it was seen that support could not be statistically established for home delivery as the preferred delivery type, since none of its residuals was greater than (+) 1.96.

### 6.3 The influence of economic status on online shopping indices

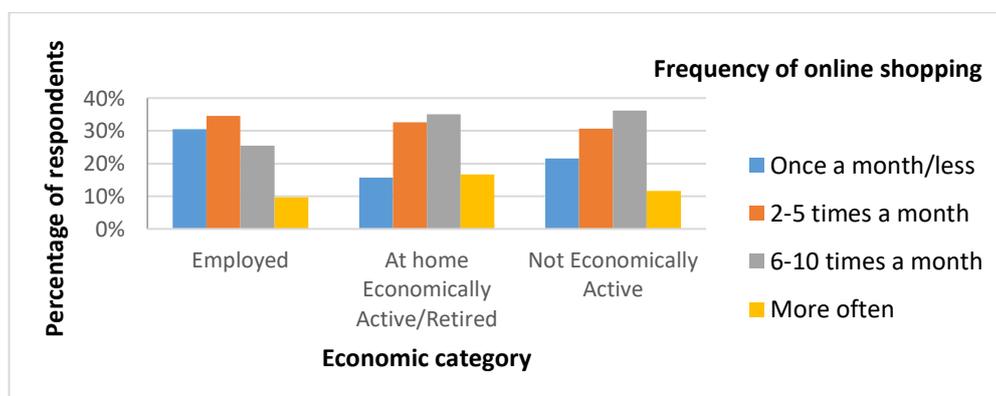
Previous research reviewed in Sections 5.2.1 and 5.6.2 has shown that a customer's economic and working situation (their employment and shift pattern) can influence their attitudes towards online shopping and delivery. For example, because most British customers are at work during the day, they often prefer to pick up parcels on their way home from the local shop, use click and collect or opt for delivery to their place of work.

However, further analysis is needed to compare people in different economic situations to determine whether differences exist in customers' attitudes towards, and experience of, online shopping and delivery across these situations.

Thus, in this section, differences across economic status groups (employed vs. at home, economically active/retired [AHEA/R] vs. not economically active [NEA]) were considered with respect to various ordinaly-scaled dependent variables (DVs). Because of the scaling of the DVs, Kruskal-Wallis tests were used, significant results being followed-up by pairwise comparisons with significance levels adjusted for multiple comparisons. However, in Section 6.3.4 two nominal variables were considered and a chi-square test of association was performed.

### 6.3.1 Economic status and online shopping habits

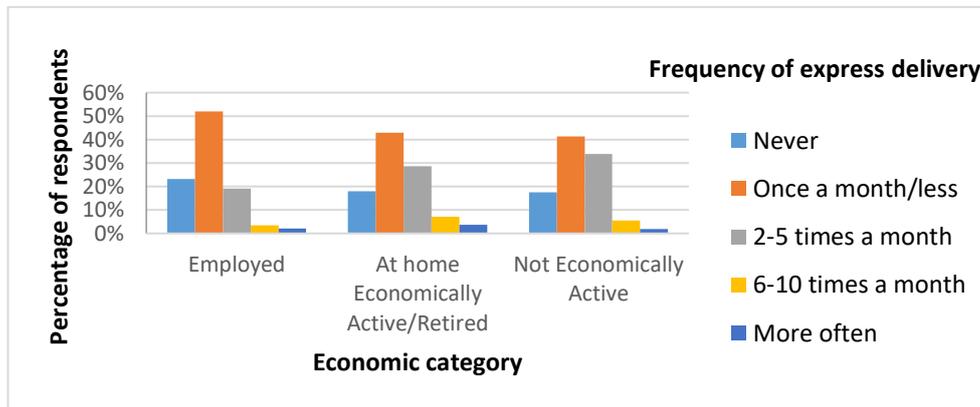
When comparing online shopping habits, a first Kruskal-Wallis test revealed a significant difference in the frequency of online shopping among the employment categories ( $\chi^2 = 38.52$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1170$ ). Mean ranks for the groups were as follows: employed = 531.80; AHEA/R = 660.07; NEA = 610.32. Standardised test statistics (z) for pairwise comparisons between the employment categories were: employed vs. AHEA/R = -6.116,  $p_{adj} < .001$ ; employed vs. NEA = -2.75,  $p_{adj} = .018$ ; AHEA/R vs. NEA = 1.65,  $p_{adj} = .300$ . Thus, there were differences whereby the AHEA/R group engaged in online shopping significantly more often than the employed group, and the employed group engaged in online shopping significantly more often than the NEA group, while no significant difference was observed between the AHEA/R and NEA groups. The distributions for the groups are represented in Figure 53.



**Figure 53: Economic status and online shopping habits through online shopping frequency.**

### 6.3.1.1 Economic status and online shopping through express delivery frequency

A Kruskal-Wallis test looking at differences in frequency of express delivery across employment category also gave a significant result ( $\chi^2 = 24.687$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1150$ ), with mean ranks for the groups as follows: employed = 532.43; AHEA/R = 622.15; NEA = 626.10. Standardised test statistics (z) for pairwise comparisons between the economic categories were: employed vs. AHEA/R = -4.442,  $p_{adj} < .001$ ; employed vs. NEA = -3.401,  $p_{adj} = .002$ ; AHEA/R vs. NEA = -0.136,  $p_{adj} = 1.000$ . So, there were significant differences whereby the AHEA/R and NEA groups used express delivery significantly more than employed people, but no significance was observed between the AHEA/R and NEA groups. Distributions across the employment categories are shown in Figure 54



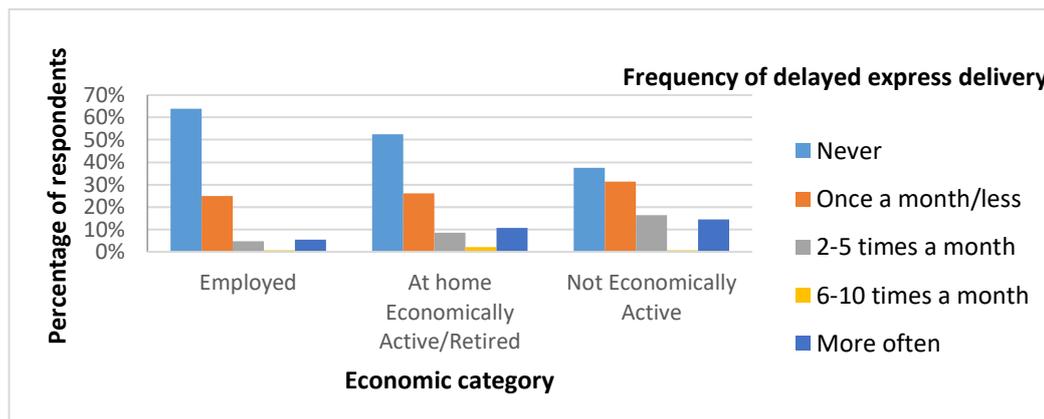
**Figure 54: Differences in online shopping habits as a function of express delivery frequency and economic status.**

Figure 54 reveals that a large percentage of respondents across each category patronised express delivery once a month or less.

### 6.3.1.2 Economic status, use of online shopping and experiencing delays in express delivery

A Kruskal-Wallis test examining differences in the frequency of delayed express delivery between the employment categories was again significant ( $\chi^2 = 46.461$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1051$ ), with mean ranks for the groups as follows: employed = 475.89, AHEA/R = 550.01, and NEA = 635.51. The standardised test statistics (z) for pairwise comparisons between the employment categories were: employed vs. AHEA/R = -3.996,  $p_{adj} < .001$ ; employed vs. NEA = -6.488,  $p_{adj} < .001$ ; AHEA/R vs. NEA = -3.331,  $p_{adj} = .003$ . As shown in Figure 55, these results showed that employed people had significantly fewer problems with delays in

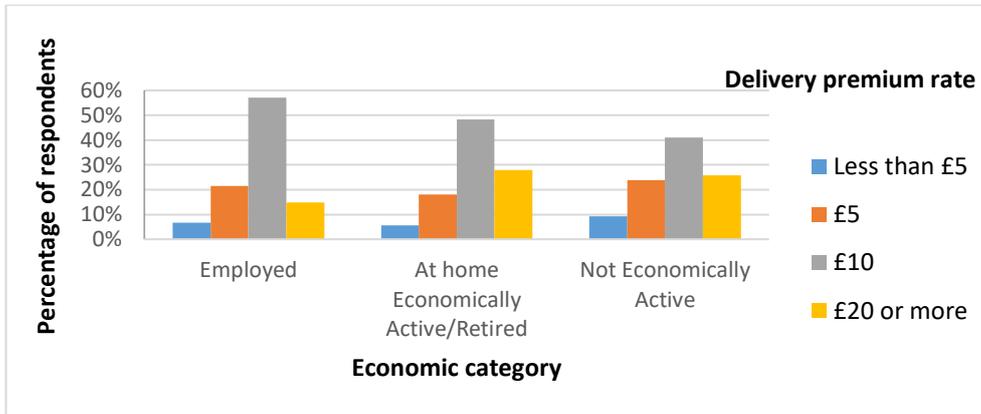
express deliveries than those in the AHEA/R and NEA groups, and that the AHEA/R group had significantly fewer problems than the NEA group.



**Figure 55: Economic status and online shopping habits through the experience of delayed express delivery.**

### 6.3.2 Economic status and willingness to pay a premium

A Kruskal-Wallis test of differences between the economic categories with respect to willingness to pay a delivery premium for an item costing £100 that was needed urgently (e.g. a gift for a special friend whose birthday was the next day) again yielded a significant result ( $\chi^2 = 14.849$ ,  $df = 2$ ,  $p = .001$ ,  $N = 1170$ ). The mean ranks for the different categories were: employed = 557.27, AHEA/R = 634.22, and NEA = 576.25. The standardised test statistics (z) for pairwise comparisons between the employment categories were: employed vs. AHEA/R = -3.832,  $p_{adj} < .001$ ; employed vs. NEA = -0.695,  $p_{adj} = 1.000$ ; and AHEA/R vs. NEA = 2.002,  $p_{adj} = .136$ . Thus, the employed group were willing to pay significantly less than the AHEA/R group, while no significant differences were observed between the employed and NEA group or the AHEA/R and the NEA group.

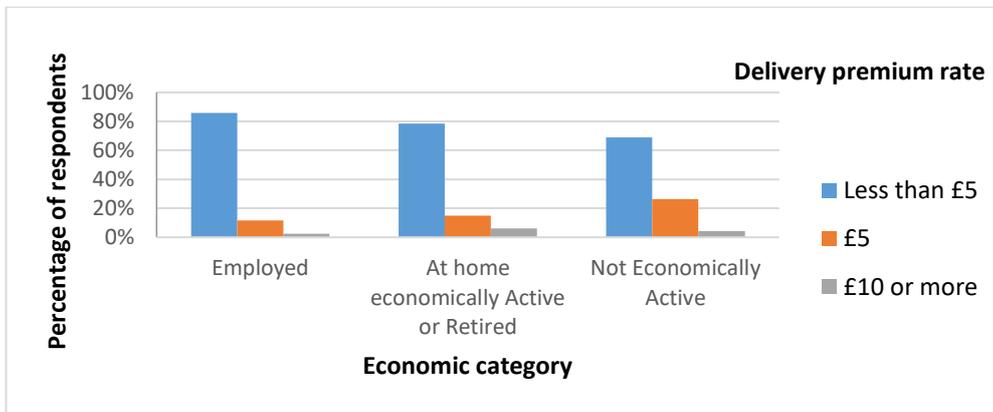


**Figure 56: Economic status and willingness to pay a premium for delivery of an urgent parcel costing £100.**

Figure 56 shows that most respondents would pay in the range of £5-£20 for the delivery of important and urgent parcels, with the majority in all three economic status categories indicating a willingness to pay £10.

### 6.3.2.1 Economic status and a less important next-day item

A Kruskal-Wallis test of differences between people in the different economic status categories with respect to willingness to pay a premium for the delivery of a less important next-day item (£100 worth of clothing that was wanted for wearing to a job interview the next day) again gave a significant result ( $\chi^2 = 26.020$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1167$ ), with mean ranks as follows: employed = 555.53; AHEA/R = 600.52; and NEA = 652.33. Standardised test statistics (z) for pairwise comparisons between the employment categories were: economic vs. AHEA/R = -3.039,  $p_{adj} < .007$ ; employed vs. NEA = -4.792,  $p_{adj} < .001$ ; and AHEA/R vs. NEA = -2.423,  $p_{adj} = .046$ ). Here, the employed group were willing to pay significantly less than the AHEA/R and the NEA groups, while the NEA group were willing to pay significantly more than the AHEA/R group.

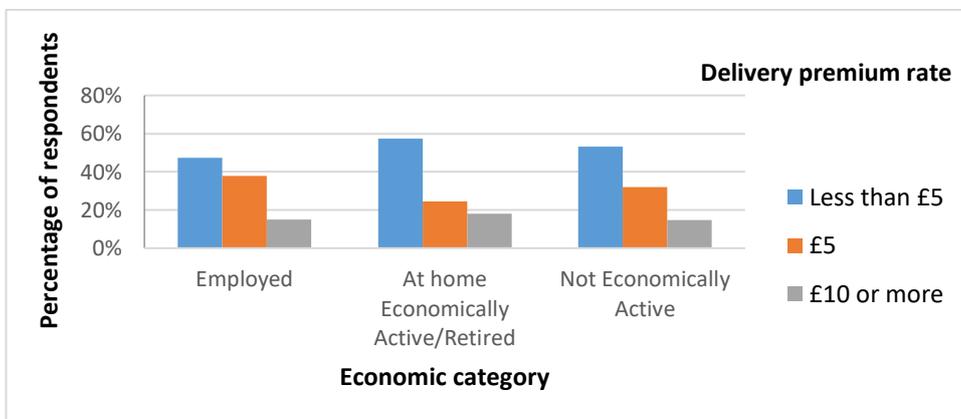


**Figure 57: Economic status and willingness to pay a premium for next-day delivery of interview clothes.**

Figure 57 shows that respondents across the economic categories would generally only pay a small amount (less than £5) for an unimportant parcel.

### 6.3.2.2 Economic status and same-day delivery

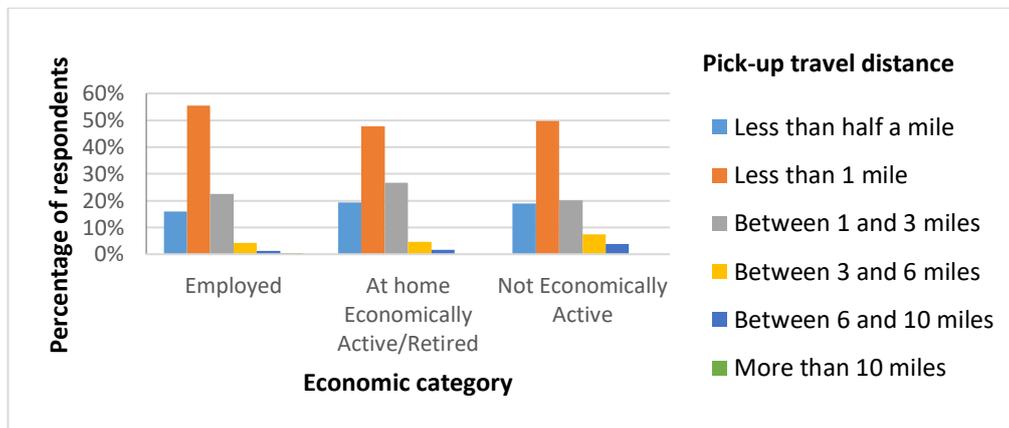
Contrary to previous tests, the results of a Kruskal-Wallis test looking at differences across the economic status categories with respect to willingness to pay for same-day parcel delivery was non-significant ( $\chi^2 = 4.530$ ,  $df = 2$ ,  $p = .104$ ,  $N = 1171$ ). Figure 58 shows that across the three categories the majority of respondents would pay less than £5, followed by £5. Furthermore, the two other categories were less likely than the employed category to be willing to pay up to £5 (although none of these differences were enough to result in a significant result in the above Kruskal-Wallis test).



**Figure 58: Economic status and willingness to pay a premium for same-day delivery.**

### 6.3.3 Economic status and distance a person is willing to travel for parcel collection

Again, a Kruskal-Wallis test investigating differences across the economic status groups with respect to distances people were willing to travel for parcel collection gave a non-significant result ( $\chi^2 = .197$ ,  $df = 2$ ,  $p = .906$ ,  $N = 1159$ ). Figure 59 shows that the distances people were willing to travel to collect a parcel were generally quite short. Across the economic categories, the total figure for under a mile was around 70% (71.50% employed, 67.10% at home economically active/retired, and 68.60% other economically active).



**Figure 59: Economic status and distance willing to travel to pick up a parcel.**

This implies that irrespective of the economic category, respondents were not willing to travel a long distance for parcel collection.

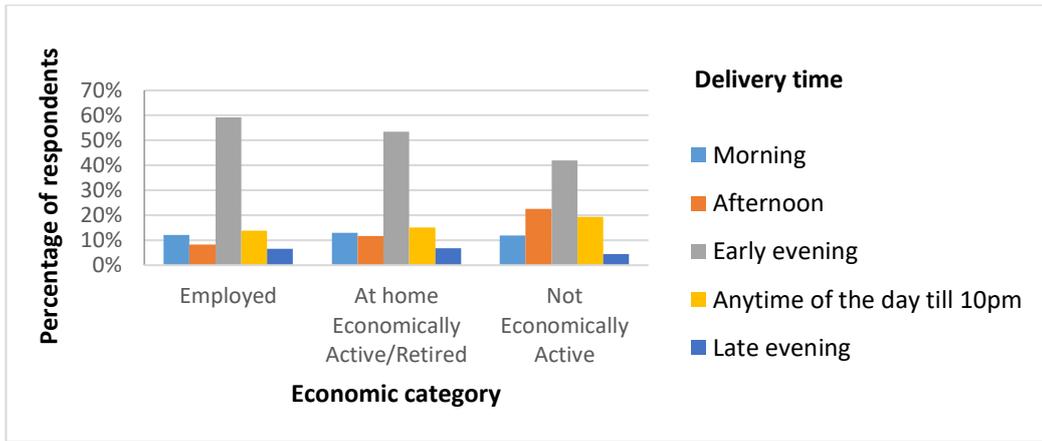
### 6.3.4 Economic status and preferred delivery time

Because two nominal variables were involved, a chi-square test of association was used to test whether an association existed between economic status and preferred time of day for a delivery. This gave a statistically significant result ( $\chi^2 = 39.99$ ,  $df = 8$ ,  $p < .001$ ,  $N = 1153$ ).

<i>Economic Status* Preferred time of the day for delivery</i>						
<i>Employed</i>	<i>Morning</i>	<i>Afternoon</i>	<i>Early Evening</i>	<i>Any time of the day till 10pm</i>	<i>Late Evening</i>	<i>Total</i>
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
<i>OBS</i>	74	50	361	84	40	609
<i>EXP</i>	75.5	69.1	334.6	91.3	38.5	609
<i>zRES</i>	-0.2	-2.3	1.4	-0.8	0.2	
<i>At home economically active or retired</i>						
<i>OBS</i>	50	45	206	58	26	385
<i>EXP</i>	47.7	43.7	211.5	57.7	24.4	385
<i>zRES</i>	0.3	0.2	-0.4	0.0	0.3	
<i>Not economically active</i>						
<i>OBS</i>	19	36	67	31	7	160
<i>EXP</i>	19.8	18.2	87.9	24.0	10.1	160
<i>zRES</i>	-0.2	4.2	-2.2	1.4	-1.0	
Residual value: +/- 1.96						

**Table 29: Contingency table for the association between economic status and preferred delivery time.**

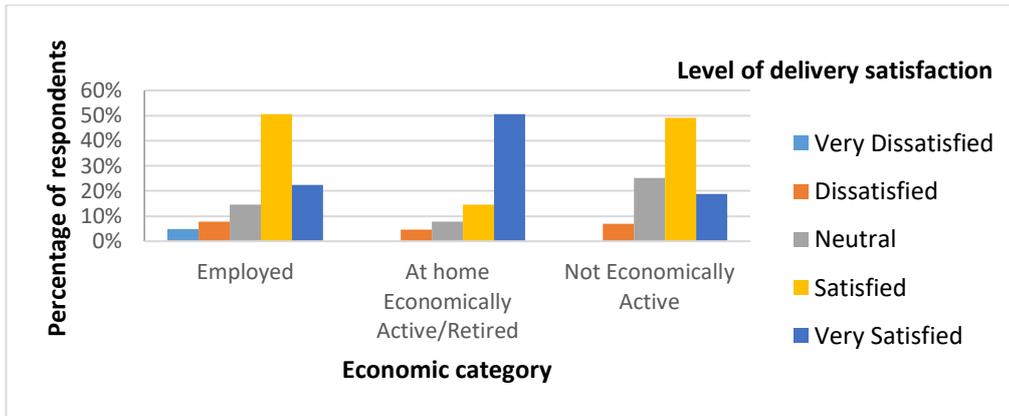
In that the standard residuals (*zRes*) exceeded +/- 1.96, Table 29 shows that employed people were significantly less likely to prefer afternoon deliveries than would be expected if there were no association between economic status and preferred delivery time, but that non-economically active people were significantly more likely to prefer afternoon deliveries and significantly less likely to prefer early evening deliveries. Figure 60 shows the distributions of responses across the two variables, and it can be seen that across all categories the majority of people preferred early evening deliveries.



**Figure 60: Economic status and preferred time for home delivery.**

### 6.3.5 Economic status and delivery satisfaction (simplified)

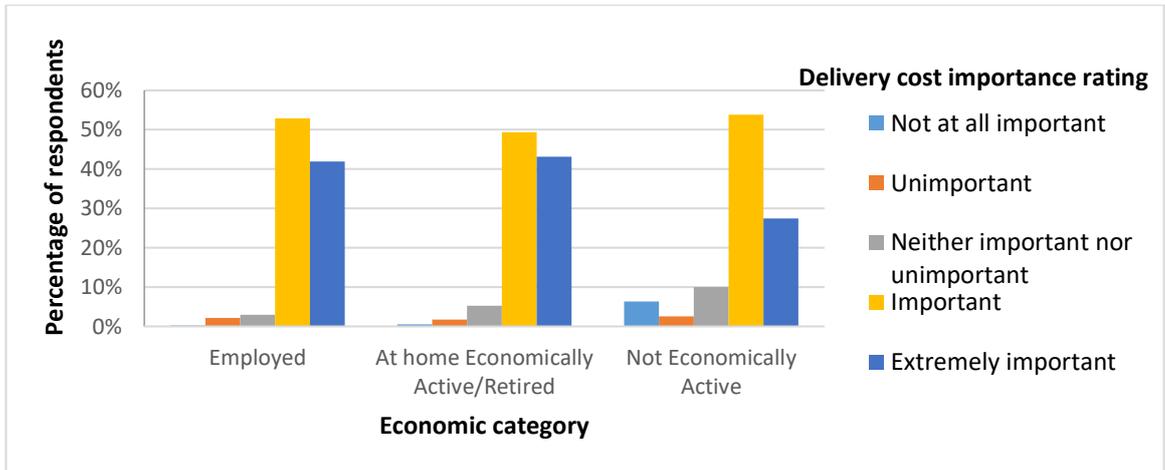
Again, because economic status was a nominal variable and delivery satisfaction was an ordinal variable with more than three points, a Kruskal-Wallis test was conducted to test for differences in delivery satisfaction across the economic status categories. This test gave a statistically significant result ( $\chi^2 = 18.562$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1159$ ). The mean ranks of the economic groups were: employed = 558.36, AHEA/R = 634.15, NEA = 533.06. The standardised test statistics (z) for pairwise comparisons between the employment categories were: employed vs. AHEA/R = -3.780,  $p_{adj} < .001$ ; employed vs. NEA = .922,  $p_{adj} = 1.000$ ; AHEA/R vs. NEA = 3.477,  $p_{adj} = .002$ . These results showed that the AHEA/R group was significantly more satisfied than the employed group and the NEA group, but that there was no significant difference between the employed and NEA groups. Figure 61 below shows the distributions for the different groups, and it can be seen that overall the majority of respondents were either satisfied or extremely satisfied with their online shopping delivery experience.



**Figure 61: Economic status and online shopping delivery satisfaction**

### 6.3.6 Economic status and delivery cost

Again, because importance of delivery cost was measured on an ordinal level, a Kruskal-Wallis test was used to test for differences in importance of delivery cost across the economic status categories. The test revealed a significant difference ( $\chi^2 = 24.026$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1163$ ). Mean ranks were as follows: employed = 599.51, AHEA/R = 598.68 and NEA = 474.24. The standardised test statistics (z) for pairwise comparisons between the employment categories were: employed vs. AHEA/R = .043,  $p_{adj} = 1.000$ ; employed vs. NEA = 4.715,  $p_{adj} < .001$ ; AHEA/R vs. NEA = 4.421,  $p_{adj} < .001$ . Thus, there were differences whereby the employed and AHEA/R groups considered delivery cost to be significantly more important than the NEA group did, but there was no significant difference between the employed and AHEA/R groups. Figure 62 shows that, overall, most people in all three economic groups rated delivery cost as either important or extremely important.

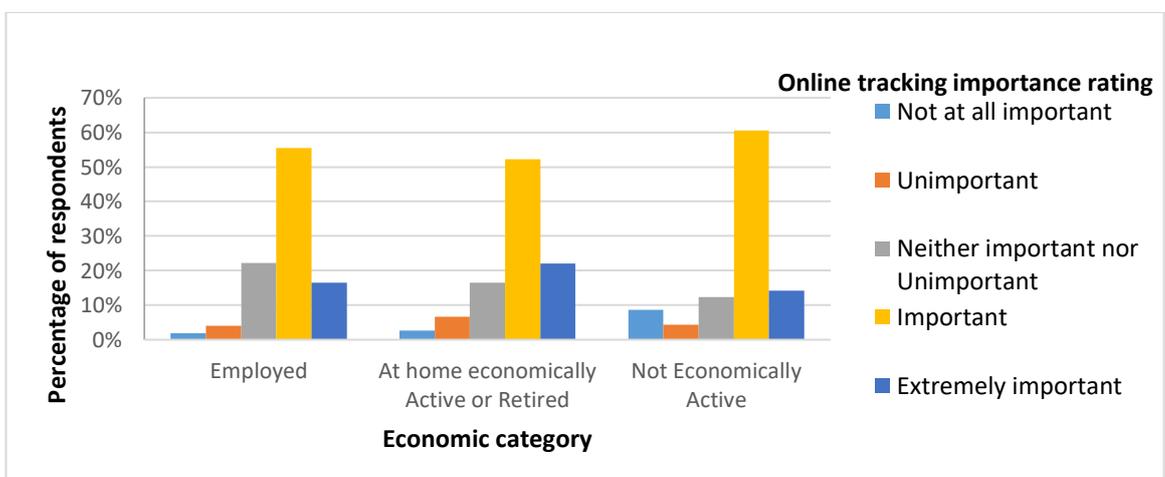


**Figure 62: Economic status and delivery cost importance.**

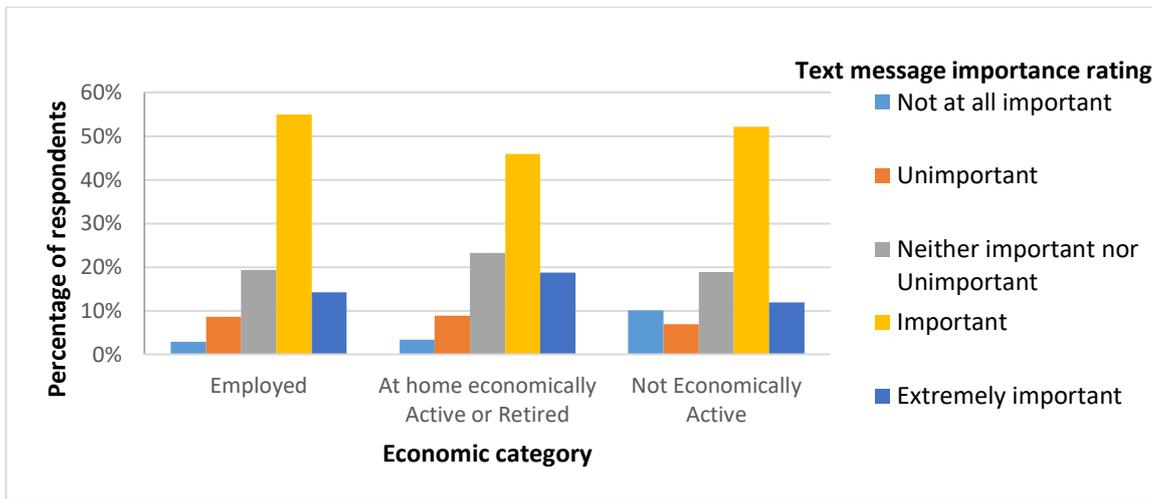
### 6.3.6.2 Economic status and information update

Differences in the perceived importance of online tracking information updates and text message information updates across economic status groups were again tested using Kruskal-Wallis tests because the two dependent variables were of an ordinal nature. Neither of the two tests was statistically significant: online tracking,  $\chi^2 = 2.639$ ,  $df = 2$ ,  $p = .267$ ,  $N = 1166$ ; and text message,  $\chi^2 = 2.710$ ,  $df = 2$ ,  $p = .258$ ,  $N = 1163$ . Thus, no statistically reliable differences were observed.

Figures 63 and 64 show that both online tracking and text messaging were considered important across all economic groups.



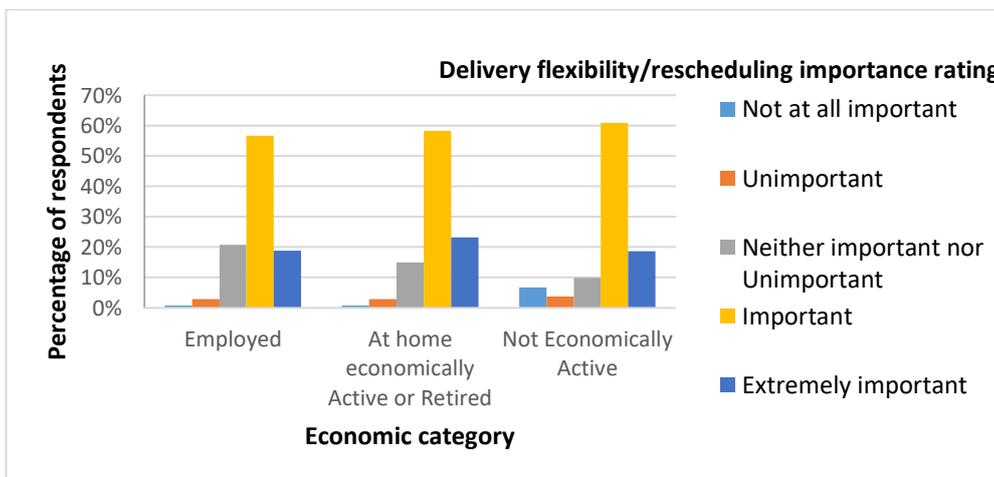
**Figure 63: Economic status and the importance of online tracking**



**Figure 64: Economic category and the importance of information updates by text message.**

### 6.3.6.3 Economic status and delivery flexibility/rescheduling

A Kruskal-Wallis test across economic status categories for the delivery flexibility/rescheduling ordinal variable was not statistically significant ( $\chi^2 = 5.803$ ,  $df = 2$ ,  $p < .055$ ,  $N = 1161$ ). Figure 65 shows that delivery flexibility/rescheduling was regarded as either important or extremely important by at least 76% of respondents across all three economic status categories.



**Figure 65: Economic status and delivery flexibility/ rescheduling**

### 6.3.7 Summary

Although no specific hypotheses were referenced, the above analyses showed that economic status may play a major role in influencing customers' preferences for parcel delivery.

The tests revealed that although the AHEA/R group appeared to be more satisfied with their online shopping delivery than the two other groups, overall, the three groups were mostly either satisfied or extremely satisfied. This may explain why people were generally actively engaged in online shopping; people usually engaging in shopping at least twice a month. Although high satisfaction was observed with respect to customers' delivery experiences, delivery cost was rated as being of very high importance, and the majority of respondents across all groups were not unconditionally prepared to pay an extra premium for speedy or same-day delivery of less important parcels, indicating that they would usually only pay a maximum of £5. In all groups, people also indicated a high degree of enthusiasm for delivery information updates and flexibility/rescheduling.

Regardless of economic status category, respondents generally indicated that they would not want to travel a long distance to collect a parcel and would prefer to travel less than a mile.

The data also indicated that people in the employed category and other economically active or retired categories preferred early evening deliveries, but that people who were not economically active preferred afternoon deliveries.

## 6.4 The influence of geographical location on online shopping indices

As seen in Section 5.2.1, it has been argued that geographical location can influence customers' online shopping attitudes and willingness to pay for delivery services. Therefore, this section reports the results of analyses involving relationships between respondents' geographical locations (city vs. town vs. rural) and their attitudes and online shopping preferences. Kruskal-Wallis tests were used because of the ordinal scaling of the DVs. Again, significant results were followed up by pairwise comparisons with significance levels adjusted for multiple comparisons.

### 6.4.1 Differences in online shopping satisfaction across geographical location

The Kruskal-Wallis test for online shopping satisfaction revealed a significant effect for geographical location ( $\chi^2 = 37.659$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1160$ ) result. The mean ranks of locations were as follows: city = 611.83; town = 503.13; and rural = 641.37. Standardised test statistics (z) for pairwise comparisons between the location categories were: city vs. town = 5.369,  $p_{adj} < .001$ ; city vs. rural = -1.146,  $p_{adj} = .756$ ; town vs. rural = -5.054,  $p_{adj} < .001$ . Thus, there were differences whereby city residents' online shopping satisfaction was significantly greater than that of town residents, but not rural residents, and rural satisfaction was significantly greater than that for towns. Here, Figure 66 shows that all respondents expressed a high degree of satisfaction with their online shopping experiences, with the lowest level of satisfaction being observed for town dwellers (the combined satisfied and very satisfied ratings being 63.00%).



**Figure 66: Location and online shopping satisfaction.**

### 6.4.2 Differences in online shopping habits across geographical location

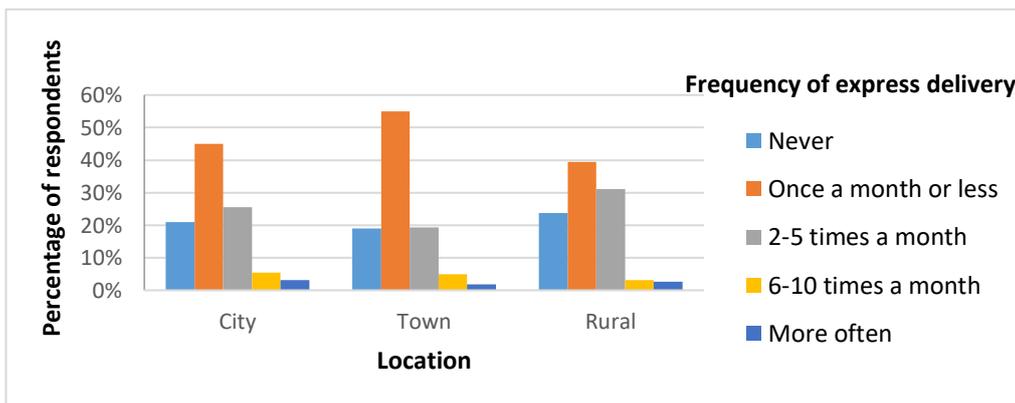
A Kruskal-Wallis test comparing the geographical locations with respect to frequency of online shopping was statistically significant ( $\chi^2 = 24.962$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1170$ ). Mean ranks were as follows: city = 600.69; town = 525.60; and rural = 600.11. Standardised test statistics (z) for pairwise comparison were: city vs. town = 3.545,  $p_{adj} = .001$ ; city vs. rural = -2.216,  $p_{adj} = .080$ ; town vs. rural = -4.733,  $p_{adj} < .001$ ). These results therefore showed that both city and rural residents shopped online significantly more frequently than town residents. Figure 67 demonstrates the distributions of responses for the different locations.



**Figure 67: Location and online shopping frequency**

#### 6.4.2.1 Location and frequency of using express delivery

A Kruskal-Wallis test for differences in frequency use of express delivery across locations was not statistically significant ( $\chi^2 = 2.063$ ,  $df = 2$ ,  $p = .357$ ,  $N = 1150$ ). Figure 68 shows that a large percentage of respondents from each geographical location used express delivery only once a month or never. Although respondents were generally not enthusiastic about express delivery, rural residents used express delivery slightly (but not significantly) more.

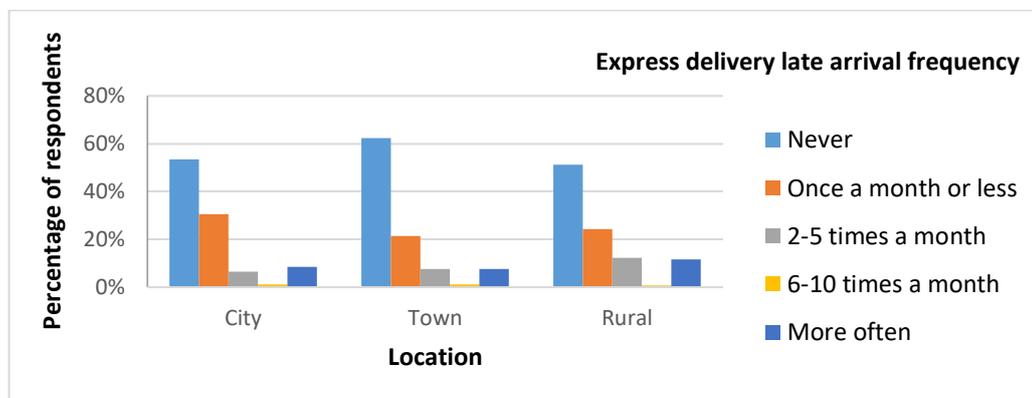


**Figure 68: Location and express delivery frequency.**

#### 6.4.2.2 Location and experience of the late arrival of express deliveries

Another Kruskal-Wallis test for differences in the frequency of late arrival across locations gave a significant result ( $\chi^2 = 8.055$ ,  $df = 2$ ,  $p = .018$ ,  $N = 1050$ ). The mean ranks for the groups were: city = 534.21; town = 495.14; rural = 561.90. Standardised test statistics (z) for pairwise comparisons between the locations were: city vs. town = 2.090,  $p_{adj} = .110$ ; city

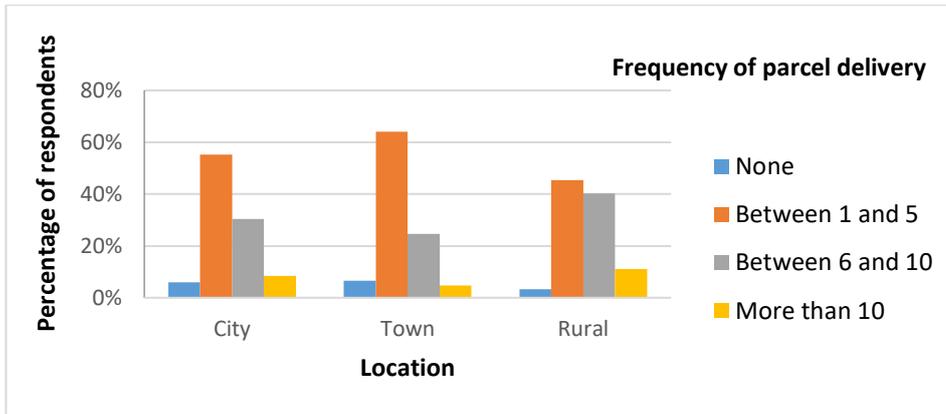
vs. rural = -1.159,  $p_{adj} = .740$ ; town vs. rural = -2.644,  $p_{adj} = .025$ . Thus, while differences between cities and towns, and cities and rural locations were not significant, town residents had significantly less experience of delayed express deliveries than rural residents. Figure 69 shows that, in most cases, respondents did not experience late delivery of their express parcels irrespective of location, but when they did it was usually once a month or less.



**Figure 69: Location and late arrival of express deliveries.**

### 6.4.3 Geographical location and delivery experience

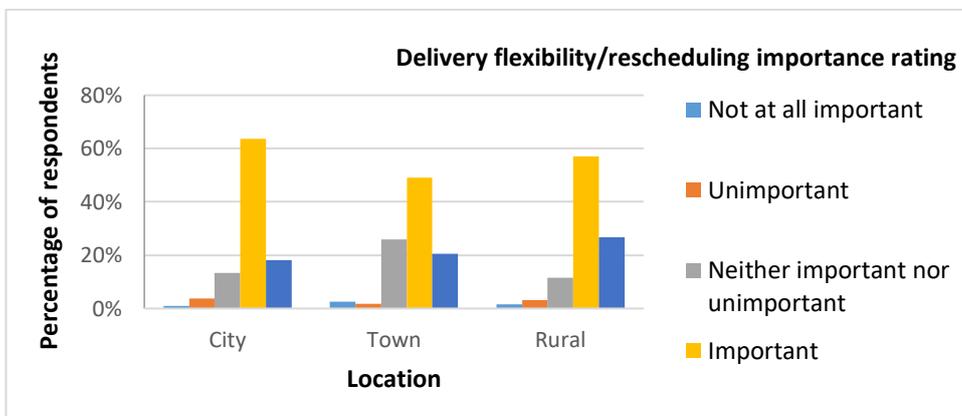
A Kruskal-Wallis test of the number of parcels received in the last eight weeks across the locations was statistically significant ( $\chi^2 = 27.077$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1154$ ), with mean ranks as follows: city = 584.06; town = 526.13, and rural = 661.70. Standardised test statistics (z) for pairwise comparisons between the locations were: city vs. town = 2.972,  $p_{adj} = .009$ ; city vs. rural = -3.128,  $p_{adj} = .005$ ; town vs. rural = -5.148,  $p_{adj} < .001$ ). These results showed that there were differences whereby the number of parcels received by town residents was significantly lower than for city and rural residents, and the number of parcels received by city residents was also significantly lower than for rural residents. As seen in Figure 70 below, although the majority of respondents across the different locations received parcels at least somewhere between 1 and 5 times, rural residents had the highest regular rates of delivery in the ‘between 6 and 10 times’ and ‘more than 10 times’ categories in the last eight weeks.



**Figure 70: Location and frequency of parcel deliveries.**

#### 6.4.4 Geographical location and the importance of delivery rescheduling/flexibility

A further Kruskal-Wallis test examining differences in the perceived importance of delivery flexibility/rescheduling across the locations was statistically significant ( $\chi^2 = 11.847$ ,  $df = 2$ ,  $p = .003$ ,  $N = 1161$ ), with mean ranks across groups being: city = 586.95; town = 545.71; rural = 634.79. Standardised test statistics (z) for pairwise comparisons between the locations were as follows: city vs. town = 2.107,  $p_{adj} = .105$ ; city vs. rural = -1.920,  $p_{adj} = .165$ ; town vs. rural = -3.374,  $p_{adj} = .002$ . So, while there were no significant differences between city dwellers and either town or rural residents, people in rural locations attached significantly greater importance to rescheduling/flexibility than people in towns did. Figure 71 shows that across the three location categories, delivery flexibility and rescheduling were generally regarded as important delivery features.



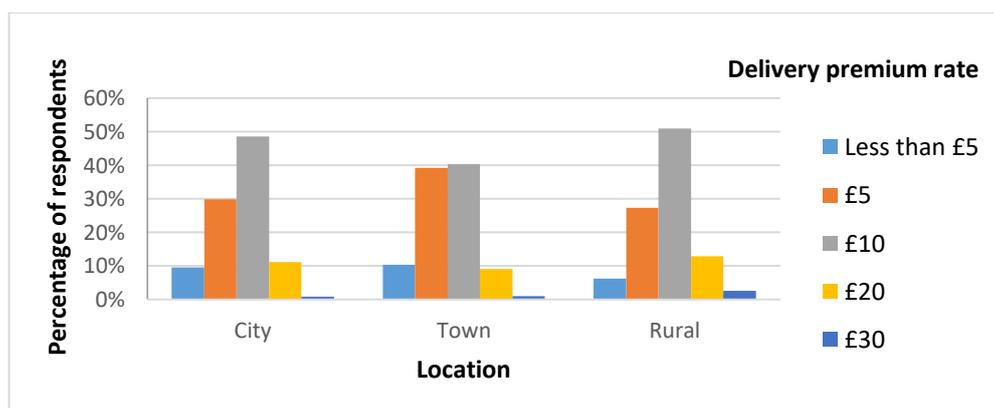
**Figure 71: Location and the importance of delivery rescheduling/flexibility**

## 6.4.5 Geographical location and willingness to pay a premium

### 6.4.5.1 Location and willingness to pay a premium for the delivery of a relatively important item

A Kruskal-Wallis test for differences in willingness to pay a premium for the delivery of a relatively important item ('Two tickets costing £25 each (£50 total) to take a close friend to a music concert this evening') across locations revealed a significant result ( $\chi^2 = 15.438$ ,  $df = 2$ ,  $p < .001$ ,  $N = 1165$ ), with mean ranks for locations being as follows: city = 593.72; town = 537.98; rural = 641.11. Standardised test statistics (z) for pairwise comparisons were: city vs. town = 2.721,  $p_{adj} = .020$ ; city vs. rural = -1.828,  $p_{adj} = .203$ ; town vs. rural = -3.751,  $p_{adj} = .001$ . Thus, there were differences whereby city residents said they would pay significantly more than town residents, and rural residents said they would pay significantly more than town residents, but no significant difference was observed between city and rural residents.

Overall, Figure 72 shows that a large proportion of respondents within each location category were willing to pay a premium of up to £10.



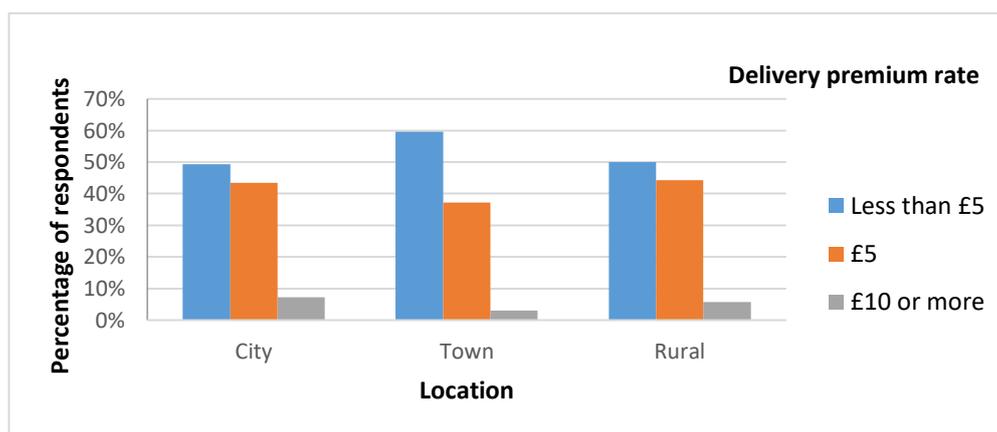
**Figure 72: Location and willingness to pay a premium for the delivery of a relatively important item ('Two tickets costing £25 each (£50 total) to take a close friend to a music concert this evening').**

### 6.4.5.2 Location and willingness to pay a premium for the delivery of a precious but less important item

A Kruskal-Wallis test for differences in willingness to pay a premium for the delivery of a precious but less important item across locations gave a significant result ( $\chi^2 = 12.707$ ,  $df = 2$ ,  $p = .002$ ,  $N = 1166$ ), with mean ranks as follows: city = 607.67; town = 539.78; rural =

599.76). Standardised test statistics (z) for pairwise comparisons between the different locations were: city vs. town = 3.466,  $p_{adj} = .002$ ; city vs. rural = .305,  $p_{adj} = 1.000$ ; town vs. rural = -2.294,  $p_{adj} = .065$ . Here, then, there were differences whereby city residents were willing to pay significantly more than town residents, but there were no significant differences between people in city and rural locations, and between people in town and rural locations.

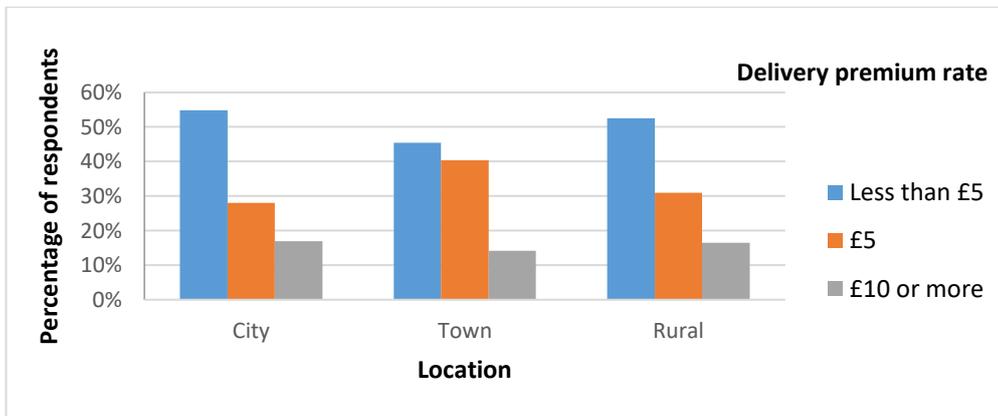
Figure 73 also shows that the majority of respondents in each geographical location would not have paid more than £5 for delivery. This could be linked to the lack of importance and urgency in the scenario.



**Figure 73: Location and willingness to pay a premium for the delivery of a precious but less important item (e.g. the latest book, costing £25, by a favourite author).**

#### 6.4.5.3 Location and willingness to pay a premium for same-day delivery of a less important parcel

A further Kruskal-Wallis test for differences in willingness to pay a premium for the same-day delivery of a regular parcel across the three locations was non-significant ( $\chi^2 = 3.551$ ,  $df = 2$ ,  $p = .169$ ,  $N = 1171$ ). For all three locations, the largest percentage of respondents said they were only willing to pay a premium of less than £5 for delivery, followed by £5 (see Figure 74). The preference for paying only a low premium was similar to that for the no urgency/importance scenario. City residents would in this case pay less, followed by the rural residents, and town residents will pay a bit more than the two other groups.



**Figure 74: Location and willingness to pay a premium for delivery of a less important regular parcel, scheduled for a same-day delivery.**

#### 6.4.6 Summary

The analysis in this section shows how respondents' purchase decisions are related to their geographical location. The first test revealed that, although there were some significant differences in online shopping satisfaction across geographical locations, the majority of respondents were either satisfied or very satisfied. The data also showed that there was reduced interest in express delivery relative to the payment of an additional premium. It was, however, observed that there were no statistically robust differences in the extent to which people in the three geographical locations used express delivery. Experience of delayed deliveries was rare across the groups, and when delays did occur they usually happened only once a month or less. It was also observed that although customers across the three locations generally shopped online quite frequently, city and rural residents shopped online significantly more frequently than town residents. Furthermore, delivery cost was generally rated as being important across the three locations, and while customers wanted delivery rescheduling/flexibility, residents in rural locations attached significantly greater importance to rescheduling/flexibility than people in towns. Also, the majority of respondents across the three locations rated information updates (online tracking and text messaging) as being important.

On willingness to pay a premium for same-day parcels, as was the case with the group based on economic status, respondents in the different geographical locations were unwilling to pay much of a premium for the delivery of regular parcels. However, there was an indication that, generally, respondents were willing to pay up to a maximum of £10 for important and/or urgent parcels. The willingness to pay up to £10 can be attributed to the

relative importance (a close friend) and urgency (this evening) attached to the parcel. This corroborates findings relating to H2 and H3 where respondents indicated willingness to pay a premium when parcels were regarded as important and/or urgent.

## **6.5 A comparison with other data sources**

The above findings serve as a form of triangulation for some of the claims and discoveries made in the qualitative analysis and the literature. To further corroborate the findings, in this section comparisons are made with White Papers, such as reports from Ofcom and the Office for National Statistics.

### **6.5.1 Customers' attitudes to payment for delivery**

The findings in Sections 6.2.2, 6.2.3, 6.2.5, 6.3.2, and 6.4.5 indicated that regardless of customers' enthusiasm for speedy delivery, economic category or geographical location, respondents did not show enthusiasm for paying additional premiums for either standard parcel delivery or express/same-day delivery, and generally showed an interest in paying only £5 or less for delivery, when given the option of different levels of premium. However, a willingness to pay a premium of up to £10 was evident for urgent or important parcels as seen in Section 6.2.3, while some respondents who were enthusiastic about express delivery said they would pay up to £20 for the service. Reference to Section 5.2.2 shows similarities between these findings and those made in previous experts' claims, this being encouraging with respect to the validity of the present findings.

In addition, even though Section 6.2.1 revealed that a high percentage of respondents rated delivery speed as important, the findings in Sections 6.2.3 (express delivery and premium payment relationship), 6.3 (economic status) and 6.4 (geographical location), showed that customers would not unconditionally pay an additional premium for speedy parcel delivery. This can be traced to the findings in Section 5.2.2 where expert studies were seen to show that although there is a preference for speedy delivery, people will not pay a premium unless there are important circumstances. An Ofcom (2015) report reveals that the main factor customers consider to be important when choosing a retailer is the retailer's ability to offer free delivery, as shown in Figure 75 below. The same Ofcom report

shows that customers prefer to wait for a parcel to be delivered via an economy delivery rather than incur express delivery charges (see Figure 76).

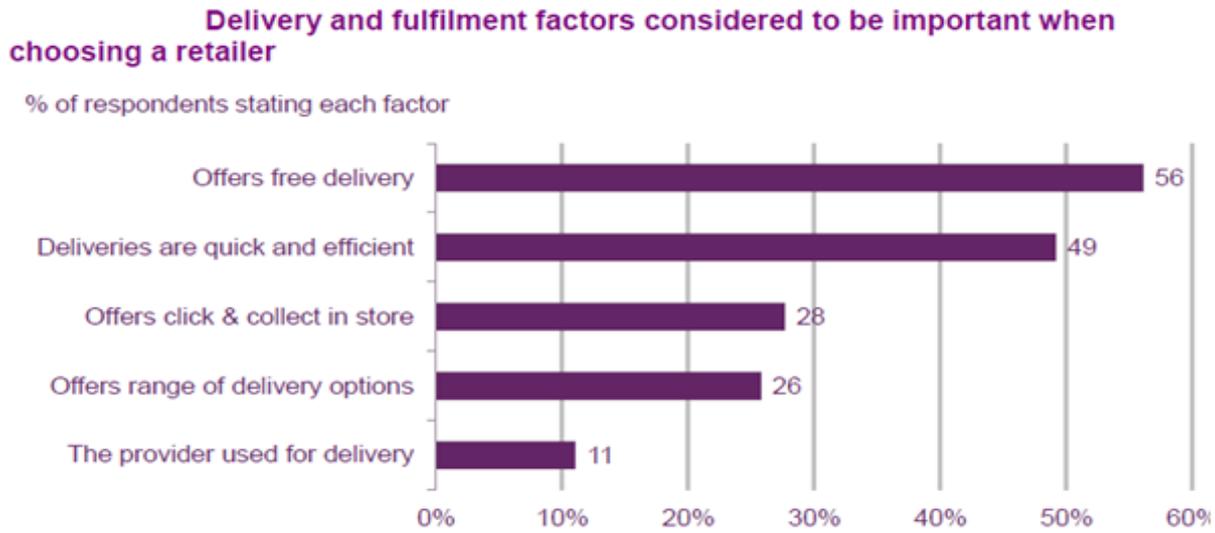


Figure 75: Important factors for retailer selection. Source: Ofcom (2015).

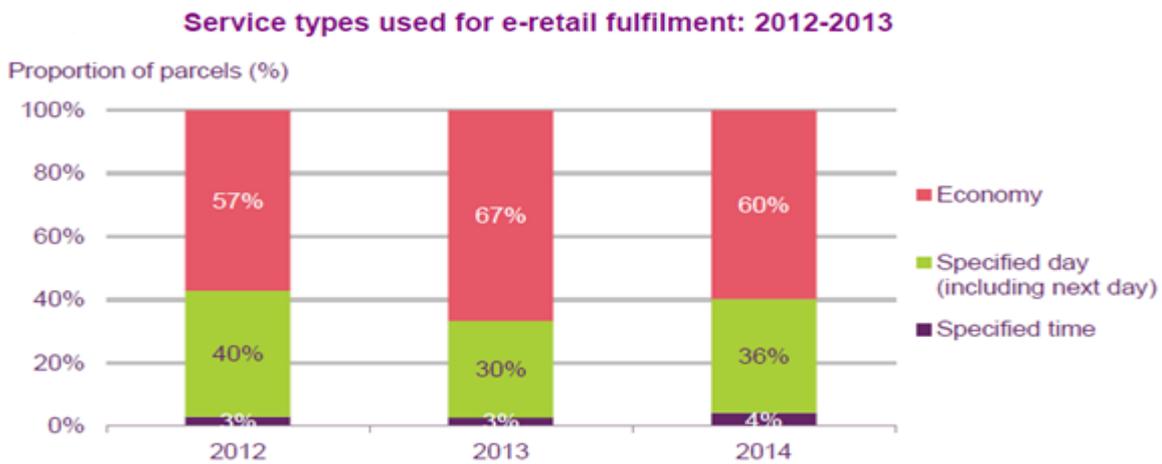
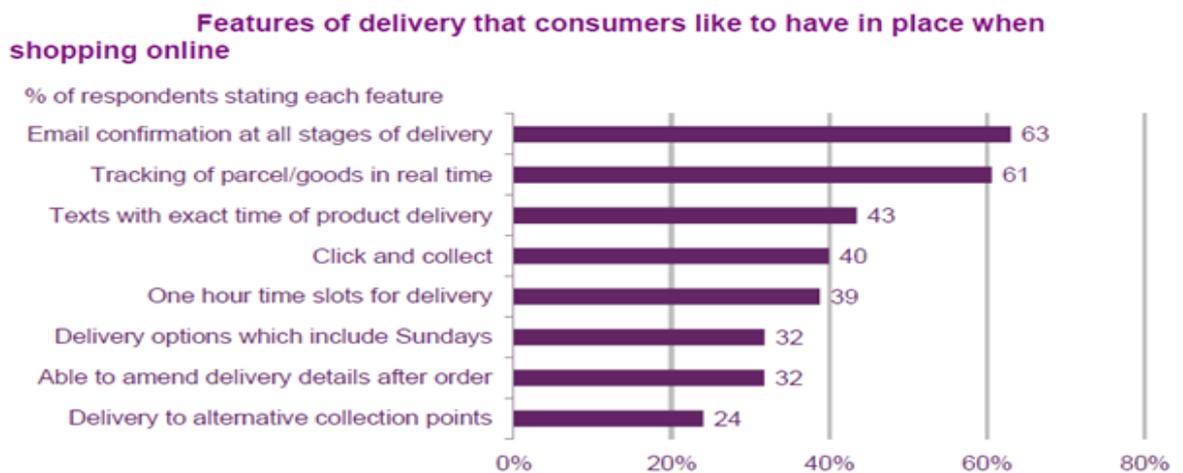


Figure 76: Customers’ preferred types of delivery service. Source: Ofcom (2015).

Also, in the body of the current survey, a text field allowed customers to include their own opinions on the theme of the survey. Numerous comments were received and it was found that over 90% of the comments indicated similar opinions to those stated by experts in the previous chapter: customers are not keen on same-day delivery and would rather settle for free standard or next-day delivery (see Appendix 6.1).

## 6.5.2 Delivery information updates

The findings in Section 6.3.6.2 that the majority of customers regarded delivery information updates, through online tracking and text messages, as important, justifies the claim by Wright (2007) that with information updates through mobile computing, carriers and customers can work together to ensure effective and efficient parcel delivery. This is supported by the 2015 Ofcom report, with Figure 77 showing that although 43% of customers indicated interest in text message updates, more than 60% of customers wanted access to real-time tracking information updates.



**Figure 77: Customers' desire for information updates. Source: Ofcom report 2015.**

The hypotheses tests and other related analyses in this chapter confirmed and validated some of the literature findings and expert claims in Chapter 5 directly concerning customers. The validation of expert claims through descriptive analysis shows that the findings are credible and dependable, and can be likened to Lincoln and Guba's (1985, 1986) mixed method framework for trustworthiness and rigour, as explained in Chapter 4. Also, comparison of the present results and those in previous White Papers show similarities in findings, transferability and conformability as shown in the framework of Sale and Brazil shown in Table 30.

Criteria	Appraisal
Truth Value	Credibility vs. Internal Validity
Applicability	Transferability/Fittingness vs. External Validity/Generalizability
Consistency	Dependability vs. Reliability
Neutrality	Conformability vs. Objectivity

**Table 30: Mixed method quality appraisal. Source: Sale and Brazil (2004)**

## 6.6 Conclusion

This chapter has clarified and confirmed claims from the qualitative research through hypotheses testing. Three out of four hypotheses were supported, and several other supportive features have been discussed and compared with findings in literature and White Papers.

The chapter has established that customers' preference is categorical, and the different features have been analysed in order of economic status and geographical location.

The categorisation helps identify that respondents are highly enthusiastic about online shopping, but do not have much preference for express delivery. Although a positive correlation is observed with customers' preference for speedy deliveries, a negative correlation was observed regarding a willingness to pay a premium for speedy delivery. While home delivery could not be established as being the favourite delivery type, early evening has been identified as the favourite delivery time, and customers would not travel more than a mile for parcel collection.

Several of these findings have also been compared and confirmed through the professional trade press.

The next chapter will show how the different ideas on same-day delivery service design through collaboration are reviewed, alongside literature findings to develop and design new business models.

## Chapter 7

### **7.0 Design of possible business models**

This chapter identifies some of the findings from the literature, data analysis and the trade press, and aggregates them to enable the design of business models. Five business models have been designed, with the second and fifth models having been designed to be intelligently innovative, proactive and fit for businesses of all sizes. The first four models can drive low and affordable premiums for same-day delivery, while the fifth can drive same-day delivery either free of charge or at a very low premium. All models drive a competitive business strategy for SMEs with the ability to support both omni-channel and multi-channel retail strategies. The second and fifth models are illustrated with examples of business process flows. This project has identified the online retail industry as emerging into the same-day delivery market, and the reaction to this market is now beyond just being innovative, but is becoming more proactive and intelligently innovative. The project also suggests that, recently, competition in the retail industry has started to take on a new dimension, and the differences between conventional retail and e-tailing will vanish and the retail sector will transform into a showroom without walls (Brynjolfsson et al., 2013).

This development has challenged carriers, particularly the 3PL and large retailers, to refine their business models to support the e-commerce fulfilment centre, which is “physically configured specifically to process large-volume small-order-demand generated through online shopping” (Koganpage, 2015, p. 12). The relatively new e-tail giants like Amazon, JD.com and Alibaba have invested in packaging and delivery innovation and now offer free delivery services to homes and offices. As good as this may sound to consumers, other traditional retailers have been left with no other option than to proactively react to the flexibility in retail logistics, overcome this obstacle and offer a matching service.

This above claim is linked to the fact that demand for parcel volume in the UK B2C sector is very sensitive to price, and customers pay for express shipping as a separate charge. As a result, this research has established that customers would rather opt for free standard delivery than pay a premium for same-day delivery.

A similar view as that above has been expressed by Miyatake et al. (2016) who explained that in Japan, the logistics/delivery cost from major online retailers is largely hidden from customers, i.e. it is included in the product price and customers do not have to pay

separately for delivery services, even for express deliveries. When free same-day delivery becomes commonplace, the absence of a free same-day service from some retailers puts them at a competitive disadvantage. This strategy by the major online retailers in Japan implies that the shipping cost is negotiated at the B2B level, between shippers and suppliers, shippers and carriers, or is an internal cost transfer within a vertically integrated operation like Amazon. In other words, this indicates that customers are disinterested in the specific arrangements between shippers and carriers, and it is just the total cost of the transaction that they care about and only that influences their choice when comparing e-tailer with e-tailer or conventional store with e-tailer.

If this approach can be adopted by LEs or SMEs in the UK, by following the Japanese trend of offering supposed free delivery, then the cost of logistics will be hidden from customers. Although this approach may only be feasible for LEs, it will become one of the items that determines the size of the retailer's margin, which will likely result in increasing demand for same-day delivery services in the UK. This is similar to the finding by Borsenberger et al. (2016) that large e-tailers possess the potential to negotiate competitive commercial terms for parcel delivery at fixed or discounted rates, which generally leads to volume shipping discounts. However, it still remains unclear how SMEs can benefit from the approach and, as a result, the development of innovative models that leverage the market in favour of all sizes of business is important.

This research work has shown in Sections 5.4.2.3 and 5.4.2.4 that in order to remain relevant in today's competitive retail logistics industry, innovative collaboration is important. It has also been revealed that most of the successful retail firms today have greatly benefitted from vertical partnership (the partnership is between shippers and carriers), and have collaborated and partnered for their logistics services (Atalay et al., 2014). The study has also revealed that the intense competition in the market has made retailers and carriers, and particularly LEs, take radical innovative steps not just to stay relevant in the market, but to rule and dominate the market. Amazon and Argos are two main TORs in the UK to have used their financial strength to take offensive competitive strategies in the retail market to gain dominance.

Ranganathan et al. (2003) explained that the success of e-commerce has introduced a new transition phase as firms are under pressure to remain relevant for profitability. In this case,

many businesses are faced with the need to integrate e-business into their conventional business, and some e-tailers have also started to open local stores.

The competition is intense and the consequences have been mostly felt by carriers. Also, with the ongoing investments by TORs and a few of the carriers, the chances are that the cost of same-day delivery may become affordable and customers would begin to embrace and patronise same-day delivery services. It should at this stage be noted that since TORs now run in-house logistics to enable them to offer same-day delivery services, carriers will likely lose market share as a result. Carriers are therefore under pressure to innovate, the result of which would require innovative business model design in order to satisfy the market need and help regain lost customers. Carriers have however described the current competitive strategy for same-day delivery as being highly demanding, and that it would require huge investment through radical innovation. Despite this, the analysis has shown that one of the respondents, Carrier 2, has embarked on a collaborative project in this regard (see Section 5.4.2.6). The literature has also shown that there are few academic studies which focus on same-day delivery, and only a few related articles have been published on the subject. In order to propose solutions that will drive sustainable same-day parcel delivery and also leverage the market, the author has, through a review of the academic literature, and professional trade press, extracted business ideas and designed new business models.

This research has therefore been able to develop five business models that would leverage the same-day delivery market in favour of both SMEs and LEs, i.e. shippers and carriers.

The approaches employed and the innovative business model designs deduced from the research work are described below.

## **7.1 Business model development**

The business models have been developed through careful review of aggregated data from the literature, trade press and research analysis to give the following findings, and as the existing system (distribution centre/hub-and-spoke) does not work for same-day delivery, as explained in Section 5.5.1, the models can therefore be termed emerging and inductively developed models.

This project has studied and analysed different ideas and opinions from different business experts, from both the retail and logistics sectors. The research has identified that most businesses no longer use a one-size-fits-all model approach, but have put in place multiple models for different business needs and requirements. Same-day delivery, having existed for a substantial time has, in recent years, been reinvigorated in the retail logistics industry as the new competitive strategy. However, this study has, through the above analysis, identified that as good as the idea may sound, the requirements to satisfy the need for same-day business delivery go beyond incremental innovation to radical innovation. In order to bring this to light, TORs have attempted several innovative methods, some of which seem to be faced with different obstacles such as the PESTLE forces, an example of which is the regulatory restrictions on attempts by large retailers like Amazon and Walmart to use drones for their same-day delivery services (D'Andrea, 2014).

Despite the challenge of restrictions regarding the implementation of drones, large retailers have continued to use their financial might to invest in R&D for new and innovative ideas on same-day delivery implementation, thereby putting the retail market under intense pressure (Lotz, 2015). Unfortunately, not all retailers can meet this competitive requirement; only the few large retailers can as they are able to benefit from vertical partnership. However, this research has introduced a few models to leverage the market in favour of small and medium retailers.

In Section 2.6.1, the nine elements of Osterwalder's business model are explained. However, because this research emphasises collaboration and since none of the elements have any collaborative features, a new element referred to as 'system integration' is introduced to address all forms of systems integration for an enhanced collaboration system. The models have therefore been designed in line with the adapted 10-point business model elements, as shown below. The model design is divided into two sections: one for emerging models and another for inductive models.

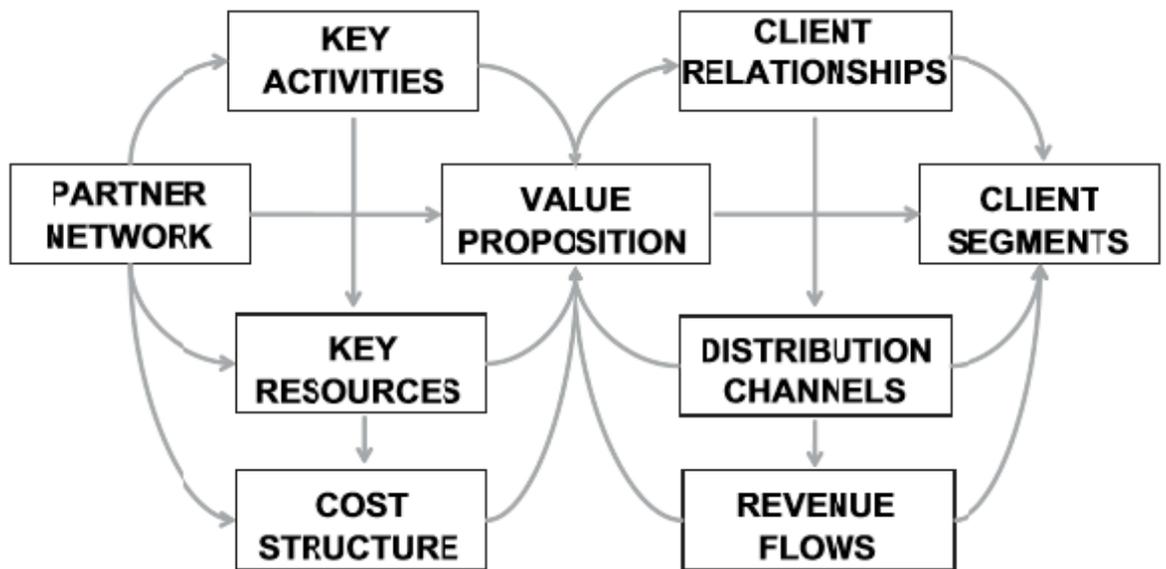


Figure 78: Osterwalder's 9-point decomposition of a business model. Source: Chesbrough (2010).

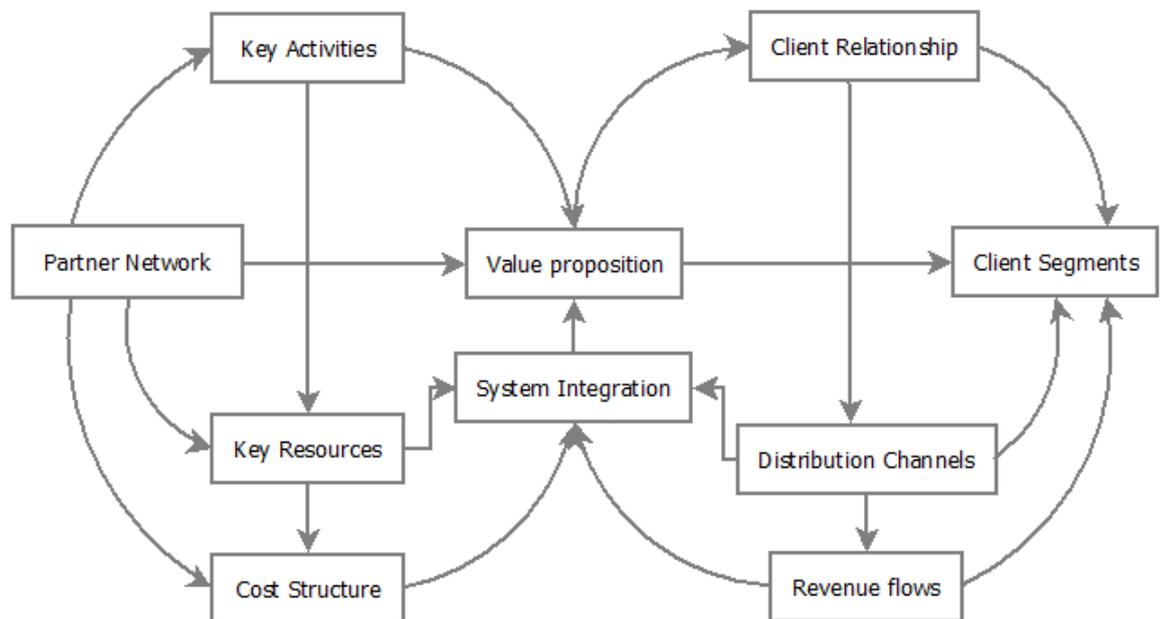


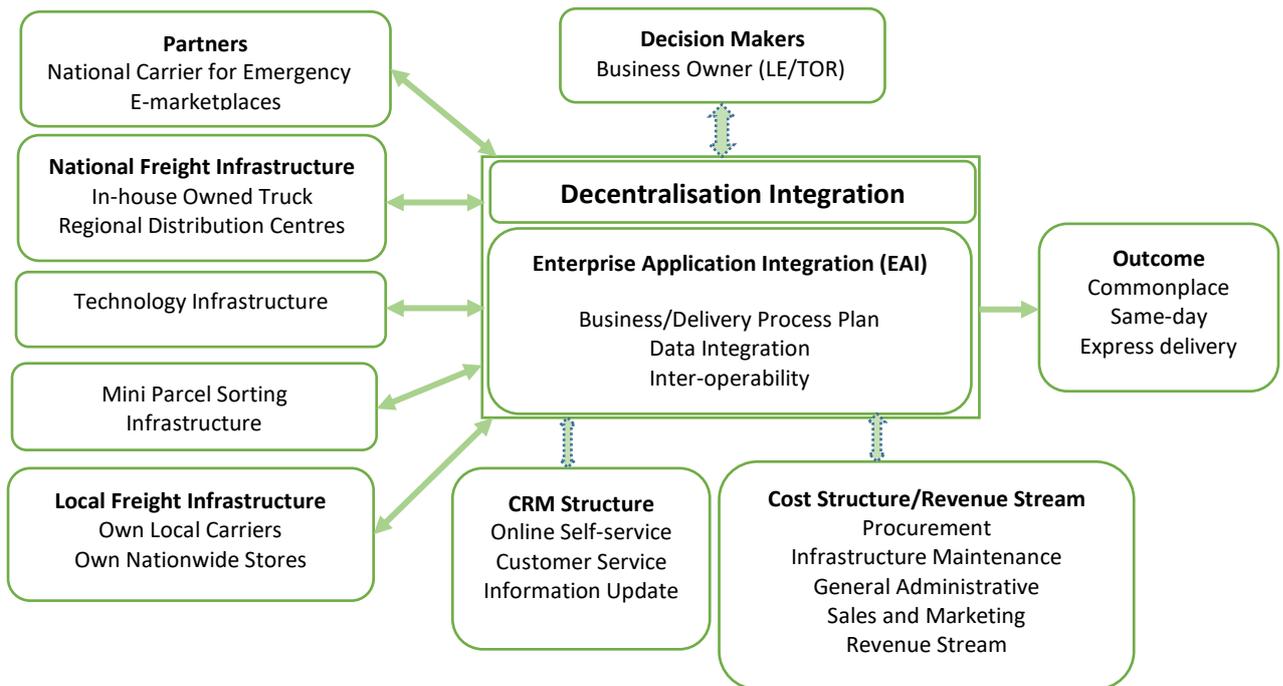
Figure 79: 10-point decomposition of a collaborative business model. Source: Adapted from Chesbrough (2010).

## 7.2 Emerging models

### 7.2.1 The large retailer decentralisation design

This is a model designed for large retailers who are able to benefit from vertical partnership. Here, retailers with a wide geographical spread of distribution centres and stores partner with a local same-day courier for same-day delivery services. In this case, parcels are despatched from the nearest store to the delivery point. This, even though it may not require volume shipping, would give room for a profit margin for both shipper and carrier. It is noted that this would only work in cities where the services of such local carriers are available, e.g. the use of freelance carriers as expressed by Carrier 2 in Section 5.4.2.6 or the recently introduced cycle courier as explained in Section 3.3.2. A nationwide delivery service could however be possible in a situation where the logistics service is internally owned by the retailer or is accessed through vertical partnership, as in the case of Shipper 3, and as explained in Section 5.4.2.7. Key infrastructure could therefore be identified as distribution centres/hub-and-spoke for regional deliveries, small vans or cycle couriers for local deliveries, nationwide stores, IT facilities for system integration and the customer relationship management (CRM) system. The availability of technical assistance on IT and freight infrastructure is also important, e.g. website maintenance preventing downtime, innovative real-time operations, and the quick resolution of any faults on the information update facilities employed, such as trackers and RFID.

Further information is depicted in the model diagram in Figure 80 below.



**Figure 80: The decentralisation model.**

This model is designed to have its driver as a TOR who has the capability for vertical partnership, has stores nationwide and strategically located distribution centres, which will allow the company the opportunity to manage, control and be responsible for its own same-day delivery services. In this case, the nationwide spread of stores will afford the company closer proximity to its customers, and parcels can be delivered in a cost-effective manner and with satisfactory profit margin without the need for volume shipping.

**Enterprise Application Integration (EAI):** this can be referred to as the centre of operations, where multiple enterprise infrastructures are managed and integrated for successful business process flow. Decisions are made on which data or information should be shared, with whom and through which channels. In instances where there are components with different operating systems, decisions are made on the infrastructure required for interoperability.

**Key Partners:** the courier partners are used only for emergency deliveries, in cases when the company's freight facilities are not immediately available due to unforeseen circumstances. The TSP is a very important part of the system, and is responsible for the integration of the entire system from the point of order to either distribution or shipment

point and then to delivery. TSPs have introduced different cost-effective, state-of-the-art facilities and innovative applications for logistics solutions that can intelligently locate the closest store for parcel despatch, design the routing process, update the transition stages and estimate the delivery time, as analysed through the TSPs (see Section 5.4.2.3). With these facilities in place, and effectively utilised, more traffic will be attracted.

**Value Proposition:** the proposition here is to make same-day delivery affordable for customers and even commonplace. With stores strategically located nationwide, parcels can be shipped from stores or warehouses in closer proximity to delivery points.

**Relationships:** establishing standard relationships with customers will require the CRM system for the online self-service system and information update as regards parcel despatch and transit progress or other related developments (see Section 5.4.2.4).

**Channels:** the primary transaction channels will be the store branches and the use of internet-enabled mobile devices for online shopping (e-commerce).

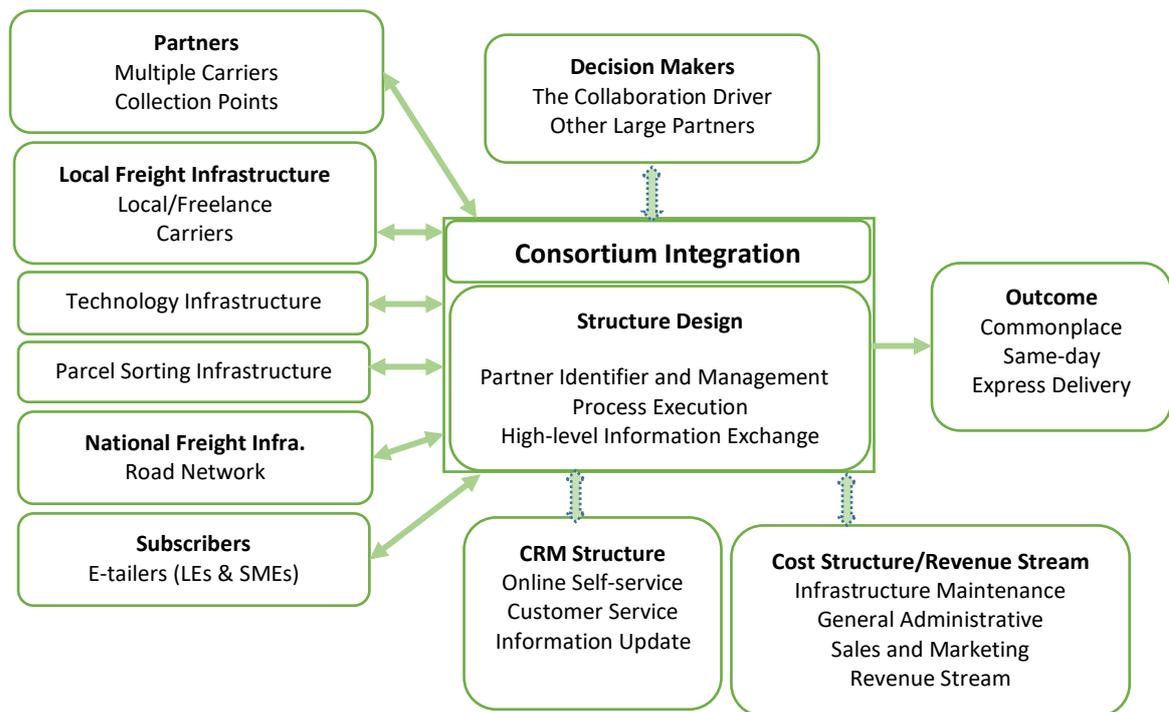
**Cost Structure:** for the successful execution and implementation of the model, certain costs like administrative expenses, costs for freight improvement, e.g. van procurement/maintenance, IT infrastructure maintenance and upgrades, and above all costs for sales and marketing are inevitable, and must always be considered in the budget associated with the model's successful implementation.

**Revenue Stream:** most of the revenue generated will be payments from the same-day delivery service. However, at the initial stage, the project could still be funded from other sources until the service becomes successful.

## 7.2.2 The national consortium

This is a form of ELM between multiple carriers which form a national consortium through partnership (see Section 2.3.5). The collaboration in this form is open to small, medium and large carriers on the basis that the strength of each category of carrier is required to achieve national coverage. The partnership is principally designed for large and medium carriers, while small carriers can either become partners or be acquired. This idea requires an initiator, which is likely to be a large carrier with the capability to vertically integrate and drive a horizontal collaboration platform. This is a flexible approach that permits the merging partners the leeway to remain in control of their individual businesses, while they deliver parcels on behalf of the initiator, and also provides them with the opportunity to benefit from a network of national coverage. It could also be explained as a good

opportunity to consolidate, and for carriers to draw volume to their own business especially the medium and small carriers, as explained through Carrier 2’s merger and collaboration in Section 5.4.2.6. It also affords partners the opportunity to share resources, such as distribution centres, warehouses and transportation fleets, which consequently results in a reduction in the cost of infrastructure investment. However, the success of this approach will be dependent on an innovative technology platform that drives seamless communication, uninterrupted information sharing, with the additional incorporation of other information update applications. It is further believed that the burden of the investment cost may be shared between large players in the consortium. Very good examples of initiators could be Carriers 1 and 2.



**Figure 81: National consortium model.**

This is a model that will require collaboration and merging. It is a model with a high level of collaboration, and it is to be driven by a large carrier with the ability to vertically integrate and strong negotiation skills. This model is not designed to only focus on same-day delivery, but to maximally utilise the strength and derivable benefits of collaboration, both locally and nationally. It has been designed with the belief that a technologically inclined, high-level collaboration will drive fast, efficient and reliable intercity delivery, part of which will be same-day intercity delivery. It has also been designed to leverage the same-day and

express-delivery markets in favour of small and medium firms, i.e. shippers and carriers, to benefit from innovative collaboration and actively compete with TORs without bounds.

**Consortium Integration:** this is the central and initial stage where the collaboration structure is designed and decided upon by the decision-makers. At this stage, partners are identified and their roles and management are decided. The business execution processes and standards are decided and agreed upon, all documents are exchanged and commercial transaction deals are signed in accordance with the agreement. At this point in the process, the business IT network is formed and the information exchange platform is designed for interoperability.

**Key Partners:** as explained above, the key partner categories are identified as carriers, TSPs and shippers. In this case, the three categories of carriers, i.e. small, medium and large, will be actively involved in the collaboration process. Each of them plays a very important role in their locality towards a common goal. The small carriers will be tasked with dealing with parcel collections and last-mile deliveries, whereas medium and large carriers handle intercity and regional deliveries (see Section 5.4.2.6). TSPs will manage the design and maintenance of the entire consortium's integration process, alongside the development and integration of other intelligent application programming interfaces (API) that make the entire system innovative, while also operating as the link between carriers and shippers. The online retailers also comprise three categories: small, medium and large, and are responsible for parcel pick-up and delivery initiation.

**Key Activities:** the model, through its national network and IT strength, will intelligently match parcels to the appropriate couriers in the most cost-effective way, using the following determining factors to deliver parcels both locally and nationally: distance from pick-up to delivery, the appropriate courier en-route, truck space management, road congestion, and the route pattern and consolidation plan (as explained by TSP 2 in Section 5.4.2.3), if required.

**Value Propositions:** the model focuses on two targets: to make intercity same-day delivery a possibility through collaboration, at an affordable price and consequently make it commonplace; and to maximise the strength of the innovative collaboration for all types of delivery, so that it not only benefits the large carriers, but also fully involves the small and medium carriers and shippers.

**Key Resources:** distribution centres and hubs are very important to this model, as parcel consolidation and re-routing will be required for a national delivery service. This model benefits from reduced infrastructural investment, following access to most of the essential infrastructure through collaboration, which automatically becomes an asset to the platform and is available for use as part of the collaboration process. Some of the beneficial resources gained in this process are the local and national freight infrastructures that are pre-acquired by the collaborating partners. The need to invest in IT infrastructure is paramount however, being the pillar on which the entire collaboration is based; this may require a total or part investment by the driving partners, depending on the level of partnership and the compatibility of the facilities.

**Relationships:** due to the advanced and innovative level of the collaboration required, high-level technical assistance must be available to the entire team for prompt service delivery, while the customer service should be in place to address issues of concern for the clients, particularly the shipping partners. In order to retain clients, and attract more clients and customers, the system must have facilities that support real-time information updates that are viewable by all parties during an on-going event/transaction.

**Channels:** three major channels are the local carriers, distribution hub and the intercity carriers. These are the channels through which the key activities, as explained above, are implemented.

**Cost Structure:** since the consortium results in increased access to infrastructure, one of the associated expenses will be maintenance of the infrastructure, while the general administrative expenses continue to run alongside sales and marketing in order to attract more business.

**Revenue Streams:** since the focus of the model is on both same-day delivery and standard delivery, the revenue is therefore generated from these two streams.

#### 7.2.2.1 The national consortium business process

This section explains another form of innovative and technology-driven partnership or collaborative business process. It is a complicated and intelligent technology system, where the technology-enabled logistics systems of different carriers and shippers are fully integrated for demand aggregation and intelligent freight mapping. The design makes use of the track and trace system, which monitors parcels and their transit progress through

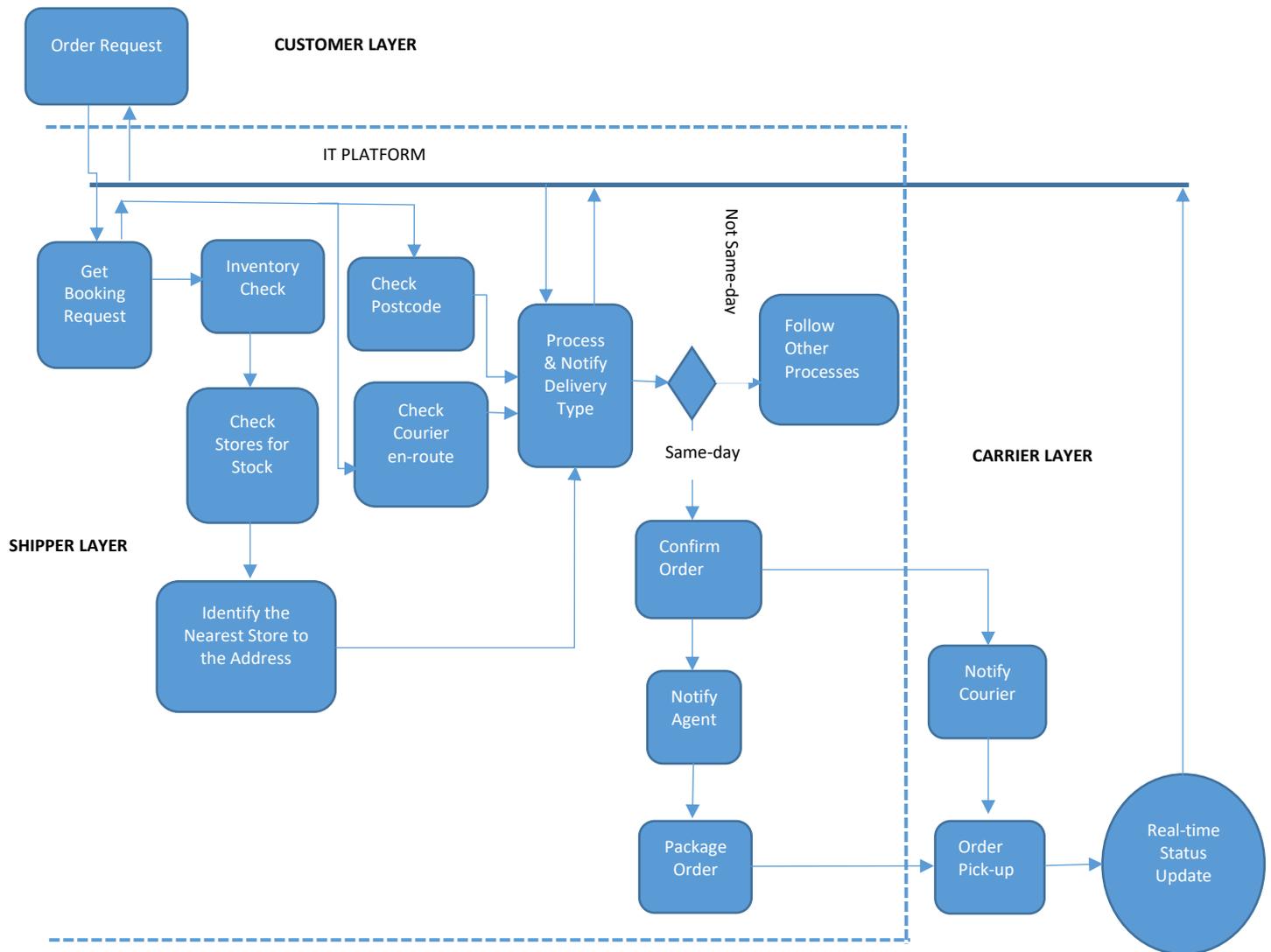
the use of tools like the RFID, transponder, and the GIS that handles smart city logistics (see the explanation by the TSPs in Section 5.4.2.3).

It is a flexible and economical system that optimises freight capacity utilisation where parcels do not necessarily have to travel through the distribution centre, neither would shippers be concerned about shipping volume, but they simply fill up available space in the trucks en-route.

Here, the online retailer and the carrier partner for the purpose of same-day delivery, and the two systems are integrated on an IT platform through which demands are aggregated alongside freight mapping. The system incorporates intelligent features such as track and trace for monitoring and tracking parcels in transit, and has an auto rescheduling facility in case of delays, so can provide an instant information update to the consignee. The system has an integrated inventory management application, which aggregates and maps parcels onto the nearest freight en-route with available space (see Section 5.4.2.3). Real-time tracking is available whilst parcels are in transit, and automatic alerts are available in case of delays, changes or emergencies.

All freight and inventories are automatically updated on the system for intelligent space mapping for all new orders. This helps to fill up free space in the trucks en-route, whilst ensuring no major disruption is caused.

The process, detailed below in Figure 82, only supports same-day delivery at an affordable premium (not free of charge), but does not support omni-channel retailing.

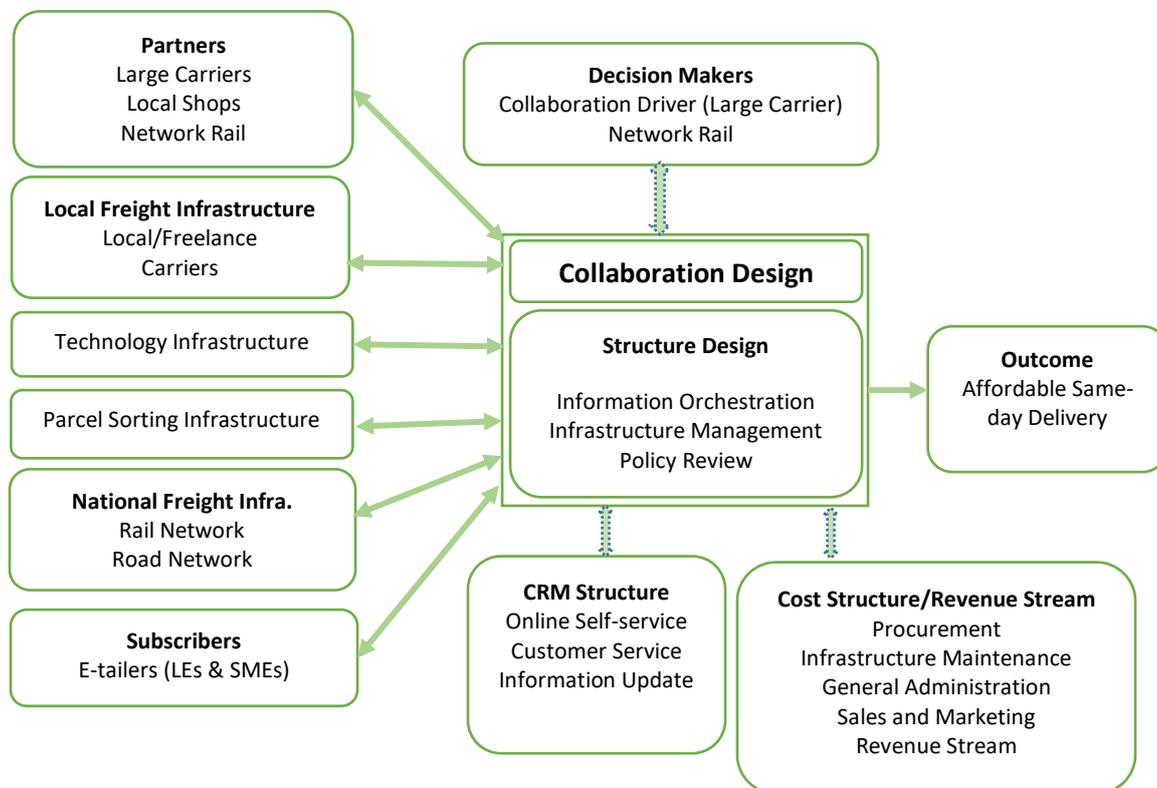


**Figure 82: The national consortium business process.**

### 7.2.3 Railroad freight (mixed passenger-parcel freight) model

This is regarded as a multimodal freight system which generally employs a mix of road and rail vehicles (see Section 5.5.1). In this model, the road network will be responsible for pick-up and last-mile delivery, while the rail network will handle intercity delivery. The rail network is categorised as being faster and timelier when compared to road transportation, as the rail transportation system does not have to contend with traffic congestion, and has a small number of accidents in comparison with the road network. The rail network is further being improved for even faster journeys. All these benefits derivable through the rail network compared to the road network are worth considering in order to reintroduce the railroad freight system. With the speed benefit derivable from the rail network (see Section 5.5.1), same-day delivery becoming commonplace is achievable. It is, however,

noted that this form of collaboration could be established between large carriers like Carrier 1, Carrier 2 and Network Rail. Carrier 1 is recommended because of its high infrastructural capability and strong government backing and Carrier 2 is recommended because of its tenacity and drive for collaboration and negotiation. This partnership can drive both collection centre delivery and doorstep delivery.



**Figure 83: The railroad freight system.**

This model is designed to reinvent the wheel. According to Carrier 2, it is a model that used to exist and was managed by British Rail. The model is deemed necessary as its implementation will drive efficiency and reliability in the retail logistics industry, particularly for the same-day delivery market. The rail network comes with many benefits over the road network, most importantly for long-distance journeys. Train journeys are regular and are scheduled in advance. According to the Freight Arranger (2012), UK passenger and freight rail punctuality is 91.6% reliable and the premium delivery for supermarket goods, such as the Stobart rail delivery services for Tesco, is estimated to be 98% reliable. Above all, the rail network is always being improved for higher speeds and reduced journey times. In line with the established benefits of the rail network, the model

is designed to use the rail network for long-distance freight, while road freight will be used for shorter journeys, pick-ups, drop-offs and last-mile deliveries.

This model is designed to be initiated by a large carrier that possesses a high level of infrastructure, is tenacious and has the capability for negotiation and drive for collaboration.

**Collaboration design:** all forms of negotiation are made as follows: due to the high-level information system management in the rail network system, extra care is taken on how information is shared, and at which level the system should be integrated. However, once agreed upon, an advanced level data integration system must be adopted for seamless and real-time matching and mapping of planned rail journeys and detailed information on parcel shipments. The system in this case is designed for intelligent operations, e.g. to plan routes and match them with parcel deliveries accordingly. Full detailed information is expected to be exchanged on the agreed infrastructure for adequate routes and efficient delivery planning. This being a form of vertical collaboration, it is expected that the policies are non-parallel (non-comparable) and, as a result, policies are reviewed to arrive at a standard guide.

**Key partners:** large carriers are seen as the initiators or drivers for the model. They identify the potential partners, strategize, and devise the means of initiation and negotiation. An ELM expert expressed that gaining access to the rail network is usually a very difficult process as the rail companies do not usually enter into negotiations (see Section 5.5.1), but in this case the carrier must devise a means of penetration and conviction. The partnership with the TSP will ensure the development, integration and maintenance of the partners' systems to ensure seamless communication. This model supports the two options of last-mile delivery and station collection; the model incorporates a rail station collection point, e.g. Duddle, in the design, while it adds either last-mile delivery or local store collection points (see Sections 2.5.3, 3.4.3 – 3.4.5 and 5.6.1). Having established a strong network for successful business design, the partnership with online shippers becomes important for parcel delivery initiation and generation.

**Key Activities:** the model is designed for a strong engagement in multimodal collaboration through which both local and national deliveries are carried out. The model is designed to deliver parcels locally through a single mode (road network) while intercity deliveries are carried out via the multimodal system.

**Key Resources:** the model uses the hub for its major re-routing and parcel sorting, whilst possessing an infrastructure, e.g. vans for local deliveries, railway carriages for long-distance freight, and the IT Infrastructure does the intelligent mapping of parcels to the appropriate freight channel from order to delivery.

**Value Proposition:** the model is not only designed for same-day deliveries, but for all types of express delivery, and is similar to the above model with a high preference for same-day delivery.

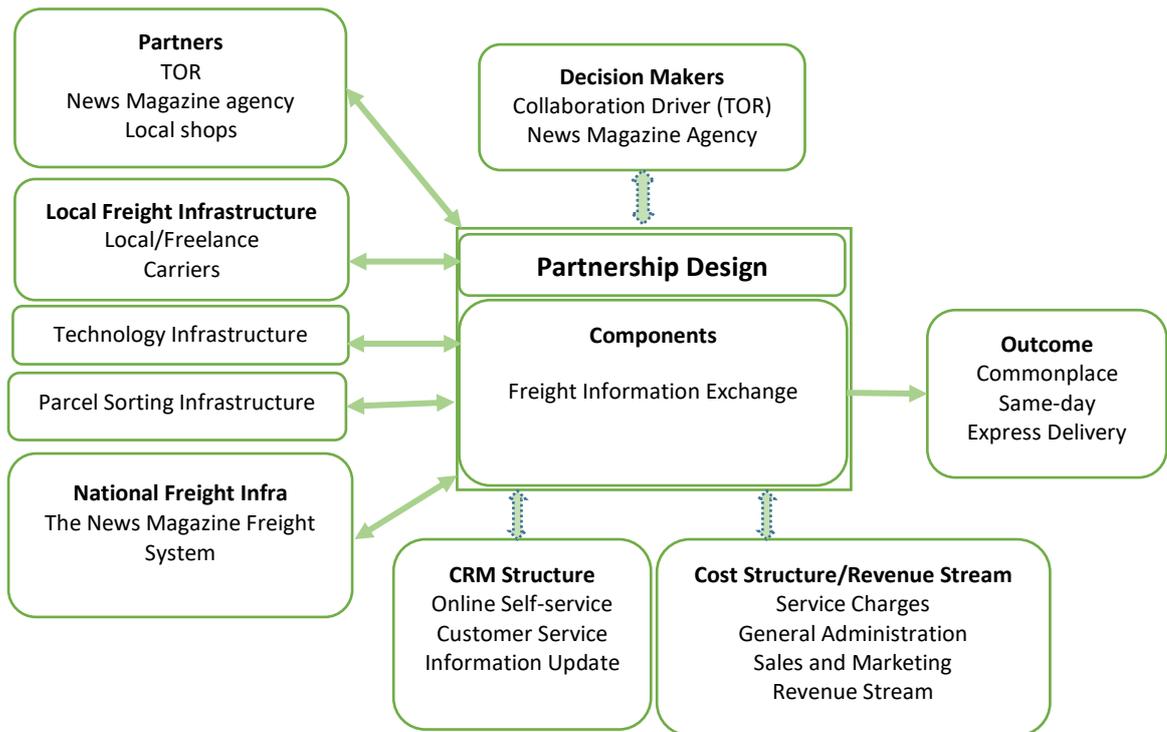
**Relationship:** this can be explained in a similar way to the second model in Section 7.2.1.

**Cost Structure:** the main expenses would focus on the procurement and maintenance of infrastructure, general administrative expenses, and sales and marketing.

**Revenue Stream:** revenue is mainly generated through payment for the service from the customer.

#### **7.2.4 National news magazine distribution model**

This is a form of partnership between large shippers and the national news magazine agencies (NNMA), as explained by Carrier 1 and TSP 1 in Section 5.4.2.2. National news magazines are usually distributed and shipped countrywide and are delivered to local stores at least twice a day, and since the volume from same-day delivery requests is low, such parcels can be consolidated with magazines for delivery to local stores. This partnership is recommended only for shippers who are in possession of sorting facilities. An example could be the partnership between Amazon and Smith News.



**Figure 84: The national magazine distribution model.**

This model is designed as a form of vertical collaboration. It requires a large retailer to be the initiator of the collaboration. In this case, the shipper must possess the capability to initiate and drive the collaboration as it requires strong negotiation skills.

**Key Partners:** the TSP is the partner that integrates the entire collaboration process for seamless communication amongst the parties, and implements real-time information updates for the entire process from pick-up to delivery. The large shipper has the ability to individually drive volumes, which are used as part of its negotiation for the vertical market. Since magazines are distributed frequently nationally, and often the delivery trucks are less than half full, the shipper negotiates to consolidate and fill up the space in the trucks in order to benefit from reduced operations and shipping costs. A secondary partnership with local shop owners is also established, and parcels are delivered for collection while local carriers are used for pick-up and last-mile deliveries.

**Partnership design:** at this stage, stakeholders agree on the kind of partnership to be entered into and the level of information to be shared. The information shared in this situation is primarily freight information from the point of order to delivery.

**Key Activities:** the model supports both local deliveries through local carriers and national deliveries through partnership with the news magazine delivery network, where parcels are consolidated and re-routed accordingly.

**Decision Making:** coordination of the collaboration in this model is jointly managed by the key partners, i.e. the TOR and the NNMA.

**Key Resources:** the hub of the news magazine network is considered as the primary hub. As the model is primarily concerned with same-day parcels and not high volumes, parcels are sorted and shipped from the news magazine distribution centre.

**Value Proposition:** this is primarily same-day delivery at a reduced operational cost.

**Relationships:** this is similar to the relationship in Section 7.2.1.

**Channels:** the news magazines are mostly shipped using a multimodal freight system that involves road, rail and the air network.

**Customer Segments:** this could be explained in a similar way as above, with online shoppers and e-tailers.

**Cost Structure:** the collaboration driver may have to pay service charges to the NNMA, while general administrative charges, and sales and marketing will continue to require investment.

**Revenue stream:** this is the revenue generated from the delivery servi

## 7.3 Inductive model design

### 7.3.1 The hybrid model

This is a model that actively engages the triad, and it is a combination of the railroad freight model and the national consortium model. It is a form of complex collaboration that aims to drive a greatly reduced overall operations cost. The model combines the benefits of the two models and considers transaction cost economics, using rebate assumptions, to drive a hybrid collaboration system for reduced collaboration complexity. Above all, it is designed to make national same-day delivery affordable so that it becomes commonplace, whilst also considering omni and multi-channel opportunities, and post-transaction activities such as parcel returns.

In order to design a proactively and innovatively robust model for a leveraged same-day delivery service, scenarios will be drawn from the literature in Chapters 2 and 3, and another two scenarios will be drawn from the analysis in Chapter 5.

The literature has revealed that using mixed passenger-rail freight and the luggage hold of coaches is a fast and cost-efficient way of shipping parcels for express delivery in some parts of the world. Yang et al. (2013), see Section 2.5.4, provide an example of how parcels for same-day delivery are shipped using the luggage compartment of passenger coaches. Similarly, Taniguchi et al. (2016) see Section 3.2.6, explained how mixed passenger-rail freight has been effective in Japan for affordable and profitable same-day delivery services, and in order for the service to be fully cost-effective, the local last-mile deliveries are made using electric bikes. Carrier 2, see Section 5.4.2.6, also explained their ongoing efforts to partner with Network Rail through a mixed passenger-freight service for express delivery and wider coverage.

Carrier 2 also explained that they have started to collaborate and invest in the merger and partnership with small and freelance carriers, with zero contracted hours, for most of their first-mile and last-mile pick-ups and deliveries (see Section 5.4.2.6).

A critical review of the retail market's operations suggests the use of the electronic marketplace as a good platform that supports retailers of all sizes and capabilities. If the product listing is done correctly and the right approach is taken, traffic can be easily drawn

to the business, as explained in Section 2.3.5. Furthermore, e-tailers can engage in both multi and omni-channel retail, and are also able to direct traffic to other channels where their products are listed. Examples of e-marketplaces are eBay and Amazon. A study of these marketplaces revealed that they both encourage their merchants to use free shipping (free post and packing) as much as they can in order to attract custom (see Appendix 7.0). It is therefore noted that SMEs mostly lack the ability to offer a free delivery service and, as a result, the need for a model designed for SMEs is re-established. In order to design this model, a few assumptions are made and these are explained below.

### 7.3.1.1 Assumptions

#### **1. A competitor-based strategic network of SMEs for increased purchasing power**

LEs benefit from reduced production costs because of their purchasing and order volumes. In order for SMEs to benefit from similar opportunities, they would also need to place a high volume of orders. However, because of their low purchasing power, this project assumes a competitor-based strategic network of SMEs can be set up as this will help SMEs drive volume. This is in accordance with the explanation in the literature by Pouly et al., (2002) as described in Section 2.6.5.1.

#### **2. Rebate assumptions**

##### **i. Successful rebate negotiation between shippers and suppliers**

Since SMEs have been privileged to benefit from assumption 1, it is assumed that they now possess the power to negotiate a rebate or discount based on order volume. SMEs that are able to place a relatively high volume of orders can engage in a B2B negotiation with a volume rebate, as explained by Pouly et al. (2002), see Section 2.6.5.1, and Miyatake et al. (2016), see Section 2.5.2. Crew and Kleindorfer (2012) explained that a rebate can be a useful tool to drive improved business performance through an overall reduction in costs. Collin (2012) explained that a rebate is beneficial in the B2B sector as it boosts business and leads to competitive advantage. However, it helps confirm that larger discounts than those deserved are not being given. Crew and Kleindorfer (2012, p.33) mentioned four types of rebate, alongside their effects, described in Section 3.2.6.1, out of which the most applicable in this situation is the 'quantity rebate'. They explained quantity/volume rebate as a form of discount that

...is granted when the customer achieves a certain (minimum) volume. Usually, this type of rebate reflects economies of scale that come along with large quantities. Often, this kind of rebate is granted in network industries by two-part tariffs: such tariffs include a flat component (independent of volume) and a variable component (dependent of volume). The higher the demand, the lower is the average price paid arising from the spread of fixed costs over more units.

## **ii. Adoption of the turnover-related rebate by the carrier for shippers**

On the basis that LEs are able to negotiate discounts on parcel shipping with carriers because of their ability to ship large volumes, SMEs also have the opportunity of discounted purchase prices and the ability to sell at a reduced price, which is believed would drive volume. However, since the research has established the sensitivity of customers to shipping costs, it becomes important for SMEs to also negotiate for a rebate on the shipping cost. In view of this, the turnover-related rebate is identified as being applicable, as seen in Section 3.2.6.1. This, according to Crew and Kleindorfer (2012, p.33), is explained as

...sales revenue received from each individual customer. Typically, the customer is required to realize a defined amount of revenue (which is usually determined ex ante) within a certain period (for example one year) in order to get the rebate. This includes a 'pull effect', near the defined amount of turnover: if the customer's need is below this threshold, he/she has an incentive to expand demand above the threshold in order to get the rebate. As the rebate applies to every unit purchased, the average price of the entire purchase volume then falls below the average price applicable before the expansion of demand.

In this instance, a B2B agreement is reached on a target shipping quantity, which is set as a threshold for a defined period of time, and once the threshold is met, the shipper becomes eligible for the rebate and it is then applied.

### **Rebate assumptions - discussion**

With the ability to negotiate high volumes, SMEs can secure a reduced overall cost and can embed the reduced shipping cost in the selling price at an attractive and competitive rate for customers. It should be noted that with high volumes and small profit margins, shippers

are better off with the cumulative effect of small margins. This is in line with Clow and Beisel (1995, p.40) who suggest that

...the most important antecedent to consumer expectations is the level of satisfaction customers experienced the last time they patronized the business. If the experience was good, i.e. no expectation-performance disparity, then their expectations will be high, resulting in future patronage.

Rebates will be applied twice, in this case, to shippers, i.e. both the supplier and the carrier, depending on the volume and the negotiation skills of the shipper. In the case of the supplier, the volume rebate is applied while the turnover-related rebate is embraced and applied by the carrier to attract shippers. The application of these two rebates ensures discounts are not unduly allocated and that fairness is ensured for both parties. It is however believed that if the two rebates are applied, they will cover the whole or a substantial amount of the delivery cost and may possibly cover the cost of any returns (by standard economy delivery). The author therefore assumes that if Carrier 2 applies this rebate, it stands a higher chance of attracting more shippers, especially SMEs that would also put in extra efforts on their marketing strategies for improved sales to drive volumes in order to benefit both from the turnover-related rebate and quantity rebate, hence, the model below.

**3. Assumption that the carrier has the ability to secure a partnership with Network Rail** (see Section 3.2.6 by Taniguchi et al. (2016) and Section 5.4.2.6)

This section is divided into two.

**a. Partnership Assumption**

It is assumed that the carrier is able to:

**i. Secure a partnership with Network Rail for long-distance express delivery**

These prices are based on the assumptions above, which imply that Network Rail has an existing large niche market for passenger freight and could offer many benefits to parcel freight, particularly at a greatly reduced freight cost. If only a small part of a railway coach was dedicated to this purpose, it would be seen as an added opportunity for profit by Network Rail. However, if there was a need for additional coaches for parcels as the business booms, it would be regarded as part of the long-term fixed asset investment. All

manpower services would be provided by the initiator (collaboration driver) and, as a result, only the transport service would need to be paid for.

**ii. Secure a partnership with the national coach provider**

It is assumed that a partnership exists between Carrier 2 and the national coach provider. In the case of the coach, trailers can be attached to the rear of coaches to carry parcels or the luggage hold can be used, as explained by Yang et al. (2013), see Section 2.5.4.

**iii. Strike a zero-hour contract deal with small/freelance local carriers**

With regard to local carriers, the intelligent system identifies carriers who are en-route and who only pick up parcels as an added benefit (see the report by Shedlock (2016) in Section 3.6.2 and the analysis through TSP 2 in Section 5.4.2.3). Also the recent introduction of cycle couriers, e.g. the cargobike, as explained in Section 3.3.2 by Wrighton and Reiter (2016), could be an added advantage.

Most of the local carriers are on a zero-hour contract, and are therefore only paid for the service carried out.

**Partnership assumption - discussion**

If a company like Carrier 2, being a large carrier that possesses strong negotiation skills, is able to secure a successful partnership with Network Rail and the coach providers for express and same-day parcel delivery, this would be very important. The ELM expert explained in Section 5.5.1 that a partnership with Network Rail would be difficult on the basis that Network Rail is not usually open to negotiation, except when there is intervention from an insider or the government. However, in this case, the author assumes that because of the government's support of the retail sector and particularly SMEs, to be able to compete, Carrier 2 would also be supported in its bid to partner with Network Rail. According to the Department for Business, Innovation and Skills (2013, p.5), in order to support the retail sector, innovation will be stimulated as explained below:

We will help the retail sector and the UK research base to maximise their cutting edge R&D and innovation, through increased engagement and building a deeper, more collaborative relationship.

**b. Possession**

It is assumed that the carrier could possess or possesses:

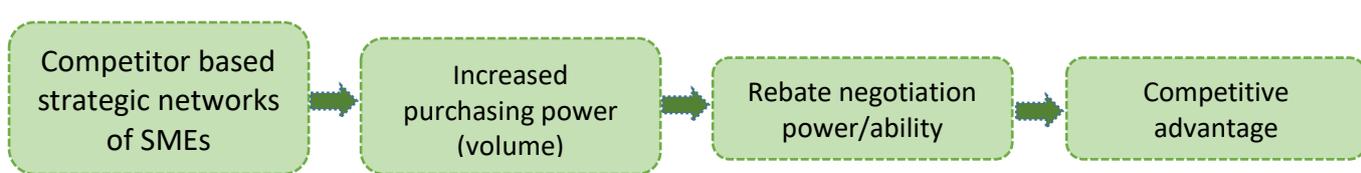
**i. A hub-and-spoke facility for express delivery services**

Large parcel volumes are consolidated to drive economies of scale and generally overnight journeys are undertaken to benefit from reduced road congestion (see the analysis through TSP 1 in Section 5.5.4). In this case, the charges are very minimal and shippers can benefit from good margins with express delivery, even when the service is offered free of charge to customers.

**ii. A mini sorting and collection facility at the station**

If the sorting facility is owned by the initiator it becomes a fixed asset whose cost depreciates over time. A sorting office would enable the effective and timely sorting of parcels.

From the above assumptions, it has been established that support from a strategic network of SMEs will have a very positive impact on the overall performance of SMEs, and this is represented in Figure 85 below.



**Figure 85: The outcomes associated with competitor-based strategic networks of SMEs.**

**7.3.2 The model design**

**Key Partners:** the model is designed to be driven by a large carrier with similar features as described in the rail road freight model. In this case, the partnership will be between the large carrier (collaboration driver), local/freelance carriers, Network Rail, drop-off/collection points like Doodle and other local shops on the high street (with 24-hour services). The TSP remains one of the key partners for the entire system’s integration, operation and maintenance. Another key partner could be an electronic market such as eBay, or the national coach providers. This recommendation could influence the service’s patronage.

**Hybrid design:** This is the central and initial stage where the collaboration structure is designed and decided upon by the decision-makers. At this stage, partners are identified and their roles and management decided. The business execution processes and standards are decided and agreed upon; all documents are exchanged and commercial transaction deals are signed in accordance with the agreement. At this stage, the business IT network is formed and the information exchange platform is designed for interoperability.

All forms of negotiation are made as follows: due to the high level of information system management in the rail network system, extra care is taken on how information is shared, and at which level the system should be integrated. However, once agreed upon, an advanced level data integration system must be adopted for seamless and real-time matching and mapping of planned rail journeys and detailed information on parcel shipment. The system in this case is designed for intelligent operation, e.g. to plan routes and match them with parcel deliveries. Full detailed information is expected to be exchanged on the agreed infrastructure for adequate routes and efficient delivery planning. This being a form of vertical collaboration, it is expected that the policies are non-parallel (non-comparable) and, as a result, policies are reviewed to arrive at a standard guide.

**Key Infrastructure:** The local carrier manages the freight system for local collection and delivery purposes (first and last-mile delivery). The drop-off/collection point can be an on-street collection point for customers or a high street agent, where shippers and customers drop off packages for pick-up by the local courier, while the 'rail collection point' is the parcel hub centre, where parcels from the drop-off points are collected and re-routed for the right freight service. Here, a mini sorting and re-routing facility is in place to determine the appropriate freight mode, i.e. rail or road (local carrier, coach or large carrier with trucks). Other infrastructure required includes local freight infrastructure, national freight infrastructure and technology infrastructure.

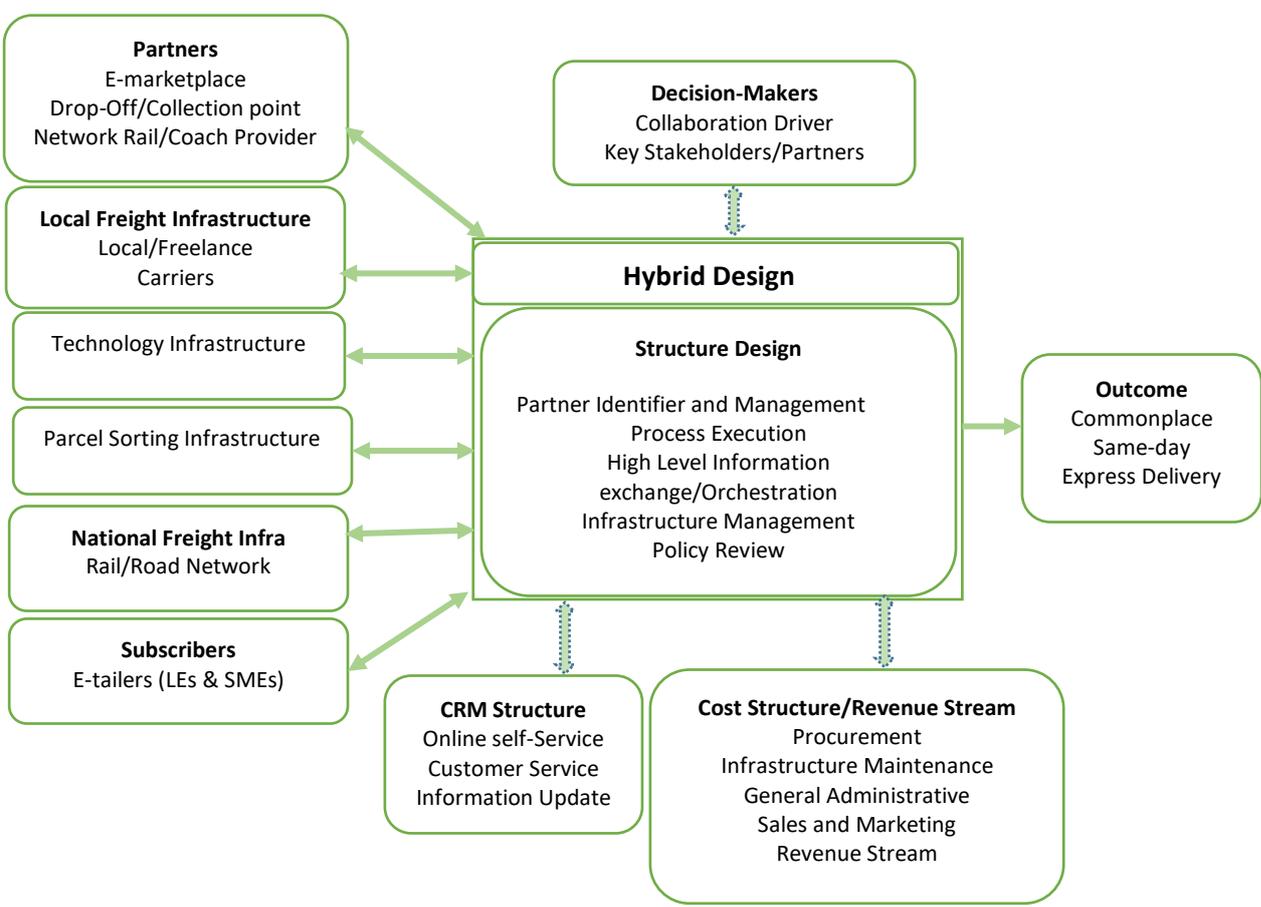
**Value Proposition:** this is specifically designed for express and same-day deliveries. This model is designed with the aim of leveraging the same-day delivery market, with the possibility to deliver local, express and same-day small parcels at zero cost or at a very low premium to customers, irrespective of the size of the business.

**Relationships (CRM):** the model provides online self-service for customers to allow access to full service options through omni and multi-channel platforms, while customer service remains key for situations beyond the self-service options available. Information updates allow customers to update their preferences on their parcels; it allows full and real-time tracking; customers' mobile contact details for home delivery can be stored and other necessary and useful updates provided for the triad.

**Channels:** the three major channels through which parcels travel are the initiating point, i.e. the internet, the road network for first-mile pick-up and last-mile and express delivery, and the rail network for same-day national delivery.

**Cost Structure:** these are the cost channels through which the entire platform is serviced and maintained, particularly in the procurement and maintenance of infrastructure, general administrative expenses, and sales and marketing.

**Revenue Stream:** this is generated through payment for the service.



**Figure 86: The hybrid model.**

### 7.3.2.2 The hybrid business process

Customers interact with retailers through both omni and multi-channels, where there are three transaction stages: pre-transaction, transaction and post transaction. They are also able to transact through any mode or platform including traditional bricks and mortar, m-commerce and e-commerce. In this case, customers are able to change and update their preferences on delivery as explained in Section 2.5.6.

#### **Order Placement**

Once the order is placed, the shipper receives the order and the IT system automatically generates the list of nearest drop-off points or centres. Once drop-off is confirmed, the intelligent system identifies the correct sorting centre, and identifies and notifies the local carrier en-route. The local carrier in this case is either a registered carrier or a freelance carrier with a zero-hour contract.

#### **First Sorting Process**

At the sorting centre, each parcel is re-routed for the next scheduled delivery, which could be by rail for long distance, fast, same-day delivery, or by coach for a shorter distance, same-day delivery. Trucks are also used for national and express delivery (next-day or overnight delivery) and the local carrier is used for local deliveries; the parcel could also be retained at the station collection point for pick-up by the consignee.

#### **National Freight**

If the parcel travels nationally, it is re-routed at the destination sorting centre and retained for pick-up or shipped for last-mile delivery via the local carrier. It should be noted that customers are encouraged to always confirm that their mobile phone contact details are correct and also indicate the nearest collection point in case of failed delivery (see the explanation by Wright (2007) in Section 2.2.3). The local carrier will attempt to contact customers before last-mile delivery is made, and failure to make contact with the customer will result in the parcel requiring pick-up at the designated collection point (the consignee will be contacted via text message and e-mail).

#### **Changes to Delivery Preference**

If a change to the delivery address is required, depending on the new address and the willingness of the consignee to pay the additional charges, the parcel may become invalid for same-day delivery. However, the last update can only be made before the parcel travels beyond the destination sorting centre. If an attempt to deliver to the original address fails, the parcel will be tagged as a failed delivery and will be delivered to the designated collection point, with the consignee being fully updated. If the consignee still wants the parcel delivered to another address, he would have to reschedule pick-up from the collection point and pay the associated charges. Once this is done, the collection point is notified of the change and a courier is reassigned for pick-up.

### **Returns**

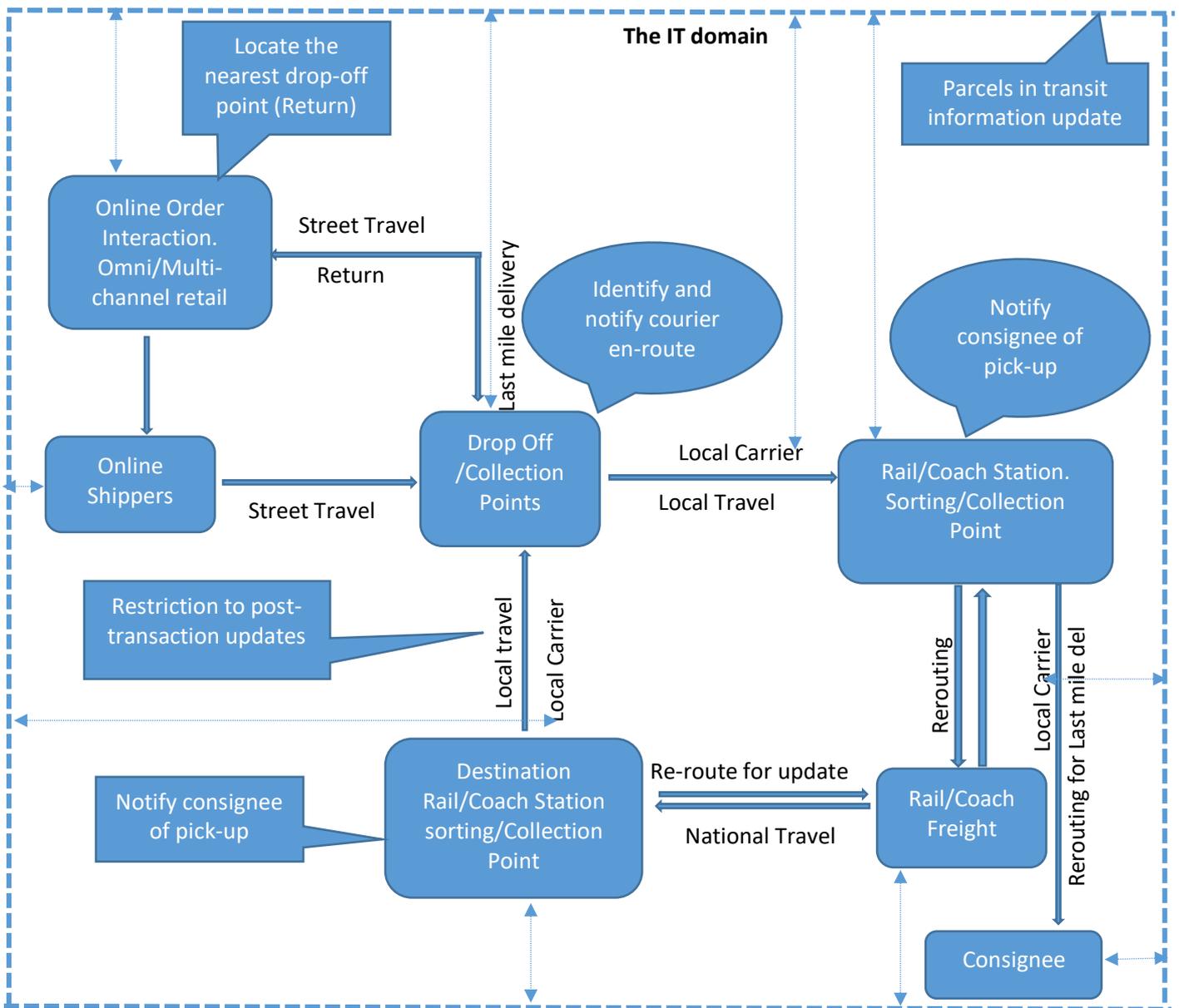
In the case of a return, the same process of ordering is followed except that the parcel travels from the customer to the drop-off point. Since shippers may have been able to cover return costs through their rebates, free returns are likely offered by shippers.

It should be noted that the system makes use of the track and trace system, through the RFID and transponder, for real-time monitoring, and customers are updated as and when necessary, i.e. from despatch to delivery as analysed through TSP 1 in Section 5.4.2.3. All deliveries are signed for, be they for home delivery or for collection at a pick-up point.

With the above assumptions satisfied, this model will leverage the retail market for SMEs and they will be able to offer, relatively speaking, the same service or an equal service as LEs without any fear. Furthermore, the model supports the emerging concepts and ideas of omni-retail, such as post-transaction activities, thereby making it a robust and innovative model.

This model can be referred to as an example of ELM, where the IT system begins intelligent functions from the ordering process to delivery to the consignee, supports the returns process and any changes/updates to a customer's delivery preferences.

Figure 87 reveals the IT domain, as shown with the thick blue dashed square around the whole process; the triad is connected to the domain via the tiny dotted lines touching the walls of the domain.



**Figure 87: The hybrid business process.**

The author has designed models that individual LEs with the capability for vertical partnership can adopt and they can then manage their own same-day logistics activities. At the same time, the author has designed a robust model, through hybrid collaboration that leverages the market, which could be used by any category of shipper on the condition that the stated assumptions are satisfied.

With this, SMEs will be able to offer same-day delivery services at competitive and profitable rates.

It should also be noted that emphasis was given to considering SMEs in order to make the design flexible and able to meet future disruptions in the market caused by LEs and TORs.

## **7.4 Summary**

This chapter shows how the author has identified and refined a series of existing strategies by firms through his research analysis to come up with emerging business models, while findings from the literature and analysis have been combined to innovatively create new and collaborative same-day business models through vertical partnership; these new models are referred to as inductive business models.

The next chapter looks at how this research work has contributed to knowledge, highlights how the objectives of the research have been met, how the research questions have been answered, identifies the limitations of the research and suggests further research.

## Chapter 8

### **8.0 Discussion and Conclusion**

This chapter does not only summarise the research work, but also serves as a retrospective that ensures the objectives have been achieved, highlights how the research has contributed to knowledge and gives recommendations for further research.

#### **8.1 Summary of the research process and findings**

The research investigated the transformation in the retail logistics industry, the transition process, its requirements, relevant factors, and the driving forces behind the transformation. The literature established that logistics now plays a very important role in today's competitive retail sector and has, through the overwhelming embrace of e-commerce by the market players and customers, resulted in changes to parcel delivery requirements. The changing market requirement has consequently led to competition amongst shippers and carriers, the result of which is the introduction and the growing adoption of same-day delivery service to the B2C market.

The literature revealed that competition in the delivery sector has resulted in customers' increased awareness, and changing attitudes with higher delivery expectations, while shippers now increasingly demand express delivery from carriers for competitive advantage.

This changing market has resulted in a series of innovative business strategies from large carriers and shippers, and has left SMEs to struggle to meet the market demand.

In order to meet the market's requirements, firms have embraced partnership and collaboration as the key strategy to sustainability. Both LEs and SMEs now partner and collaborate, but in order to control the market and dominate competition, LEs and particularly the TORs have started to invest in incremental innovations through innovative logistics collaboration. They have made IT the enabler and identifier of business competitive advantage through technology developments for improved business strategies.

The literature review further revealed how firms have embraced partnership and collaboration, optimised logistics activities through collaboration, and how IT can help through the creation of an electronic logistics marketplace (ELM). The marketplace is a platform that supports different business types and sizes for logistics operations and intelligent logistics activities.

The literature can therefore be summarised to have identified the growing adoption of IT as the potential driver, responsible for the increasing demand for express deliveries due to the triad's growing adoption of e-commerce, which has put retailers and carriers under pressure to improve customer satisfaction and loyalty. Furthermore, it has been established that the current nature of the market, i.e. the instability and incessant changes to delivery requests by shippers, has begun to have negative effects on carriers, and the only solution to the changing market is through collaboration. In the case of LEs, the few wealthy ones and especially the TORs have increasingly dominated the market through offensive competitive strategies.

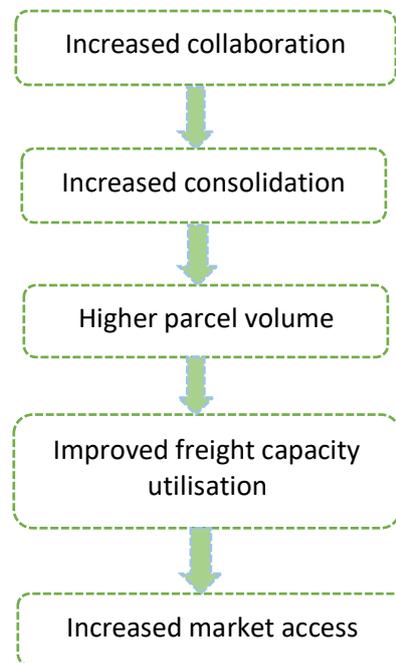
Different findings were identified through the literature, and three research questions were proposed and investigated.

The investigation through a mixed methodology of qualitative and quantitative methods, i.e. interviews and survey, has revealed that TORs are the main drivers behind the increasing demand for same-day delivery services, and they continue to invest in the service as one of their competitive strategies. It was revealed that the drive for same-day delivery is attributable to competition amongst TORs and their determination to dominate the retail sector. This has therefore made demand for same-day delivery the result of a competition-driven strategy and not a customer/market-driven strategy.

In spite of this, the TORs have used their financial resources to devise offensive competitive strategies through innovative business models and designs to invest in same-day delivery services. Customers are not willing to pay a premium for same-day parcel delivery, except when there is an importance, value or urgency attached to the parcel.

The research further established that innovative partnerships and collaboration are the key tools to drive profitable and sustainable business model design, and that the market can be leveraged through collaboration to favour all business sizes.

In general, a particular process is seen within the parcel delivery system, i.e. the capacity utilisation problem pushes for greater volume, and necessitates the need to consolidate, which is achieved through collaboration and from which other benefits are derived, as represented in Figure 88 below.



**Figure 88: Emerging Retail logistics flow.**

It supports the view that business innovation is mainly enabled through technology and, as a result, any business that intends to maintain relevance in the market must embrace technology for competitive advantage.

Distribution centres and hub-and-spoke have been established as the most economical and sustainable design for parcel delivery, and especially next-day delivery. However, the research revealed that even though the system is being technologically improved, for enhanced delivery efficiency, environmental and infrastructural factors will hinder a cost-effective same-day delivery service, particularly for intercity deliveries.

Although enough evidence could not be gathered to support home delivery as being the most preferred delivery type by customers, most respondents would prefer to receive their parcels in the early evening, while the majority will not travel more than a mile for parcel collection from a local store.

## 8.2 Auditing the research objective through the research findings

Here, the trackback process is used to identify how the research objectives have been achieved.

### Objectives

5. Explore the forces shaping the retail environment and the demand for express logistics.

Four forces are identified as shown below.

**Competition:** the research identified that carriers have, as a result of competition through the growing adoption of e-commerce, transformed parcel delivery from the standard 4-8 days to next-day or overnight delivery. In addition, TORs have made same-day delivery one of their key innovative tools to respond to the competitive market, by offsetting an offensive business strategy through which they can dominate and control the retail industry. Competition is therefore seen as a major factor in enhancing retail-logistics/distribution responsiveness, through innovation.

**Environmental Factors:** even though the hub-and-spoke model has been identified as being the most efficient delivery system that drives sustainability and economies of scale in this contemporary retail market, the research has identified that its operation cannot be extended to meet same-day delivery service requirements due to infrastructural and environmental challenges.

**Technology:** recent developments in technology have introduced many innovative solutions and logistics ideas that have contributed to the growth of e-commerce, and have resulted in an unprecedented growth in e-retail. Most of the large stakeholders have therefore embraced the use of technology for their own innovative approaches and business model design for competitive advantage in ways that cannot be easily imitated by others. This has unfortunately left SMEs vulnerable or struggling. Technology has therefore become the enabler of innovation in the retail logistics industry, and it must be embraced.

**New Entrants:** this project identified that the few carriers that traditionally specialise in same-day delivery are mostly the SMEs, and most of them are restricted to local coverage within cities. Their approach to same-day delivery used to be lucrative, but the recent involvement by the TORs has resulted in increasing demand that is beyond the capability

of SMEs. The recent demand has increased the need for wider coverage (intercity) delivery services, which are now becoming a necessity, and unfortunately SMEs do not have the infrastructure to satisfy this new demand. SMEs have identified that should same-day delivery become a requirement on a national level, it will become necessary for them to be present nationally, i.e. able to deliver parcels nationwide through intercity operations, which they are unfortunately unable to do. Also, the recent vertical integration approach by the TORs has negatively impacted on SMEs by reducing their share of local delivery services. It is on this basis that the upsurge in the requirement for same-day delivery has negatively impacted on the market share of SMEs due to powerful new entrants in the market. This has resulted in reduced profitability, and hence the struggle to attract and retain more customers for local deliveries or be open to collaborate.

6. Investigate whether hub-and-spoke distribution can extend its effectiveness to support current same-day market demand.

The research has acknowledged the effectiveness of hub-and-spoke through its economies of scale and improved capacity utilisation. It has been discovered, however, that even though the system handles express deliveries, and could support same-day delivery, the lack of volume, through infrastructural factors of capacity utilisation and economies of scale, would not make same-day delivery through the hub-and-spoke network economical. Environmental factors, such as traffic congestion, accidents, road maintenance, order times and processing would also make same-day delivery through the hub-and-spoke impossible. The contemporary hub-and-spoke system cannot unfortunately satisfy the requirements of same-day delivery services, and therefore its effectiveness cannot be extended.

7. Investigate a cost-effective and innovative approach to the same-day delivery service

The recent boom in e-commerce has reduced the problem of capacity utilisation through increased collaboration and partnership of shippers and carriers for parcel consolidation. In order for improved consolidation strength, carriers have intensified their efforts to partner with shippers, and also shippers have engaged in collaborative activities to share resources, improve inventory management and utilise capacity. Carriers and shippers have both embraced collaboration and partnership as being very important for sustainability, to remain relevant and for competitive advantage. In order to drive efficiencies, a series of new developments in technology is being embraced for collaboration, and this has been

helpful for innovative collaboration. It could, at this point, be stated that technology has been embraced and adopted to become the enabler for innovative collaboration, and this has consequently helped in intelligent parcel consolidation and, above all, has driven economies of scale through capacity utilisation.

The research has identified that in order to make same-day delivery a possibility, the need to incorporate other transport modes outside road transport is important. It has been established that the road freight system is highly susceptible to environmental factors, and in order to have effective and efficient same-day freight, alternative plans that are less susceptible and more cost-effective should be put in place.

The multimodal freight system, i.e. the mix of rail-road freight has been identified as the likely most efficient mode of freight to drive sustainable same-day delivery. It has also been established that many benefits are derivable through rail freight over road freight as trains are able to transport higher parcel volumes, as well as passengers, and can cover longer distances at higher speeds; this can offer reduced costs and economies of distance. The railway system is also subject to rigorous operations procedures, which make it a well-structured, timely, regular, fast and frequent delivery service. In the case of last-mile delivery, a more efficient and cost-effective mode has been identified to be the partnership with local freelance carriers with zero-hour contracts, or the use of bikes; LEs have also started to invest in R&D regarding the controversial use of drones.

8. Discover how a business model can be developed for a cost-effective same-day delivery service for large players and the SMEs.

The project has successfully drawn from literature, media and qualitative research to develop five technology-enabled logistics innovative collaboration business models, which could serve as an innovative approach to stakeholders for the development and design of sustainable express delivery platforms that conveniently support same-day delivery services.

### **8.3 Auditing research questions**

1. How much acceptance will the same-day delivery service enjoy in the UK retail market?

This research has identified through the literature, and qualitative and quantitative research that the retail market has been revolutionised, the market approach has changed,

customers have become more informed and aware, and have made speed and cost of delivery key factors in online retail decision-making. The research has revealed that despite the awareness, customers would not pay an additional premium for speedy delivery, and would rather wait for standard delivery except when the parcel has attached importance/value.

In another instance, qualitative respondents have shown that the same-day delivery service is not market driven, but is competition driven, and has only become a competitive strategy for TORs. Based on this, the majority of the respondents has confirmed that there is no demand for the service, neither is there a clear future prospect for an increasing demand from customers; as a result there are no assured considerations for the service to become a norm, but just to remain a bespoke service.

Furthermore, because it is unlikely that a same-day delivery service can be offered as a free service, and since customers are reluctant to pay extra for a speedy delivery service, it is unlikely that the service will attract customers, and the required volume for profitability will therefore prove difficult to achieve.

These discoveries have therefore shown that a same-day delivery service is not what the customers want, neither is it a business requirement, the design is not affordable for the majority of the players in the market, and therefore will not be a worthwhile investment. It therefore implies that the service will not gain much acceptance by the triad (carriers, shippers and customers).

2. What are the surrounding factors that influence investment in the B2C same-day delivery service?

From the general respondents' perspective, the research has identified the same-day delivery service as a clear competitive strategy by TORs, who would always devise several means to dominate or control the retail market.

The retail market has witnessed a radical transformation through the growing adoption of e-commerce; customers have become highly demanding, and their expectations continue to change in ways that are unpredictable. Customers have made delivery speed, cost, information updates and reliability the key factors in purchase decision-making, and they have pushed retailers and carriers to review their business models to be more innovative

and proactive, particularly with the need to engage in some form of collaboration and or partnership.

Shippers have also seen their roles in retail logistics services change from passive to active, and have been directly involved in the organisation of parcel delivery. They have, as a result, continued to pressurise carriers to invest in value-added services, such as engagement in affordable speedy delivery services, to allow them to meet the market demand and also to remain competitive in an ever-changing environment.

A few carriers have responded to this market demand by investing in local delivery services. However, in the case of the national service, it is emphasised that successful implementation can only be witnessed/achieved through an intelligent/technology-driven collaboration that would always require an initiator (mostly a large player), mainly due to the cost implication.

On the other hand, a few of the TORs with deep pockets and a high level of vertical integration, strategic distribution centres, and national local stores have diversified by directly engaging in same-day delivery services. They have invested in infrastructure by opening more stores and distribution centres, purchasing vans, recruiting drivers for the delivery services, and partnering with freelance local carriers using zero-hour contracts. This is an approach noted to have enhanced an affordable (less than £5) same-day delivery service, with a consequent increasing demand.

Investment in same-day delivery services can therefore be referred to as a proactive response to the evolving and competitive retail market, and it is believed would be attractive to customers if offered at an affordably low (£5 or less) rate.

### 3. How can a business model be designed for a cost-effective UK same-day delivery service?

The research has generated several ideas from the literature, the professional trade press and the qualitative research, which have been found to work when implemented in various ways. These ideas mainly revolve around collaboration, information technology and innovation; these ideas have been reviewed, merged and refined to develop five innovative business models. Two of these models have been designed to work only for large companies (carriers and shippers), while the other three have been designed to favour all business sizes.

## 8.4 Contribution to knowledge

This research work has successfully studied previous research, identified research gaps to guide its findings, and has established new findings that are novel to logistics both in academia and in industry; the findings have particularly focused on emerging competitive strategies.

- a) This research has been successfully conducted through a mixed methodology, where the qualitative method was the primary research technique, and the quantitative research was informed for confirmation and validation of findings from both the literature and qualitative analysis, through hypotheses testing and descriptive analysis.
- b) At the time of compiling this thesis, the author came across a few logistics research papers which used a mixed methodology approach and, as a result, this research joins the few pieces of work to propagate the use of the mixed research method in logistics research.
- c) At the start of this research, no literature was found on B2C same-day delivery, and until recently few articles had been published. Based on this, this project can be referred to as the first major academic research conducted on same-day delivery.
- d) This research has revealed that customers will not patronise a same-day delivery service, unless it becomes commonplace at zero or near-zero cost. It further revealed that even though customers give preference to express delivery, they would not pay a premium for it and would rather settle for standard delivery that attracts no additional cost. The only condition that could make customers pay a premium is when parcels have a high value, are urgent or important. Based on this, it was established that customers are not responsible for the increasing demand for same-day parcel delivery, and that the responsibility lies with the TORs that have been directly engaged with the service, and have made it one of their newly adopted competitive strategies.
- e) In addition, a firm's size plays a significant role in business model and strategy development, which is attributable to their level of infrastructural capabilities. Analysing market requirements and the existing approach by different players also revealed that large shippers and carriers are able to adapt to changing business requirements through vertical integration.
- f) The hub-and-spoke/distribution centre is recognised as the most efficient way to drive economies of scale in courier and delivery services; however its efficiencies cannot be extended to same-day delivery due to environmental and infrastructural challenges. The

hub-and-spoke is designed to aggregate and distribute large parcel volumes, and the cost of operation is only economical with large volumes. The cost implication to consolidate same-day parcels will not provide sufficient profit margin due to the lack of volume, while the problem of capacity utilisation will not only remain unresolved, but will be aggravated. Due to the need to be time conscious, most freight is transported overnight to allow time for the volume to be transported and to take advantage of reduced traffic congestion. Daytime transport of parcels, when considering economies of scale, is counterproductive in terms of capacity utilisation, increased travel time and inefficient overall business performance.

- g) The research has revealed that achieving intercity and affordable same-day delivery is a possibility through a technology-enabled innovative collaboration platform; an ELM could be an example of such a platform due to its features of integration, collaboration and consolidation, regardless of business size. As such, up to five models have been designed, two of which could leverage the same-day market for both LEs and SMEs.
- h) The research also revealed that in order to achieve a cost-effective and affordable intercity same-day delivery service, the freight system would need to be reviewed to incorporate a multimodal freight system, particularly using road and rail freight, where the rail is a mix of passengers and freight.
- i) Government support and a competitor-based strategic network of SMEs will pull the market back to a more competitive position through the SMEs' abilities to negotiate competitive deals at the B2B level.
- j) Furthermore, in order to create a level playing field for the same-day delivery market, large players should drive intelligent and innovative collaboration platforms that incorporate SME carriers for wider network coverage and local delivery operations. In order to benefit from the same-day market, SMEs must be willing and open to collaborate through intelligent collaborative platforms, or partner with larger firms.
- k) Although customers want improved delivery services, which incorporate features such as real-time information updates and delivery flexibility, they are not willing to pay an additional premium. For the sake of competition and business relevance, carriers must invest to improve their services, but must devise alternate strategies to compensate for the investment

## **8.5 Limitations and future research**

### **Limitations**

Due to time constraints and the scope of the research, the author could not deeply investigate collaboration techniques, and having identified collaboration as key to drive successful same-day delivery, it is recommended that further research be carried out to determine the types of collaboration required.

Since multiple stakeholders will be involved in the collaboration system, it is important to investigate strategies for cost and benefit sharing for multiple stakeholder collaboration.

The research revealed that customers would not pay a premium for express parcel delivery. However, not long after the survey, TORs started to roll out nationwide same-day delivery services at affordable prices that are even cheaper than the cost of a bus ticket. It is therefore important to conduct a post-study investigation to test customers' reactions towards these new services and the profitability gained by the TORs that offer the service.

Analytical research on the feasibility of drones as a cost-effective method for same-day parcel delivery should also be undertaken, and its environmental implications and long-term effect on business should be reviewed.

Omni-channel retail, being the recent approach to retailing and its disruptive impact on the logistics supply chain also needs in-depth investigation.

In order to have an efficient and cost-effective same-day delivery system, several opportunities must be explored. On this basis, the need to investigate the challenges and restrictions on mixed passenger-freight on coaches must be investigated.

The first and last-mile pick-up and delivery are two critical stages in parcel delivery, and in order to drive an affordable platform that will leverage the market for SMEs, the need to investigate other pick-up and last-mile delivery freight modes, particularly the cycle courier and the freelance carriers, is important.

### **Future research**

Even though this research work reviewed the literature on omni-channel retail to acknowledge its presence in retail logistics, it could not be investigated in depth due to the

scope of the research. It will therefore be recommended from the purview of this research to investigate how omni-channel retail can influence B2C same-day delivery practice.

In another instance, this research work briefly mentioned the drone technology in the literature review section, but could not conduct primary research on this technology, again due to the scope of the research. There have been a lot of uncertainties and regulatory challenges surrounding this approach, and it is therefore recommended that this approach be investigated beyond city deliveries, and its chances of success should be investigated in suburban and rural communities.

It should be recalled that the business models designed in chapter 7 were designed with the UK infrastructure in mind, and that future research should be conducted to design a generic business model that can universally match any infrastructure.

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## Appendices

### 1.0 Collective Data

#### Interview Introduction to respondents

Same-day courier services are already being used by some business sectors for urgent delivery, for example, spare parts or legal documents. There is increasing interest in same-day delivery of parcels for online retailing. This interview is based on my research plan to look at same-day courier services, in particular the role of electronic logistics marketplaces (ELMs) and the potential benefits to SMEs and Large firms in using ELMs for collaboration. Current services are very expensive, so one objective of the research is to investigate the potential for more cost-effective approaches to same-day delivery.

### 1.1 Pilot questions

#### 1.1.1 ELM Pilot

1. How would you define Innovation in your own view?
2. Based on your view, would you regard ELM as being innovation?
3. I want to believe ELMs already exist in the outside world, are there some companies that already make use of ELM?
4. About the Cardiff same-day Courier Services: They deal primarily in small parcels. Have you ever thought of same-day inter-city delivery?
5. Do you think ELM framework can be designed to sustain a same-day delivery framework.
6. How do you think ELM improves consolidation and freight capacity utilisation?
7. Have you any idea on whether ELM has ever been used for special delivery, in the sense of fast delivery (it could be a next day delivery)?
8. Can you refer to Amazon as an example of ELM platform?
9. The issue of government restriction, economic challenges etc. does ELM face any of these challenges.
10. Do you think ELM is time sensitive?
11. How effective has the information speed impacted on ELM?
12. Using ELM for same-day delivery collaboration, what type of collaboration would you recommend?
13. How would you justify financial investment in ELM?
14. Have you thought of modifying the model of ELM to see if it can accommodate collaboration that will work for intercity delivery?

15. What business size is ELM focused on, is it small or large.
16. I will like to know if at any point in time looked at the possibility to address urgent delivery through ELM in the B2C.
17. Are there plans to extend your research beyond Wales?
18. Do you think the ELM framework can be modified to address National Logistics

### 1.1.2 Carrier Pilot

1. What can you say about same-day delivery practice in the UK?
2. So who would you say is responsible for same-day increasing demand amongst customer, shipper and carrier and why?
3. Do you think same-day delivery will influence delivery type, e.g. home delivery, click and collect etc.?
4. How do you think the current hub and spoke distribution system can be improved to meet up with the same-day demand or do u think the current infrastructure can handle the same-day delivery.
5. Is inter-city same-day delivery achievable, If yes, How?
6. What are the anticipated challenges in terms of economic, regulatory and environmental factors?
7. Do you think at any point in time, the company can actually venture into a same-day parcel delivery if the volume increase by chance?
8. Do you ever think that if such service is offered on retailers' platform, having collaborated with logistics service provider like your company, do you think the demand for it will grow?
9. Does your infrastructure really support same-day market for effectiveness through the IT investment, through multimodal freight system?
10. In what way has technology helped your company?
11. Does the company get involved in collaboration with third party transport service provider? e.g. virgin train
12. I am thinking of an IT system that deals with this multimodal consolidation wherein parcels can be consolidated both on the road, rail and air service, do you think if such exists, it could be useful to your company?
13. In what way do you think technology can aid multimodal consolidations?
14. Can existing infrastructure support/drive effective same-day delivery market?
15. How much investment do you think is required for same-day delivery market success?
16. Can same-day delivery become commonplace?
17. Do you think SMEs need external help to cope with the changing retail market?

### 1.1.3 Shipper Pilot

1. Are there demands for same-day delivery from your customers?
2. Between customers, retailers and carriers, who do you think is responsible for the increasing demand for same-day delivery?
3. Would you regard your online retail business as effective?
4. In your opinion, how has collaboration/partnership contributed to the success of your company?
5. How flexible is your company in terms of the delivery system?
6. What is the fastest delivery you think you have offered?
7. Lately, people have been looking at the possibility of parcels delivered to them in their homes. So do you think you can use this delivery option as a competitive strategy against competitors?
8. Going by the recent urgent delivery need, what is your view on same-day parcel delivery?
9. Do you think you can offer a same-day delivery at some point and on what condition would you do that?
10. Does your company manage its logistics system or is it in partnership with a third party?
11. Would you embrace the package if a logistics company approaches you for the same-day delivery?
12. Is your business strategy driven by customers demand
13. Can same-day delivery practice become commonplace?

### 1.1.4 TSP Pilot

1. What is your view on same-day delivery?
2. How will you describe technology impact on parcel express delivery?
3. As a logistics technology expert, how do you think technology can enhance inter-city same-day delivery?
4. Do you think technology can support inter-modal freight?
5. Since LSPs do overnight delivery, how do you think technology can turn this around to day time delivery?
6. Who are your clients' and have you developed any same-day package for them?
7. What speed do you think technology can enhance with speed delivery.
8. How can this work for SMEs?
9. In what way do you think technology can help carriers collaborate to achieve same-day parcel delivery?

10. Can technology be developed to enhance parcel consolidation through intermodal/multimodal freight?
11. Can a system be developed similar to journey planner?
12. Can a system be developed to generate massive transit route
13. What would be your suggestion for same-day delivery?

## 2.0 The ELM Expert data + Pilot

***INTERVIEWER: How would you define Innovation in your own view?***

**RESPONDENT:** Innovation...interesting. It is about the context of ELM, ELM itself is innovation and it is not possible without internet. We have cloud computing, even before cloud computing was gaining popularity, it was actually called on demand and so TSP looks at volume, even if u are small media size business and u don't have in house expertise or the resources to run the platform like that, u are still able to use that. To me that is innovative, back to 2005, it was quite original as not many org have the internet yet but because the TSP is promoting this, it started to see the light of the day. So to me you know, we still couldn't trace back whose initiative demand computing is. But then before demand computing, great computing and then there is something else. We know companies like IBM etc., are the pioneer behind this. So that's the driving force the technology drives the innovative business model to emerge. Without the support from technologist, no matter how novel your business concept is, it is not feasible particularly in the online e-commerce environment. To me that's what I think about innovation. Innovation itself is such a big subject and it's difficult that I can't give you a comprehensive definition. If u do something new in the industry to drive value, it is innovation.

***INTERVIEWER: Would you regard ELM as being innovation, and are there some companies that already make use of ELM?***

**Respondent:** I think so. ELM is mainly led by the big shippers, manufacturers or freight forwarder and they want to create platform just for their own use and to get connected with all carriers, subsidiaries etc., and that was then but then 4, 5 years later, this is on demand computing and hosting solutions being popularised and then we started to see a small medium size companies tend to use that service because u pay as you go and you do not have to bear the huge investment involved.

***INTERVIEWER: What can you say about same-day delivery practice in the UK?***

**Respondent:** Same-day delivery will usually be on a special demand with a lot of premium to be paid. It is usually a delivery service commonly used in the B2B settings.

***INTERVIEWER: In what way do you think collaboration will influence same-day delivery market success?***

**Respondent:** That is getting popular and later on there is collaborative type of ELM where a few big companies start to collaborate to share the resources between themselves for economy of scale. Three big shippers all use more or less the same carrier. This is why I refer to ELM as an evolving electronic collaborative platform, with an open framework that can be modified to suit different business needs, and has mostly been useful. Although recently in the UK, an example I looked at few years ago called sky-log, and it's no longer a collaborative ELM and makes it more interesting. I find it extremely difficult for people to collaborate horizontally particularly between shippers and probably you have read the paper I published on industrial marketing management collaborative issues and so although there is a lot common ground where they can collaborate to explore the synergy between them, but in the end because of the issues of cost sharing, access to information, trust, power, allocation. A lot of issues complicate things. Quite few collaborative, so currently I will say private and shared ELM dominate the market but the collaborative one for some reasons is not very sustainable. Actually that's a PhD topic I put on the website I was hoping students will apply for it. So they are out there, a lot of them out there. But more or less, the collaborative ones don't seem to exist. Can we have a collaborative market place for Nigeria or for Wales or for probably east Africa?

***INTERVIEWER: About the Cardiff same-day Courier Services: They deal primarily in small parcels. Have you ever thought of same-day inter-city delivery?***

**Respondent:** It is normally the next day delivery that is quite common like the Amazon premium membership. If I buy something, get the next day cos I pay upfront t £50 per year. For Same-day delivery in Cardiff, I haven't experienced it myself.

In the major consumers, I don't see the need. Same-day delivery I know in China, it is very popular most especially for very important documents between different cities. The cities are quite big, and parcels are picked up for delivery within two hours or more.

I think probably if we talk about B2B and same-day delivery, it will be more attractive, if we talk about individual consumers or probably I would be wrong. How about we talk about innovative business concept like the store without products and you know, u hear about same slab, if u get out of the subway, as u walk out of the station along the corridor, there

would be truck display various product u scan and say u want to buy this product when u get home, that's probably where that kind of thing could happen. But at the moment I see very limited usefulness in the B2B. But in the B2c environment, we are not quite there yet but I think if we talk about online commerce, like Tesco online... B2C environment, ideally you want...this morning I did a bit of shopping online click this click that, and a lot of mobile ...now. You choose a time slot and it's normally the fastest you can get is next day but I would have loved the same-day. I hope I don't have to wait till next day. I think in this kind of environment, same-day deal will be appealing, preferably for professionals, who don't have the time to shop or cook, they only take ready meals. But in China, its already very popular now, same-day delivery is almost like default setting and the price is very competitive, you pay like £2 for documentation. Even 15 years ago when I was in the service industry, I used a service like that. It is already very popular in china, but here things are quite slow because labour costs lot more and lots of control by the government. The environment is different, I don't see any reason we can't do the same thing here.

If you think about it, it is not new you described the extra ...time and now we talk about 3 or 4hrs time slot and even more ...where the companies here with customers where cities with huge population like every increase in demand what does your competitive advantage as the carrier, what differentiate u from the others, and if you can guarantee 2 hrs time slot and there the other...which with the pure motive, if it something urgent and important, you want it delivered in two hour time slot.

***INTERVIEWER: How can a collaborative platform be designed for a same-day delivery service?***

**RESPONDENT:** That's why I told you about Anyvan. Although they don't deal with same-day but C2C. That's your future version isn't it? When you want consumer to connect, you have to have the critical mass. For any platform to work, you have to have enough sufficient transaction volume to justify it exists. So then in the c2c environment, e.g. eBay which started with c2c model and later on to b2c now its transforming into the largest e-tailer because of the auction sites. The reason why is explored by business because only c2c will have the platform u won't have sufficient volume coming through. So when that comes into mature level and then you won't be able to see further growth, so as market maker eBay say ok my profit is not improving simply because all those c2c are small medium size or individuals mostly. If I want to make a charge chat because they profit by charging

transaction fee whereby if u sell, they make commission off it. So u know, once the novelty of auctioning goes off , I buy it, I get it now, so I don't want to pay, waste all my time watching or ...so that's the point once you get as far as you can with the model change B2C and C2C. In your case, if u talk about it on the demand side, u are predicting ok if a lot of individual clamp on to the platform like you say, then you wouldn't have the economic scale that would enable the carrier to deliver at a cost effective rate. That's why I think Anyvan is good because it is successful in a way that it attracts people to use it. Because people have started to use it a lot, it increases thickness and people stick to it. The demand is out there and it is effective because the market is out there with the user, market maker and the carrier. For the moment I think of them because it's difficult to find in that kind of example in your specified area and you have to look at what is out there in practice. It might give you some indication of why the idea of model that you have in your mind is not existing. It might give indications that there are issues with this, with that or really just not ready...that's why I suggest very well was in platform plan.

**INTERVIEWER:** *Giving examples of Anyvan, if such model is to be developed, do you think ELM framework can be designed to sustain such framework?*

**RESPONDENT:** Technically, it's not a problem at all, the tech is already out there, u are the IT guy u know more than I do. Technology wise it's not an issue and so what actually is critical now is someone is got to take the initiative and whoever takes the initiative is got to take the responsibilities of making the market, hosting the market and attract users both sides to use that, so if u independent company and starting up is very challenging cos if u say ok come and use my platform, the users will say it's just a new platform, they haven't got as many carriers as I would have wanted, on the other hand some the carriers will say they haven't got enough users to be attractive enough for me, but once u got enough users out there, like snowball... Someone is got to take the initiative. So who's going to take that is what we don't know now.

**INTERVIEWER:** *How do you think ELM improves consolidation and freight capacity utilisation?*

**RESPONDENT:** Consolidation means it could consolidate the demand or supply side, that's the beauty of that and useful when u have SMEs or there are shippers or small medium size companies or individual consumers. If I say ok I myself need to buy a basket of whatever

and I am willing to pay £7 for that, the carrier will say it can go for only one parcel at that amount, or in a situation of 10 to 100 of people all have similar amount of demand then we are talking £700 worth means business then that will encourage the carrier. If Only one or two carriers dominate the marketplace and the users want to negotiate, then the monopoly can be found, on one hand, if I am a wealthy individual an I have a high demand and also sell online, I need to deal with this, and that, but as a small carrier I can't do that and probably can only do three cos of distant, and no high network coverage but with the platform, carriers can share information about their resources for capacity utilisation and consolidation. I think I sent u email on the various collaboration, if u look at that goes further into the concept of consolidation and utilisation together. The selling point here is the visibility. The demand out there, if u don't see it, u don't know how to consolidate, if all the data are in one place, u can see it and consolidate, so the visibility is the beauty of ELM as it brings transparency and opportunity for business.

**INTERVIEWER:** *Have you any idea on whether ELM has ever been used for special delivery, in the sense of fast delivery (it could be a next day delivery).*

**RESPONDENT:** In your case, u are probably talking about open or many to many delivery. The ELM in your case will be this is a platform right, that's the model, normally will be open platform, here is the shipper, provider, carriers...well in this case, the special delivery/ next. I mean again if we talk about B2B or B2C, that's why I said Anyvan will be good example. If we think about B2C, B2C normally, if we think about amazon yeah, Amazon is different because it is a hybrid model...market maker and retailer. Its B2C and B2B.

**INTERVIEWER:** *In what way do you think same-day delivery practice can be successful in the UK?*

**Respondent:** This kind of example, u have to see ok, any consolidation that is cost effective, you have to have a densely populated system. The more densely population, the better and the more cost effective. Cities like Manchester, Birmingham, central London, they would work. I think Bristol etc., but if you think about rural places, it may not be effective. If I say ok certain miles, I got to deliver one box of apple to a farmer, it's not going to make u much profit. If you think about it in more rural places

Same-day delivery makes a lot more sense in the same city environment, and it depends on transport infrastructure most especially when you have to rely on transport infrastructure. If you have a truck. In the UK it is ok when we talk of motorway etc. in countries like the state, Thailand etc.

***INTERVIEWER: How much technology do you think would be required to influence a same-day success?***

**Respondent:** Similar to what you have just mentioned about shutl, I think the service is logical in cities as I earlier mentioned. So if the service would be in these cities, no too much technology will be required. However, you may be looking at a huge technology infrastructure if you need to extend the service beyond cities. Here, there would be a need for real time information exchange, and a high level of integration. A lot of players would be involved, and a lot of logistics requirement will also be involved. You are practically thinking of collaboration in this case, and it must be technologically driven. Talking about collaboration is easier than its implementation. The more partners and infrastructure required, the more complex that would be.

***INTERVIEWER: Can multimodal freight system be instrumental to same-day delivery success?***

**RESPONDENT:** Around 80% of the freight transport in the UK is done by road, and the rise should be the combination of rail, water and air freight etc. so if we talk about multimodal transport, and there is another interesting concept, I think you'll be struggling with same-day delivery in the multimodal environment. It involves multiple handling, change over and the complexities of the processes they involve. It could be fine be it one person or multiple, so long it is traceable.

You could look at pallet network to see how they operate. Here, they chunk parcels together in order of destination, before freight.

**INTERVIEWER:** I am thinking as you said that the majority of their freight is 80% done by road in the UK. So I think the challenge is if something like rail could be used cos I think rail is faster than road in the UK.

**RESPONDENT:** It depends on... rail freight has been a nightmare. I did quite some work to look at consolidation between road and rail, road and water. The rail is quite reliable and

there is no congestion for instance, I think there are some technical problems like the trailer. In road transport, they have double deck. That means the difference may require reassembling of parcels, depending on the freight mode.

***INTERVIEWER: Can a mix passenger freight rail be helpful to design a same-day delivery service?***

**RESPONDENT:** It depends on the stuff that you have. If it's large, even small parcels, once consolidated together, it becomes big. You know what, it's not up to you or the user, which comes to the power play. The rail freight won't have a problem but to offer you the choices like this unless it is justified. So it like saying you want to load container on the ship. It's not your choice to decide where to stop. The farther you think, the more complex it becomes, most especially in the multimodal environment and in this country.

We were trying to speak to the rail freight, when I was talking to the welsh govt that lets do multimodal freight transport, through road, rail, combine with Cardiff port for a more sustainable environment, they don't speak to you whatsoever. So you have to think about ok, what is the culture and the incentives to accommodate small companies. They don't mix freight and passenger... In the ideal world yes. If they will honour this kind of negotiation, it will be with large carriers or a consortium of carriers through which attributes such as funds for investment, a guaranteed volume for shipping, strong negotiation skills, advanced infrastructural facilities and vertical integration capability are derivable.

If your supervisors have good contact to the rail network, it may be possible. Do let me know if that is successful.

***INTERVIEWER: the issue of government restriction, economic challenges etc. does ELM face any of these challenges.***

**RESPONDENT:** During the economic downturn, demand in products decrease. That's why electronic patronage reduced. Although in the UK, it is quite relaxed.

***INTERVIEWER: Do you think ELM is time sensitive.***

**RESPONDENT:** I don't think it's a tool, it's just a platform that helps to collaborate for freight opportunities. It's not a time sensitive tool, but it can support a time sensitive activity.

**INTERVIEWER:** *How effective has the information speed impacted on ELM.*

**RESPONDENT:** If we talk about the functions of ELM, it's about trace and track. The different types of trace and track, you can do it retrospectively, real time. In India, they have very good examples of multimodal practice. Also in China. In developing countries, a lot of opportunities are available. A good example of technology is the real time information sharing application.

**INTERVIEWER:** *What collaboration type do you think would drive same-day service success?*

**RESPONDENT:** It's difficult to say, it depends on the market. Different collaborative structure could be applicable. There is no one size fits all. But in your case I will suggest the collaborative ELM through a closed system, to accumulate benefits from stakeholders' horizontal collaboration, and also establish synergy in the distribution network. You bear in mind that there must be a community leader.

**INTERVIEWER:** *How would you justify financial investment in ELM.*

**Respondent:** You probably know there are different types of ELM. In your case, you want to create a platform for LSPs to collaborate. Have you thought about it going to require an agency that will create a platform for stakeholders to subscribe, then the cost and benefit will be quite different, then the cost and benefit because of the data ownership which will determine how you would evaluate the return investment, and in your case I will recommend this. You have to think at it in a way that I have small parcels and for same-day delivery, what kind of collaboration do I need for the platform to work, think of platform ownership and who actually drive the platform, cos the TSP can design this to suit different requirements but who will bear the cost and how is the cost and benefit shared.

Are you going to invest by yourself as LSP, then you have to consider whether having a warehouse or use existing platforms of consortium of LSPs and what sort of collaborative conditions they need to have. All these are to be considered first before even talking of the cost and benefit. If there is a large customer for instance, if there is a big enough company which is able to create and manage the platform and also if there is a 4PL and create this platform and has all the LSPs who want to be part of it into this platform and then this 4PL place them in a hierarchical situation. But it depends. I want to argue that you have to

define operational model, business model, ownership before you can access the return investment. But I would say in your case, some companies is got to take the initiative like a leader of the community. You have to decide who leads the community, from there you can start to work on operational model. It could be at regional level country level, design level, function level etc.

I did some consultation work for east Africa and this is called regional initiative where we thought of having ELMs of six countries in the region and we select the cheap flows around the corridor where goods go in and out of the region. That is where we aimed at bringing collaboration in through ELMs. We also tried to do the same consultation in Wales to see if they could do something similar.

**Respondent:** I did not write much about cost and benefit because each individual in the logistics marketplace will be quite different depends on the size, the functionality that you have. If you have the basic functions till delivery which is quite straight forward but if you incorporate a lot more complex functionalities like real time tracking, telematics, the telecommunication cost, simulation e.tc, that's why it's quite difficult to write something about this.

The platform itself should be a neutral one, and should be managed by the TSP. Have you seen Anyvan operation through open market place? If you look at that, it could be a good example. It also works for C2C. If any marketplace platform is set up, there would be need for publicity, popularity etc.

***INTERVIEWER: Can an ELM model be developed for an inter-city same-day delivery?***

**Respondent:** there are a lot of different ways to collaborate and through critical mass, I wish I discussed a number of collaborative opportunities that could give the critical mass that we talk about which reduces the cost, otherwise it will be quite expensive for small parcels to be delivered e.g. from here to Edinburgh. Once you get the critical mass, the cost goes down and then you got synergy between several players, this gives good volume to various destination. Here a number of collaborative opportunities are discussed.

In Figure 2, there are 4 collaborative opportunities. If you read through this, it is empirically testing your PhD work for you.

Also you need to recognise the conflicts in collaboration mostly on cost benefits, competition, cooperation meaning collaboration and competition.

***INTERVIEWER: What business size is ELM focused on, is it small or large.***

**Respondent:** It covers all sizes. E.g. in the open marketplace, there would be a lot of small medium sizes, while for the collaborative one, there would be more of large and medium sizes. Years back, the ELM operates on closed collaboration but with the exploding IT and cloud computing, we started to share marketplace through the open marketplace. Now we started to see the B2C ecommerce. In recent time, it is getting a lot more complicated in the open and close system, but in the case of ELM, we can refer to it as hybrid collaborative system that supports horizontal and vertical collaboration, will support physical logistics facilities for freight and technology-based collaboration and can also provide a low-cost channel for information flow between parties.

***INTERVIEWER: Has ELM been used for Time critical delivery? E.g. same-day or next day delivery?***

**Respondent:** If you look at the B2C side, lots of ecommerce companies like Amazon. Same-day delivery, I am not so sure it is very popular in the UK. We are getting there but a lot of delivery will be next day. Having said that, in China big ecommerce companies have already started working on that (same-day delivery) but that is not in the UK. So if you look at customers demand, the UK system is more controlled in terms of border most especially for international parcels. In China, there is a delivery of 3 hour slot for same city or inter-city. So if you want to have consortium of LSPs, you have to set carefully the platform to either address the B2C or B2B and what product focus

**INTERVIEWER:** At the initial write up, I have screened out edible products and explosives.

***INTERVIEWER: Are there plans to extend your research beyond Wales?***

**Respondent:** Yes the scope goes beyond Wales but the requirements are quite different. E.g. the collaboration in China will be quite different to that of the UK.

***INTERVIEWER: Do you think the ELM framework can be modified to address National Logistics***

**Respondent:** Yes it can be modified because of evolvment of technology and so many other factors.



## 3.0 Carrier data

### 3.1 Large Enterprise carrier data

#### 3.1.1 Carrier 1: Standard large carrier + Pilot

1. **Interviewer:** *What can you say about same-day delivery practice in the UK?*

**Respondent:** The customer would call a service provider same-day, and the service provider typically will accept that job electronically or will type that information into their system to create an electronic track and trace to that parcel, create a job number and manifest and then give it to a person to go and collect. So when you talk about the same-day market and the electronic shipping tools. So the company has a same-day business and we offer customers the full range of services from next day, 2 days, 1st class, second class and same-day offering but the same-day typically is not inclusive of the main business because it's a very small part of our business and the we are dealing with 55 to 58 million items a year, but same-day is small. It's significant in that the market in same-day is very lucrative, with much higher unit rate because the transaction is a smaller volume and it's almost a bespoke service, it is tailored to the customer, so the customer is like a just in time delivery. They need to move it today, not overnight service, like contacting the supplier electronically or via phone and that supply is collected that same-day. So it's very different from a typical parcel company which is hub and spoke to us which is multiple and kind of complex set of round about 45 mil centres, it's very different.

So we are very different as a mail organisation to a parcel organisation. In our parcel and the same-day service, hub and spoke collect into depot, the hub collected in the line-up into the hub sorted and in the morning push back out to depot to deliver something like overnight service. In the world of same-day, could make collection to delivery same-day. so you can imagine the movement and the consolidation of volume to ensure that you can get a cheaper rate is very difficult, so to create volume, we find people like Carrier 2 as a retail logistics provider buying up a lot of the regional same-day business to try and create that differentiator and a differentiator in any organisation collects and delivers parcels and mails is volume. If you get volume you can leverage the benefit of dealing with volume and the customer can get a better rate. So you mentioned consolidating the market place. There is an online platform that already just started so people can ring up for a same-day platform wherein people get into agreement with supplier of same-day services and the IT platform where the customers ring in and then they have multiple choices to push that

work out dependent on where the service providers are. So there is that opportunity so if I was the same-day carrier wanting to do business, I will join this platform and get the benefit of scale, for me, it's a small business I have to pay them for the transaction as well as make my money and then what so left is the revenue. The third man relationship that stands is not attractive as having transaction with the customer direct. probably over the last three to 4 years, there's been a lot of consolidation of the same-day market place because as the market change, and parcel carriers and mail carriers have got so much better with their IT and so same-day as declined a little bit, it's starting to come back into fashion and so very ... as things get into fashion. So there are some market like the same-day offering, looking into just in time logistic people who ship very expensive market, I could be a document etc., it's very expensive. So its normally high product for very important document, so that's typically what happens. When of the banking alternative would use a lot of same-day, it's a critical movement of door to door and the service a same-day service gives is almost 100% the time, it's a very service oriented collection in the industry whereas in the overnight market, even the best carrier when I use to work with DPD, so DPD interlink the par the same brand owing by the past French post office, there overnight service is well over 99%, they are very good. but still then out of the 100% and sometimes, things go wrong parcels not picked up, mis-sorted, misrouted, post code are wrong etc. with that service of same-day you are very rare find any issue, they are mostly 100% perfect.

**1a. Interviewer: Is inter-city same-day delivery achievable, If yes, How? Prompt**

Inter-city same-day is possible and achievable, but again you should think of the possibility of getting volume mails parcels to ship. However in the absence of the required volume, such parcels will be shipped on empty trucks. Now tell me how can that be profitable? So, inter-city same-day delivery already exists, but with dedicated vehicles. However, it may not be possible or realistic to have a regular inter-city same-day delivery practice.

**2. Interviewer: What are the factors and who would you say is responsible for same-day increasing demand amongst customer, shipper and carrier and why?**

**Respondent:** The demand is not coming from customers... Shippers are to blame for the same-day demand increase. Most of the speedy delivery requests are for business purposes, except few important ones from customers, or when it is an inclusive package offered by shippers.

I will say Shippers are to blame for the same-day demand increase, and this can be traced to e-commerce boom...it's all about competition, and has been unstable in recent time. Over time, there has been the recurrence of pressure from top retailers on carriers to innovate for same-day delivery service, which has had a huge negative impact on carriers who always want to satisfy the demand.

**2a. Interviewer: Do you think at any point in time, the company can actually venture into a same-day parcel delivery if the volume increase by chance? Prompt**

**Respondent:** We already have a same-day business

**2b. Interviewer: I mean full time for customers to be fully aware of? Prompt**

**Respondent:** We do that now, a lot of companies do that now, but the people you are talking about are saying the appetite for same-day is not massive yet cos the consumer and typically if you look at the volume, B2B market places talk to the B2C, B2B customers are very happy with the overnight delivery service, I will call it a niche market based on what I said in terms of the value of the item or document, so it's very important to have it as part of the offering and for large niche market but I don't see same-day ever outstripping the next day or 2 day market, not in a million years. However it will be a growing market as customers and consumers want more services and the life style changes and the spare time diminishes and if they dispose the link and crows and they are willing to pay the premium, then you have to be a player. We are a player and we keep monitoring and talking to same-day colleagues and there is always opportunities. Its typically regional marketplace as you can imagine in London, massive market place in London, less of a marketplace in the rural part of the country, so it is much centralised around the big city. I agree that you have to have the offering but I don't see it outstripping the next day market.

**3. Interviewer: What impact do you think volume will play on same-day delivery success and profitability?**

**Respondent:** Going back to what I just said, same-day delivery is a bespoke market that will not in a million years attract volume. It should not even be discussed as becoming a norm, because I still cannot fathom how that can be. It is true that we have shutl, whose primary business is same-day delivery, but I can authoritatively tell you they are not doing well in the market, and has been bought over by eBay. Until there is volume, no mail or parcel delivery business can be successful, except premium is paid.

**3a. Interviewer: Do you think the demand for same-day will grow. Prompt**

**Respondent:** Its interesting we already mentioned shutl because eventually they got both types, they are settled in the UK and its very interesting concept to put an order and get it in 90 mins, it's a very interesting concept but it didn't do anywhere as you've got to create the volume and more importantly you've got to really have a good marketing understanding of customer demand, if the demand isn't there, it doesn't matter how good the service is, it's not going anywhere, and I will suggest in the UK that the demand isn't that great so a shutl or a similar platform or product would cause a semi concept. I know they have been bought out by eBay. So eBay bought shutl so eBay is looking at a lot of opportunity of experience and they've taken it to America to try a lot of opportunities.

I think in the UK, in terms of ecommerce, we are miles ahead of everyone in the world even in America. We outstrip everyone. We are a country that really embraced technology, online shopping, we are alighted. It's very great. Let's hope it doesn't kill the high speed. people like shutl has shown that the demand in the UK isn't that good for the service and it's because the next day service is absolutely phenomenon and the IT changes remember I said I worked for DPD, so when DPD introduced predict and IT platform designed to create efficiencies. so the track and track of products many customers are notified by text or email that their parcel have been collected, sorted, delivery office and delivery window of 1 hour and they'll tell you when they going to come and deliver, so if you are not in, you can respond to that text and say can please deliver on a convenient date. So the parcel market is so sophisticated that for a very reasonable price for next day or two day service u get all the bells and muscles anywhere, so to pay that bit more, because same-day is an expensive way of sending parcel, so me as a customer I can pay a delivery charge anything from 3 to 8 pounds, if I want it same-day I am looking at a minimum 10 to 40 pounds, big difference, do I really want it today. That's where shutl came in. it's a great return opportunity 'for carriers, can I wait till tomorrow, yes I can because I save myself a lot of money.

I go back, so for most of carriers, a lot of the things that are happening in the marketplace like click and collect, lucker banks, parcel stores, collect+, the new DPD pick up, all of that is hygiene factor because you have to have it as part of your portfolio cos if u don't, customers like amazon, e-tailers and big retailers will look to customers who have the service. So if u put customer first in everything u do, u win the war. So as a customer, I like choice and I like convenience, so if u give me more options I like that so if 1 of your options

is same-day, I might not buy it today but may come back tomorrow. So it's a matter of hygiene that you got to be in that market place to understand where the market is going, so you have to invest.

**4. Interviewer: Can existing infrastructure support/drive effective same-day delivery market?**

**Respondent:** Oh yes, it is very possible. Although it may be expensive to transform, but it will only be a form of incremental changes to the existing infrastructure. I will say it may be easier with carriers like us who has got the required infrastructure, but costly, in fact presumably unachievable for smaller carriers, except through a form of innovative collaboration that is fully technologically driven.

**4a. Interviewer: Can your infrastructure really support same-day market for effectiveness through the IT investment, through multimodal freight system? prompt**

**Respondent:** Because of the share size of the company to react to market forces, it's harder because of the size of the organisation and because we have so many people that requires huge changes in our processes, unlike the small organisations. Their infrastructure is quite small. So if you think of a smaller carrier, who doesn't cover all UK post codes, our company does. So that's our unique selling point

So categorically, I will say we are not ready without an IT platform. Its flexibility gives you information to drive efficiency.

**5. Interviewer: How do you think the current hub and spoke distribution system can be improved to meet up with the same-day demand or do you think the current infrastructure can handle the same-day delivery.**

**Respondent:** If I am correct, you are probably referring to our distribution hub or mail centres. We have mail centres where parcels are distributed to depot or delivery offices, and in order to reduce cost due to the reduction in letter postage and secondly increase in parcels, and the fact that the level of competition at the moment has made us lose some of the major contracts to competitors and has resulted in closure of mail centres and opening of local hubs. So some of those works done at the mail centres have been shifted to local delivery offices. The current distribution centres are not structured to sort parcels for same-day delivery, but the local hub is a possibility for same-day delivery, and we already have something in the pipeline where the staff (A) will be doing the same job as

collecting from the (location B), which was to be done by the (location D), if a job of the (location D) can be done by staff (A), that means at some point on the same-day, the staff (C) that was supposed to be doing (location D) will at the same time be delivering. (...) we call them hybrid staff i.e. a staff that can do both delivery and collection at the same time in the same-day, therefore it is a possibility.

**6. Interviewer: In what way do you think collaboration will influence inter-city same-day delivery market success?**

**Respondent:** Collaboration will be required amongst most carriers, and would likely require some system integrations that are technologically driven. It will require a real time system and information sharing. Some sorts of electronic collaboration will in this case be useful, but I will argue that it will be expensive to design or implement. The P2P may not require any form of collaboration, and in this case it will be a door-to-door service, but anything other than this, especially an intercity delivery may require two or more companies coming together for a successful operation. Collaboration will influence it, but it will require a complex integration process.

**6a. Interviewer: does the company get involved in collaboration with third party transport service provider? E.g. virgin train**

**Respondent:** The company operates its own trains, so the company does that for many years, although the reliance on the rail has diminished as that of road has improved. Although we still operate our rail system to get products from London to the midlands to Scotland, so we still operate a rail network. So we are quite different from other organisations as we operate an extensive network to ensure we reach our service and customers obligation. So a lot of our mail centres are positioned where the rail network actually feeds the mail centre.

**7. Interviewer: Do you think same-day inter-city delivery is possible at a cost effective rate?**

**Respondent:** Because of likely complexities, and a high level of infrastructure required, I will not say it won't be cost effective out right, but the service may not come cheap. I will imagine challenges when the demand is not market driven, and the cost of implementation is high. At the end of the day implementing this for inter-city purpose may not be cost effective.

**8. Interviewer: Will you collaborate for same-day delivery service success, if required?**

**Respondent:** Are u asking if we will collaborate? Probably no, it wouldn't be something in our strategy, because of our size, we must have a control, and there is a legal obligation. If u have a lot of smaller companies, u are potentially letting that down. So we are legally bind to deliver to all post codes in the UK. So we will want to control, they wouldn't want the smaller LSPs let the customers down, so would prefer to have our services in house.

**9. Interviewer: Will multimodal freight system help achieve commonplace same-day delivery?**

**Respondent:** Yes it could help, especially in the rail system is effectively engaged. This does imply the need for a high level of collaboration between businesses.

**9a. Interviewer: Can same-day delivery become commonplace? Prompt**

**Respondent:** Premium will always be paid for a same-day service, and you cannot expect it to be cheaper than a next day delivery service. If that is the case, customers are never willing to pay additional premium, when they may be able to get next day delivery freely except for special deliveries. So if the premium will not be paid, how will it be profitable considering the input by the service providers? In view of this, same-day delivery may be more popular, but becoming commonplace is doubtful. So except it is set out to be a premium service, no carrier would consider investing in same-day delivery to become a regular service.

**10. Interviewer: In what way do you think technology can aid multimodal consolidations?**

**Respondent:** It's the key to the success of every parcel carrier, so the main drive for every carrier should be integrated with the customer, after then every service that customers need, so there is need to go to a further platform of parcel consolidation of parcels and I can't tell you cos I know them very well that every parcel carrier work over time to make sure there IT infrastructure is the best, to minimise the impact of people like Metapack. If the carrier has a sophisticated IT platform to give the customer what they want, they won't look elsewhere. If the carrier gets and understand the customer needs and then leverages want customers want and price never becomes the barrier, they won't look outside. But if u can leverage and offer that IT, u are in a far strong position. Having said that people like Metapack has a role to play because there are customers out there who are probably classed as medium to small enterprises, having got the investment required to give them and described , I can see that they have a lot of role to play for small and medium enterprises. E.g. platforms like eBay, Alibaba etc. they are offering the opportunity to

appear to be on forefront of online services to become a professional organisation. so I can see and understand that we will never be able to get to all these organisations, yet we've got to strive to do more, u can see why an intermediate platform is attractive and is good for competition cos it keeps an organisation to ensure they are looking at the competition, innovation, next step and evolution of the market place.

**10a. Interviewer: I am thinking of an IT system that deals with this multimodal consolidation wherein parcels can be consolidated both on the road, rail and air service, do you think if such exists, it could be useful to your company? Prompt**

**Respondent:** I would say that again, we would want it in house, we are such a big organisation, we would rely on our own system. we will be interested in any disintermediation of parcel business, however we need to influence it strongly to ensure we keep control, understand those businesses... there, keep close to TSP and understand what they offer, because u keep control, you maintain a better revenue.

**10b. Interviewer: What relationship do you have with Metapack? Prompt**

**Respondent:** Well, Metapack is the platform consolidators of volumes, which offer customers an opportunity to get the best parcel deal with multiple carriers. So Metapack sets up a relationship with customers who give them the data, so its typically the volume, size and the weight of the parcel, so that's the key information that Metapack will be able to know and within the information provided, will be collection and delivery point. We call it rise from earth and the delivery is called fall to earth. So rise from earth is typically one collection point for multiple parcels and the fall to earth can be spread all over. That information with a sophisticated IT system will help you to manage the flow through your pipeline and know where the volume is going to make sure you optimise the delivery process. so Metapack will get into a relationship with the customer, they agree price with the customer so the customer will pay them and then they will then look at the suppliers, they'll look at the best possible deal from the supplier and based on the size and weight of the parcel, and from time to time the fall to earth, they decide which carrier takes up the load, so once Metapack agrees the price, they pass it on to the carrier who carries the parcel through the hub sortation and deliver, so Metapack are the major men.

**10c. Interviewer: Is Metapack a large company? Prompt**

**Respondent:** I wouldn't call it a large company, I don't actually know the volume that drives through them. They wouldn't be a major player within parcels if you think of them as a competitor, however they have some volume and customers love to deal with them, so those intermediate suppliers are very important to understand the work.

**11. Interviewer: *In what way do you think collaboration will influence inter-city same-day delivery market success?***

**Respondent:** Collaboration will be required amongst most carriers, and would likely require some system integrations that are technologically driven. It will require a real time system and information sharing. Some sorts of electronic collaboration will in this case be useful, but I will argue that it will be expensive to design or implement. The P2P may not require any form of collaboration, and in this case it will be a door-to-door service, but anything other than this, especially an intercity delivery may require two or more companies coming together for a successful operation. Collaboration will influence it, but it will require a complex integration process.

**12. Interviewer: *Do you think same-day delivery will influence delivery type, e.g. home delivery, click and collect etc.?***

**Respondent:** May be until the service is formally launched. All I know is that home delivery is mostly preferred.

**13. Interviewer: *How much investment do you think is required for same-day delivery market success?***

**Respondent:** Well, like I said earlier, it depends on which perspective we are looking at. In our own case, it is a matter of incremental changes to the existing system, whereas for smaller carriers or even large carriers who haven't got these large amount of infrastructure, a lot of investment will be required. An example is Amazon and there massive investment in the drone technology. This will be categorised as radical, and a lot of investment will be required.

**14. Interviewer: *How much technology do you think is required to influence a same-day success?***

**Respondent:** Technology has been helpful in all business sectors, and I am sure I have in one way or the other talked a lot about technology today. So I think with technology evolving and changing approach to business, it will be key in the drive for same-day delivery success. I will say technology should be the first on the priority list of the required infrastructure in the drive for same-day delivery.

**14a. Interviewer: In what way has technology helped your company? Prompt**

**Respondent:** I think technology has helped us to do what we couldn't do without technology, so for people who have been in the business and I mean 20-40 years, they are being part of the public organisation, and they don't really get exposed into the competitive environment and now we are in the business and we know the external market really well. Now we are private organisation and people like me who has been in the external so people are really helping us understand the external market using their knowledge and thinking. So over the last couple of years, we have put in place some technology to help deliver special delivery guarantee of track 24 and 48. they manage to grow their business and revenue margin by introducing products that customers want and then recognising the standard product if u have the bar code on it, there is so much more to offer customer, so we retain that business so we can grow that business and leverage half of the information both from the revenue perspective and cost perspective because in an organisation like us or nay delivery organisation, if u know your data, u can leverage half of your information, without it u are operating blind u are operating on the experience of people rather than the data. So by introducing those products we understand that we have to go to the next level.

**15. Interviewer: Do you think SMEs need external help to cope with the changing retail market?**

**Respondent:** This is an evolving market, and the requirement to satisfy the changes have become so high and costly for small business owners. So I think help from government on loan and market regulation will make a huge difference.

**16. Interviewer: What are the anticipated challenges in terms of economic, regulatory and environmental factors?**

**Respondent:** We have the market power to remain competitive in the market, the number one challenge is not to become anti-competitive where we can use the deep pocket approach to deep our hands into the funds we've got, mainly because we have the market power to do so, so then invest in the product that we can afford to cheaper than the rest of the competitors, in order to just knock them out of the business. That will be deemed anti-competitive and a huge fine against us. So in choosing any strategy that we use, it has to go in line with the regulation, to be sure it is not anti-competitive. so we have the legal tame that actually works closely with every product we choose, either new product or how we do our prices of the old product in such a way that we remain .....and at the same

time, it does not become anti-competitive where it will be tamed as too cheap to knock off competitors.

**16a. Interviewer: *As the competitive strategy in the UK, do you think there could be a way to bring the price down to be relatively cheap? Prompt***

**Respondent:** yes you can bring the price down. You need two things (1). a very sophisticated IT platform that supports the collection and delivery, what time you need to collect and the connectivity of getting the product through the pipeline to the delivery point. So that's where you need a very sophisticated IT system and it's absolutely the focus of creating efficiency which lowers the cost that can now be passed on to the customer. (2) The second is volume, so IT gives you the competitive advantage and the way you leverage that is getting the volume and to get the volume. So to get the volume, you've got to make a choice. Do you create the market or do you go on consumer business same-day to create the volume. So Your absolute core business and what we are very good at our main parcel is small parcels delivered by post men and women, we deliver six days a week and we ...the proximity to our customer collection and delivery is far greater than anybody, so the company can just simply as we doing now leverage of what we already do, capturing every little bit of that, so the first stage we need as an organisation is to put bar code on all of our parcels. We're the only carrier probably in the world that collects and delivers so much products that hasn't got a bar code on, we probably the last carrier that does that, very other carrier does that. every other carrier that I have met has bar code, and that includes mail, we have something called 'mailmer' that we stamp barcode on all our parcels and letters to capture the data, u can drive efficiencies, through which u can introduce same-day product and ensure u are minimising cost which drives down price. so u either create market for it or u find the business, so the fact that we 've already got the business, if we want to really lower the price and do something different, its leveraging out of the next day market to see how we can integrate same-day market. Yes it is not easy, but it can be done. If you look at what amazon has done, in the UK with a same-day offering, they use a company called Smith, the News agent paper, customers' orders today, they get it delivered into smith, smith gets it delivered to news agent and customers pick up from news agent. This is leveraging to deliver the same-day to customers. So they are coming up with a different solution to offer that to customer. A company like amazon creates that and forces u to look at it and forces u to say do we become a player or do we have a watching

brief or do we have some of the things they want. so when we talk to amazon, that we see what u are doing and that what can we do to assist the new idea, so those conversation are going all the time. So customer demand should force organisations to demand rather than a market place proposal. So because of the size of our company, what we can do is to watch but also to prepare on how to enter the marketplace.

**16b. Interviewer: Have you heard of Jingdong in China with his same-day delivery of over 180 million? Prompt**

**Respondent:** Yes, we have looked at his business strategy because one of the challenges we have is, what is the next requirement in the UK, and in the organisation? Carriers like that is not just to deliver parcel but whatever the customer wants, I think eventually it would come to the UK. We are quite traditional in our way in the UK. We look at brand as being important. We don't try to diversify e.g. Tesco and other organisations have tried to diversify but sometimes it works well and sometime it wouldn't work. So it's going to take time but it's got to be presented.

So if you think of food, I know amazon is doing very well in America and they are bringing it into the UK.

### 3.1.2 Carrier 2: Same-day specialist large carrier

#### 1. Interviewer: What can you say about same-day delivery practice in the UK?

**Respondent:** Same-day has always been a premium delivery service for very special documents, and it is mostly patronised for B2B purposes. It is an expensive delivery service that requires a dedicated vehicle. In most cases, only one parcel or mail is shipped, and the backhaul is usually empty. So because of this, both the forward and return journey would be charged by the carrier. There is no delivery success without volume shipping, except for time critical parcels that attract special premium.

**1a. Interviewer: How will you define a time critical parcel delivery? Prompt**

**Respondent:** Something quite simple that meets customers' expectations, that meets deadline, e.g. 11 o'clock, it has to be there by 10.59

**1b. Interviewer: What is the fastest delivery service you have ever offered? Prompt**

**Respondent:** Was to deliver between UK and New York in less than 5hrs. I did this through concord airline, which is the fastest airline as of then.

**1c. Interviewer: *Do you think dedicating a van to only one parcel is profitable? Prompt***

**Respondent:** I used motorbikes more same-day delivery. The company makes more money, and when it is a very important parcel, they are willing to pay for the service and you also want to satisfy your customer. So long as the company will pay, you will offer the service. But as LSP, if you get orders, you try to source for more for profit, maximisation even though the company was going to pay for it. So consolidation really works a lot for LSPs. So LSPs tries to offer cheaper services most especially in this situation or for the backload, when they don't want to return empty. Also through massive network of couriers, a lot of consolidation happens amongst drivers to reduce empty backload.

**2. Interviewer: *What would you say is responsible for the increasing demand for same-day parcel delivery?***

**Respondent:** In the real sense of it, there are no demands for same-day market, except that it is being pushed by top e-tailers. I am sure you are aware of Amazon and their attempt to radically change delivery services. This in my view has been the source for same-day delivery demand, and not from customers. Amazon has engaged in a lot of R and D specifically for same-day delivery service, they have invested in the drone technology, in partnership and collaboration and by increasing the number of regional and distribution centres in strategic locations. Their major reason for doing this is to come up with a radical and offensive competitive strategy that is hard to respond to or imitate by other players in the industry.

**3. Interviewer: *Who amongst customers, shippers and carriers would you say is responsible for same-day rising demand?***

**Respondent:** 95% of the responsibility will be on retailer, most especially, the large players in the industry who are mostly in the online business.

This could be referenced to speedy delivery as being a target competitive strategy that has resulted in a huge technology infrastructure is being invested in by large online retailers.

**3a. Interviewer: *Have you got plans for national same-day service? Prompt***

**Respondent:** We already deliver parcels same-day and nationally, but it is currently a premium service, and with plans in the pipeline to make it more popular and affordable through collaboration that should actively engage the SMEs and large carriers.

**3b. Interviewer: *Would you say collaboration will help this service? Prompt***

**Respondent:** Certainly will, as it gives you access to infrastructure you may not individually possess, but it is key to be sure the volume is there.

**4. Interviewer: What impact do you think volume will play on same-day delivery success and profitability?**

Carriers partner with many shippers to drive volume and collaborate for consolidation. ....going by the rule of thumb, on the average, parcels from between 150 to 200 upward will be categorised as sizeable volume, and shippers with moderate or greater level of parcel shipments have benefitted from cost reduction and achieved a good return on investment through the multi-carrier approach. So I think one major reason for collaboration is profit maximisation through volume drive. I.e. volume shipping in which the problem of freight capacity utilisation is reduced. I think the market is really changing, and since same-day will likely attract premium charges, we need a lot of volume to drive consolidation.

A very good example of the benefits driven by volume shipping is the reduced or free shipping offers to customers by online retailers.

For your information, it is worth knowing that all these services are better offered by Carrier 1 (replaced), because it has the ability and infrastructure, but will require volume shipping.

**5. Interviewer: Can existing infrastructure support/drive effective same-day delivery market?**

**Respondent:** It depends on the infrastructure you are talking about. However, when companies partner or collaborate, they bring with them their infrastructure, that becomes open and available to use amongst the collaborating parties. Therefore in this case, through collaboration, existing infrastructure can be pulled together from different sources, and integrated to become a single system and drive a same-day market.

**6. Interviewer: How do you think the current hub and spoke distribution system can be improved to influence volume for same-day delivery market?**

**Respondent:** Again I would say through partnership and collaboration, a lot of infrastructure would be shared, and as soon as this is supported with technology, the system alongside hub and spoke operations can be integrated for efficiency. What I mean is that there could be an electronic platform, where trucks, vans and parcels details are shared amongst partners, and matched for space optimisation and speed delivery where possible. We are into series of discussions with our TSPs, who have also been doing extensive research on how advanced and technologically inclined collaboration can be integrated with our hub and spoke operations for affordable and effective speed delivery services, part of which I believe may possibly include same-day delivery service.

**7. Interviewer: Do you think collaboration will play any major role towards achieving an inter-city same-day delivery?**

Due to pressure from retail giants, unending proactiveness and innovation are the slogan in the logistics industry, and has in recent time been experienced through partnership and collaboration. 3PL partnership helps retailers with flexibility and nationwide coverage, the result of which is customer retention while carriers partner/collaborate with many shippers, to drive volume and collaborate for consolidation.

In our own case, we collaborate for volume shipping, through which the problem of poor freight capacity utilisation is reduced. We have hugely invested in collaboration, wherein we merge, partner and acquire other large carriers, medium carriers and small local carriers to for same-day delivery purpose. One of our moves to stay ahead of the market demand is the investment on our national coverage expansion scheme, through which we are increasing our distribution channels, and we have successfully partnered with medium carriers and still negotiating with small local carriers who specialise in last mile deliveries. We also believe that a successful implementation of this new network design will aid a real-time and uninterrupted information sharing amongst collaborating partners. (...) the business has over the years experienced growth through successful consolidation, operational cost is reduced for maximised delivery cost

Talking about inter-city freight, a vast majority of small carriers lack the required volume for such shipment, but through collaboration the operation cost is reduced, and they can concentrate more on local deliveries and last mile deliveries.

Collaboration can be of optimal use when executed effectively in logistics, and has helped transform freight businesses to drive efficiencies. ...with the recent upsurge in freight competition, most of the small and medium carriers cannot afford to remain in business without collaboration. It will be a difficult task to get same-day to work for all without a high degree of collaboration, and the collaboration may have to effectively engage large carriers and SMEs.

If you check different business strategy development in the logistics and retail industry, collaboration would be discovered to play a huge role both with retailers and carriers.

**8. Interviewer: *do you think intercity delivery is possible in the same-day at a cost effective rate?***

**Respondent:** definitely, if people are willing to pay premium and as such the volume is likely going to go up and all these will be factored in.

It used to be a service offered by the rail long years ago, called the Red star. As a rider, I pick up a parcel, take it to the train station travelling towards the destination of the letter, after which it is picked up by another rider for the last mile delivery.

So I would also say if freight and passenger rail can be reintroduced, inter-city delivery will be fast, and the issue of dedicated vehicle can be massively reduced. Parcels on the train in this case will be a niche market, which generates additional revenue for the network rail, and no loss will be incurred even when there are no mails or parcels. So, yes it is possible and will be profitable by reinventing the wheel and reintroduce the mix passenger freight rail.

I think the market is really changing, and same-day is set at premium service. We need a lot volume to drive consolidation. All these service are better offered by royal mail. As it is, royal mail has the power and capacity but would require a huge volume

You can also check NCA-National Courier Association, a form of cooperation amongst couriers to help themselves out usually at no cost most especially to reduce the empty backload.

**9. Interviewer: Will you collaborate for same-day delivery service success, if required?**

**Respondent:** The collaboration process is already on. There is no way such a service will be successful without having an effective and innovative retail logistics collaboration system in place.

**10. Interviewer:** *Do you think there could be a way to bring same-day delivery price down to be relatively cheap? prompt*

**Respondent:** What do you mean relatively cheap?

**Interviewer:** I mean to become commonplace, i.e. a near zero price or even free delivery.

**Respondent:** Anything is possible, it all depends on the set goal. A company like Amazon for example can claim free same-day delivery as one of their competitive strategies. However, it should be noted that such offer would only be for prime customers, which in my own view disqualifies it from being free, but can be regarded as cheap and affordable. Affordable in this case also refers to customers' frequency of patronage. In another view, the need for intelligent collaboration and integration is important, and smart logistics must be in place to drive volume, and for effective consolidation. It is only through this we can achieve economy of scale for profit maximisation. Achieving this wouldn't come cheap, it will require advance level technology system and infrastructure, and such would only be invested in when the market reflects the need for it. So, it is possible to have it cheap and affordable, but only time will tell.

**11. Interviewer:** *Will multimodal freight system help achieve commonplace same-day delivery?*

**Respondent:** Multimodal freight has been in use for a very long time. It is a possibility, but will require a form of advance information technology, and will also require some level of integration between 2 or more companies. With the technology, the consolidation operation may take a lesser time to process, and may be helpful for both economy of scale, and same-day delivery.

A lot of benefits can be derived from rail speed, especially passenger rail, and with the recent high speed rail, and if there could be an intelligent integrating technology system for the road-rail freight system, and for the re-invention of mixed passenger-freight system, it is likely achievable. This implies a strong collaboration between a carrier(s) and the rail network, and to initiate such collaboration means there is strong motivation.

**12. Interviewer:** *In what way do you think technology can aid multimodal consolidations?*

**Answered above**

**13. Interviewer: In what way do you think collaboration will influence same-day delivery market success?**

**Respondent:** Our ongoing collaboration system has helped us with our national infrastructure and facility expansion. We have partnered with other large carriers, medium, small, local and freelance carriers. In some cases, we operate a zero hour contract especially with local or speedy couriers, and in areas or places where our infrastructure is not strong. It may also interest you to know that the investment is worthwhile because we now benefit from increasing distribution centres and other facilities. Plan is underway to partner with the National rail network for quicker and wider coverage. A successful completion of the project could actually make a same-day delivery service more popular and attractive, especially if it is affordable, may be also become commonplace as in the case of your project. All these could be possible because we will not invest in new infrastructure, but a transformation or expansion through facility or infrastructure sharing. This approach is interesting because most participating members are still able to carry out individual businesses, and are also responsible for their own performances.

**14. Interviewer: Do you think same-day delivery will influence delivery type, e.g. home delivery, click and collect etc.?**

**Respondent:** In recent time, the demand for other delivery types is increasing, but that has not changed the preference for home delivery over every other delivery type. But in the event that same-day becomes popular, there would likely be a switch to parcel pick up or click and collect. This could be because majority of online customers are working class, and would want to pick up the parcels on their way home. Our system has this in place already, and in some cases we make use of the collect+ service, to deliver to local stores. Most parcels in the case of same-day delivery are highly valued, and there would usually be an estimated delivery time, so customers know when to expect their parcels, and they are prepared.

**15. Interviewer: How much investment do you think is required for same-day delivery market success?**

**Respondent:** Asides Amazon who has been investing in the R&D for radical designs for the same-day delivery service, I would estimate the investment to be that required for collaboration and system integration.

**16. Interviewer: How much impact do you think technology would play to facilitate same-day delivery success? Answered**

**17. Interviewer: Do you think SMEs need external help to cope with the changing retail market?**

**Respondent:** External help is definitely required. The retail logistics market is evolving, and a lot of changes have been witnessed. In most cases, the market requirement for the changes are hard to meet, except when financially capable. Since SMEs are not likely to tick the boxes required to satisfy the changing market, they may be able to benefit through partnership and collaboration. Also carriers like Royal Mail may use their position to help SMEs.

**18. Interviewer: What are the likely challenges, in terms of economic, regulatory and environmental factors?**

**Respondent:** For our business, let me say here that we have customers in both the B2B and the B2C sector for our same-day delivery service, with the higher percentage in the B2B. We also have a high record of B2C same-day delivery customers nationally, but more in the London metropolis, and the problem here is that this service may experience set back with the pressure from companies like Amazon.

General challenges for everyone in the service, Volume I will say is the No 1 challenge, followed by the unpredictable and evolving competition from other large players, infrastructural deficiencies and finally and environmental factors.

## **3.2 SME carrier data**

### **3.2.1 Carrier 3: Standard SME carrier (Pilot)**

**1. Interviewer: What can you say about same-day delivery practice in the UK?**

**Respondent:** It is a service that has always existed, and patronised mainly for B2B purposes. City Sprint for example has been doing this for quite some time, and when you check their website you will see that the service is mainly business focused. I am saying this because the charges are not retail targeted. So I will explain it as a time critical form of delivery that is usually patronised for business purposes. Having said this, there is a new company called shutl. The company is into same-day, but their business model is different when you compare to City Sprint's. Their model is fit for both B2B and the B2C judging from their charges, and partnership with retailers. My concern would have been whether the model

can drive volume shipping, but because they operate in cities, and mainly in London, being the centre of market attraction, it may be profitable. Otherwise, it could be challenging because most customers do not want to pay additional delivery charges.

**2. Interviewer: What would you say are the factors responsible for the increasing demand for the same-day in retail market?**

**Respondent:** It is all about the changing and competitive nature of the market. Companies are engaged in a lot of R and D projects, which has resulted in many value added services. In the case of retail market, we've only heard of Amazon trying to introduce this to the market. It may be possible for them because they are big, and can easily influence collaboration. Amazon sets the pace, and they always want to do things differently. Investing in same-day delivery doesn't come cheap, and may be difficult for others to engage in. If this is the motive, then I will say it is another competitive strategy by Amazon. It is not economical for retailers to be directly engaged in delivery services. Influencing carriers to engage in same-day delivery may be challenging because it will require new infrastructure and a huge cost. The service may be beneficial to large retailers with many stores across the country, but challenging to smaller retailers.

Same-day is best practiced within cities, and may only work for large retailers.

**3. Interviewer: Do you think same-day delivery will influence delivery type, e.g. home delivery, click and collect etc.?**

**Respondent:** Although customers have always given preference to home delivery, but as earlier mentioned, it has mainly been a B2B service, and in this case it will be a case of business address delivery. If it gains popularity in the retail sector it may not necessarily influence home delivery, different delivery types will be required.

**4. Interviewer: Which delivery type is mostly patronised? (Home, click and collect, local store, etc.)**

**Respondent:** It has always been the home delivery. If all vendors include other delivery options, I think there would then be preference for other delivery types over home delivery. The reality here is that people are not always home for parcel collection, and the delivery time is not always known, except for a few companies. In most cases it is difficult

to collect parcels at work, also in some cases there are people at home to receive parcels, and so for one reason or the other, customers give their home address for deliveries.

**5. Interviewer: Do you think same-day delivery can eradicate the problem of failed delivery?**

**Respondent:** No I would not think so. Same-day parcels are pre-planned parcels, and because they are important parcels, they are rarely missed. Arrangements are specially made for this delivery type, and it will be very rare to record delivery failure.

**6. Interviewer: What impact do you think volume will play on same-day delivery success and profitability?**

**Respondent:** Parcel delivery goes hand in hand with volume shipping, and that is why you see distribution centres or hub and spoke everywhere. Parcels are consolidated for volume shipping, through which carriers drive economy of scale. Without volume, it is difficult to have a profitable delivery service, and that would be the likely challenge in the case of same-day delivery service. It is easier to drive volume for standard and next day deliveries, but same-day will likely face difficulties with volume. Customers will go for same-day delivery only in matters of urgencies, otherwise they either leave it as free next day or standard deliveries because of the cost.

**7. Interviewer: Can the hub and spoke satisfy the same-day delivery requirement?**

**Respondent:** Volume of parcels travel through the hub everyday, and in most cases we have the concentration on the night shipping. Same-day parcels are usually time critical, so what I would say is that same-day delivery will be best served through P2P. I can't really see a profitable same-day delivery service in retail, the next day delivery service is successful, and will outperform a same-day delivery service.

**8. Interviewer: Do you think same-day delivery can become commonplace?**

**Respondent:** No it cannot. As for those carriers in cities, they can improve through their partnership with retailers for retail deliveries, but cannot be commonplace except it is a free delivery service. Although customers have become frequent online shoppers, they still want free delivery services, and if same-day delivery is not made affordable or not made a free service, it will struggle amongst other free delivery services. You will notice that next

day delivery patronage is not as high as standard parcel delivery, which is because next day delivery is not always free. Customers choose it when it is free, and shun it when charges apply. Even next day delivery does not get much patronage when compared to standard delivery, let alone same-day.

**9. Interviewer: How will same-day delivery becoming commonplace affect your business if successful in the retail market?**

**Respondent:** Well I'm not sure it is something any carrier has to worry about. Same-day delivery is not a retail delivery, retailers always want free delivery, and since same-day cannot be free, there won't be demands for it from customers. As a carrier, our services must be tailored around customers' want, and since same-day delivery isn't one of them, it can't be of any concern and would not affect our business.

Even in the event that the service sees the light of day in retail services, it will be a time critical service that attracts charges. Carriers charge special premium for this, and that is when it can be profitable. The service cannot become commonplace, and will not conflict with other existing services.

**10. Interviewer: How do you think medium carriers like yours will benefit from the same-day delivery service?**

**Respondent:** Just as I have said, a same-day delivery is a bespoke service, and should be used for extremely urgent parcels. However, and for your project small carriers who wish to offer the service in the retail can only get that done within cities in the UK. Also do not forget that I said there would be charges, and in this case special premium will be paid. Going back to your previous question about same-day delivery becoming commonplace, I think this just explains it. A delivery that will always require special premium will not be patronised by customers except as and when required. The case of Shutl will be a good example. They are small, and operate only within major cities of the UK. Let's place a sample order on their website to see how much that costs. As you can see now, the longer the distance the more premium you have to pay. It may be beneficial when the premium is paid, but not when there is no volume, and you have made some investment.

**11. Interviewer: What role do you think collaboration will play to make same-day delivery achievable?**

**Respondent:** Collaboration is important in logistics, and in order for any company to be successful in today's market they must engage in some sorts of collaboration. Collaboration drives innovation, it helps with economy of scale, business expansion, flexibility, and in some cases it helps with competitiveness. I will advise that you use both collaboration and partnership in your subsequent interviews. In some cases it doesn't necessarily have to be collaboration, but it could be partnership. From same-day delivery perspective, it may be the case of partnership. Carriers who engage in the service will have to partner with some retailers, and possibly integrate their services in order to reflect same-day delivery as one of the services they are able to offer. This will be vice versa for retailers like Amazon who has engaged in same-day delivery campaign. They can partner with shutl or any carrier that offers a similar delivery service. This practice I have seen between shutl and some retail companies. You can check this out by going to their website, you should see list of partners. One benefit through this would be customer network expansion.

**12. Interviewer: *Does your company collaborate/electronically collaborate with other Logistics Service providers?***

**Respondent:** Are you asking about electronic collaboration? In this century, the business has gone electronics, companies have worked together to drive efficiencies in their services, and a lot of integration have taken place. Electronic collaboration is really important, two or more systems are now integrated, and our freight services have improved, we have been able to cut cost, and attract more customer satisfaction. An example could be seen at the distribution centres. Many carriers converge at this point to consolidate parcels, and when parcels are consolidated, problems of empty freight are reduced. A new automated system is now in now being deployed to calculate the spaces in each truck, estimate the number parcels, and assign parcels to truck even before its arrival at the distribution centre. Yeah, it's some advance technology we use there. Not all carriers use this, it is still a new system, and I'm sure it will very soon be popular. We are able to do this because we have created a consortium, and the consortium is managed by a logistics technology provider who designed and manages the collaboration platform. Each member of the consortium updates its activities, which are instantly synchronised and executed at the DC. It is an advanced level of electronic collaboration, and it is really efficient.

**13. Interviewer: *How does Technology help you achieve cost effective collaboration and delivery?***

**Respondent:** That I think has just been answered.

**14. Interviewer: *Do you think any technology can be designed to get parcel deliver inter-city the same-day***

**Respondent:** In theory it is possible, but in practical, it is not realistic. Logically, most consolidation processes are done overnight and that is why express delivery is most a next day delivery service. You are not able to drive volume until all parcels are brought in to the DC, and the process is usually at night, and this is when the system or say the technology operates at its maximum capacity. The machines have been designed with minimum and maximum parcel volume recommendation. It will not be economical if you don't operate them at the recommended level. Because you are asking about inter-city delivery, it will be difficult to have same-day item that will travel through the consolidation system, but will be possible as a point-to-point system when special premium will be charged. I really am not sure of that technology, but the technology providers may be able to answer this question better. Even if it will work, companies must partner and invest in new technology and some other infrastructure. It is going to be difficult.

**15. Interviewer: *So what are the likely challenges that could hinder a same-day delivery success?***

**Respondent:** The challenges will be numerous, some of would the unwillingness by customers to pay the premium, carriers' inability to get volume shipping, high cost of investment and implementation, no attractiveness, not market driven, expensive to run and maintain.

**16. Interviewer: *As a carrier, have you thought you could be pressured to engage in the service?***

**Respondent:** At the moment, the main retailer behind same-day delivery is Amazon, and for them to get this right, they will have to engage the services of large carriers like the royal mail for example. I am not even sure royal mail will buy into it. It is just common sense. Think about it in terms of profitability after the investment, there are no assurances

of a break through. If companies like royal mail will not consent to that, it cannot be a worry for medium and small companies like ours. There can never be pressure for a same-day delivery service. Too many logistics are involved, and Business strategies should not be revised unless there are critical changes to the market requirements. In your situation, that is not the case.

**17. Interviewer: Will you see your company engage in same-day delivery service?**

**Respondent:** I don't think it is one of the services that are of utmost importance to us, so I can't say Yes to that, in the meantime. Also bearing in mind that there is no market enthusiasm for this high speed level, it is unlikely that we'll engage in it.

**18. Interviewer: How achievable is inter-city same-day delivery?**

Considering the extent of complexities in the likely collaboration and integration system, there would be need for new infrastructural investment. For a medium sized like us, it is not feasible. I will also add that even for large carriers, it may be easily achievable within cities, but gets complex once beyond. This kind of service will usually require a form of partnership between shippers and carriers.

### 3.2.2 Carrier 4: Same-day SME carrier

**1. Interviewer: How do you define same-day parcel delivery, from the company's perspective?**

**Respondent:** It's a two type like Amazon type where they deliver between order time and evening and secondly the company's type where delivery is made within 90 minutes of placed order. We understand same-day delivery is more expensive, but we operate in a way that we still make profit. We don't offer inter-city delivery, our pick up and drop off is always within the same city. For example, if a customer places an order and wants to use our service, it is the nearest station that would take up the service. So our service only covers certain postcodes in the cities where we operate.

**1a. Interviewer: So in your own view/from the company's view, how would you rate the demand for same-day delivery? Prompt**

**Respondent:** The demand is there, and most especially in the cities we cover, and also we have some regular customers who would always deliver same-day to their customers. So

in order to keep up you have to maintain good customer relationship. Big companies always want volume because of the cost of running the service, so they definitely want their trucks to be filled up before they leave the depot.

**2. Interviewer: What would you say are the factors responsible for the increasing demand of same-day market?**

**Respondent:** The point here is that a few years ago, we started the same-day delivery service in London. We partnered with businesses, and we ensured affordable delivery prices. Most staff members with busy schedule who experienced our consistency and reliability started to patronise the service, and we continued to expand through marketing and recommendations. It just started as a new business concept to think outside the box and get parcels delivered same-day and at affordable rate. We later expanded, and the service is now available in some cities of the UK. There isn't really significant increase in the demand for same-day delivery service from the general retail market, except for the fast spreading news about Amazon and few other large retailers to have it as part of their delivery service.

Amazon being a giant retailer has got a wealth of resources, and are able to invest in new business models. There is this news about Amazon and same-day delivery trial through drone, which would be a massive investment in technology, they also have the power to engage in partnership to achieve what they want. My submission on this is that Amazon has started pushing for this to dominate and disrupt the market using a radical delivery strategy that is difficult to imitate. Some other large retailers have also started to invest in the same-day delivery market R and D.

**3. Interviewer: *Who amongst customer, shippers and carriers, would you say is responsible for the increasing same-day delivery demand?***

**Respondent:** I've always said this that same-day delivery practice in the UK is our innovative idea. However, because of the changing market demand, that is the recent steps by the giant online retailer to make it one of their delivery services, may likely change the tone of the market requirement. Due to our business size, the market demand may go beyond our capability, and we will in this regard put the responsibility of same-day increasing demand on the giant online retailer, but not customers, neither will it be carriers. We do get same-

day delivery requests from individual customers, especially the working class with tight schedules, but not as much as from the B2B.

Since the giant online retailers have decided to make it the new approach to competition, which is not good for the SMEs, if it eventually becomes success. It is also all over the internet that a huge technology infrastructure is being invested in by the giant online retailers.

**3a. Interviewer: *What is the motivation for the business? Prompt***

**Respondent:** To give the customers what they want, any time of your choice, Saturday but Sunday is very expensive, so no. The motivation is to satisfy customer, and to see that we are happy together which is what we currently experience. We are pretty well the leader of the same-day delivery, but there is a bit of competition now, most especially with companies like Amazon who are now into same-day and evening delivery.

**4. Interviewer: *What impact do you think volume will have on same-day delivery profitability?***

**Respondent:** As we all know that volume shipping commands profitable delivery services, so definitely will it be in the case of same-day delivery service. But because same-day parcels will likely be constrained by time, it may be difficult to get as much volume as you would get with other delivery services. An example is our 90 minutes delivery frame. We stick to it, and that is why most clients and customers will always patronise the service. Although in few occasions, we get 2 or more same-day delivery requests for the same routes, which is definitely more profitable. Yes we are fully aware of the impact of volume, but because we will never compromise our delivery strategy, our customers have been loyal.

**5. Interviewer: *How do you think same-day delivery service will affect your business if successful?***

**Respondent:** If the drive to make same-day delivery commonplace becomes successful, medium companies will be under pressure, and the only solution would be to partner with large carriers in order to remain relevant, which in most cases, the conditions are not favourable to keep up with. Like in our case, for example, same-day courier is our primary

business, but the impact of the recent pressure by the giants in the retail industry has contributed to the company's buy out to become a subsidiary to TOR (replaced).

Unfortunately the current market trend has undermined logistics operations, does not favour SMEs, and whoever wants to remain relevant in the industry must be proactive and open to collaboration or ready to be acquired, and in our case, the proactive approach was to put the company up for sale.

**6. Interviewer: How has collaboration influenced the same-day delivery service?**

Collaboration in the freight industry has become a necessity for profitability. Through this, we have enjoyed improved profitability and access to infrastructure. ...so we get parcels delivered to city through Partnership, also working with companies like Metapack, a technology service provider who maps parcels to delivery companies, they try to map parcels to the cheapest and fastest delivery offer, for customers satisfaction.

..... although not important for our primary same-day business (.....) we have benefitted tremendously from third parties resources, particularly to handle their last mile delivery. It is through this medium that our business is not restricted to same-day courier services. ...in this case, we collaborate to offer last mile solutions for larger carriers in the industry, who do the intercity shipping.

Big companies always want volume because of the cost of running the service, so they definitely want their trucks to be filled up before they leave the depot. ...collaboration has helped improve network coverage and reliable delivery speed

**7. Interviewer: What are the likely/ anticipated challenges in terms of economic, regulatory and environmental factors?**

**Respondent:** The problem is competition. The current market trend is not favourable for SMEs, the top retailers have diversified their investment, and are now into delivery services. For us the SMEs, our market economy will be negatively affected, in terms of patronage, we will likely face a massive disruption, and the business future will be at stake. Unfortunately you cannot stop them, the market is competitive, it is evolving, and each day is faced by new innovations.

**8. Interviewer: Do you think the need for it is increasing, particularly comparing the demand from the start of the business till the current moment. Prompt**

**Respondent:** It depends on...I think it has increased, but with the introduction of pick up from local stores, collect plus, the demand for it is not as high anymore. The challenge with Amazon's same-day delivery is the cost, or you have to be a prime member which not everyone wants to do. In my own personal view, I don't see future in same-day delivery becoming commonplace, most especially with the next day delivery getting cheaper, so it is sort of challenging.

As earlier said, we have through recommendations, marketing and online awareness, attracted clients to our business. Although the growth is not rapid, and not faster than projected, it has really improved compared to the early days of the business. It is always good when you have volume to ship, but our business model is not designed around volume because of the very short delivery window frame.

**9. Interviewer: *Do you partner with companies to offer services to them? Prompt***

**Respondent:** There is a cost benefit to it, we do try on John Lewis, very, we do sell our products to them but not from the logistics point of view, we were part of the Maizell group but they've split now, so we like partner with companies, so we get parcels delivered into city through Parameller, also working with companies like Metapack, a technology service provider who maps parcels to delivery companies, they try map parcels to the cheapest companies to get customers satisfied.

**10. Interviewer: *How much technology do you think is required to influence a same-day success?***

**Respondent:** A massive technology will be required. For us, it is not massive because we only operate within cities, but for big companies, for example look at the case of Amazon, if the drone is to be implemented, it will cost them a lot of money, and a lot of infrastructure will have to be put in place. Although I am still in doubt on how profitable this will be for Amazon, which is one of the reasons I am not sure of its success.

**11. Interviewer: *What do you think attracts customers to your service?***

**Respondent:** The speed, offers promotion regularly as low as 99 pence, which attracts loyalty which may at some point not be profitable but as a marketing strategy to keep customers, and definitely you can make up with other transactions

**11a. Interviewer: *Who are your customers?***

**Respondent:** I think they are time conscious people, those who wouldn't mind payment for delivery, those who want to try it to see if it really works, really busy people mostly between 25 and 40 year old who do not have time.

**12. Interviewer: *Do you engage in multimodal freight system***

**Respondent:** It really wouldn't matter if the 90 minutes is 90 minutes, as long as we get there on time.

**13. Interviewer: *Do you think same-day delivery market will influence delivery types e.g. home delivery, click and collect etc.?***

**Respondent:** Like I said earlier, same-day delivery is mostly a B2B service. Even when it is B2C, the same principle applies. What I mean is that it is a planned and expected delivery, and in most cases there would be an estimated delivery time, so the receiver is aware of the delivery, and would have made provisions for it. Also because our same-day service is usually a 90 minutes delivery service. It is difficult to miss a delivery that you are aware take place in less than two hours. I really would not know if it influences delivery type, what I do know is that whichever type it is, it mostly doesn't fail. As for us, we deliver to any address within our coverage area, and all available delivery types will become useful depending on customers schedules. Also if carriers can be more flexible with delivery times.

**14. Interviewer: *Do you have any plan for inter-city delivery, or would it be later proposed.***

**Respondent:** everyone has come across our company in different cities, but no plans for inter-city deliveries. ...Intercity delivery requires a huge infrastructural investment to drive volume, part of which is the need to intelligently collaborate with carriers and retailers.

**15. Interviewer: *Does your company collaborate with other LSPs***

**Respondent:** We don't within the 90 minutes.

**15a. Interviewer: *What is your networking strength? Prompt***

**Respondent:** It is mostly city, looking at the frame of our work of 90minutes, it definitely has to be city. I have to be honest, it could be a bit of a challenge for the big players in the industry, as it will take up to 24 hrs to get parcels delivered. So the service they can currently offer conveniently is Next -day delivery.

**16. Interviewer: *Do you have a central hub?***

**Respondent:** Yes we do, we have a distribution centre, because we offer standard delivery and next day delivery. We collaborate with larger players in the industry, who does the intercity. We do a lot of evening deliveries most especially when people order via click and collect, and at the end of work they use our service for the pick-up and delivery service.

**16a. Interviewer:** *How do you consolidate for same-day delivery?*

**Respondent:** What we do is get one parcel and deliver, except when we have two or more coming and either going in the same direction and would still not have adverse effect on the promised 90 minutes promised.

### **Additional Prompts**

**Interviewer:** *Is the company's operation strictly internet reliant? Prompt*

**Respondent:** it is strictly internet wherein we get to see orders place from our end determine the nearest station or available delivery man en-route to the pickup.

**Interviewer:** *In terms of cost effectiveness and capacity utilisation, how profitable is the business?*

**Respondent:** I can't give definite numbers, but it is really profitable. It's pretty relative, they are all kind of relative to each other, it would be more profitable than standard because we charge premium like £3.99, but also times when we charge 99pence must also be factored in.

**Interviewer:** *Imagine if you have a parcel that could fit on a motorbike. Don't you think it will be more profitable on a motorbike rather than having to use the van with loads of spaces unutilised, and fuel cost and the carbon emission.*

**Respondent:** If the cost benefit was there, why not. But if you are working with DPD and DHL for example. The main thing is if it gets there on time, customers don't care how it got there, so far it is delivered.

**Interviewer:** *Are you very stringent on the 90 minutes, what about 2-3 hrs.*

**Respondent:** I think at the moment we are kind of happy with the 90 mins, I don't think we are looking at anything more than that at the moment. We got to set the target 90 minutes, and any changes to that could adversely affect the business from our own point of view.

**Interviewer:** *Outside the 90 minutes, do you collaborate?*

**Respondent:** Yes we do for next day or standard delivery with DPD, and again it depends on many factors, we could use Royal mail, UK mail etc. Although, with other last mile delivery services outside same-day, we deliver to local stores, using the collect+ service.

**Interviewer:** *Do you electronically collaborate?*

**Respondent:** Yes

**Interviewer:** *Do you think ELM will serve as an effective collaboration tool or platform, and will your company ever subscribe to such. A similar service to Metapack?*

**Respondent:** Yes because it is similar to Metapack and of course if it has any better service why not.

**Interviewer:** *What features would you like to see from a company like Metapack?*

**Respondent:** It is difficult to answer cos it does exactly what it says it will do on its theme.

**Interviewer:** *Having seen Metapack, the consolidation system, do they have to approach companies or LSPs have to subscribe to them.*

**Respondent:** LSPs subscribe to them, and there must be some tie between them.

### 3.2.3 Carrier 5: Technology inclined SME carrier

**1. Interviewer:** *What is your view on same-day parcel delivery in terms of the demand, do you think it's increasing or decreasing.*

**Respondent:** Same-day courier would be more appreciated in the B2B if cost effective. Ordinarily, customers wouldn't pay for express (next day) delivery except it is an inclusive package by the retailer, and would definitely not pay for same-day courier. Different economic situation or customers' geographical location can also influence willingness to pay for the service. Customers are not responsible for this, but the retailers are, particularly the giant players who have recently devised this as their new way to compete. Because they need this to be attractive, I have heard of many ongoing trials, but I can't see same-day out weighing next day and standard delivery.

I heard someone talking from royal mail, where they talk about people who are time rich, cost poor or time poor and cost rich. So what that means is you get a lot of people who don't care about when something turns up and don't want to pay anything for it whereas other people really care about when it turns up. So that's the two kinds of customer we try

to cater for. So and that's where the spectrum of services really come from. I will say we are a user of time critical parcel delivery, we spend quarter of a million pound on same-day delivery per year. We are looking at projects at the moment where we'll commute larger delivery vans better within our network and for same-day delivery per year. we certainly do time critical delivery and it's becoming more common now, we were quite prominent within the fashion beauty centre, some of the things that some of our customers want to pay for is the boutique experience in London for example, they want to be at work within the M25, if you buy from one of their shops, try another pair of shoes or try another piece of make up or whatever it might be, it will be delivered to your desk that same-day. And that's the type of thing that they want to offer. I can say that the market is changing now and the expectation of the consumer is growing massively now because people don't want to wait for delivery all day, they want to know within the hour when the delivery will arrive. And this is all about time versus cost model, some people are home all day, whereas somebody who is very busy will be prepared to pay that premium.

**1a. Interviewer: *Are you a TSP or Technology user? prompt***

**Respondent:** We are Logistics service provider and we've invested heavily in IT in the last 24yrs, we had in our pay system which manage our whole business and quo3x, so we do warehouse fulfilment, carrier, dispatch and delivery as well, we utilise not only the carrier, we utilise and integrate different carrier facilities like royal mail, TNT etc. We also utilise wholesaler, same-day delivery, companies with different portfolio. We have a system which is basically called. Information to allow offer series of services depending on what customers request, so we are able to offer everything from slowest postal service up till same-day delivery within two hours. So the variables that go within that and it generally depends on the demand of the end user or customers for appropriate services. E.g. someone who buys a £3 product on the internet will not want to pay £20 for same-day delivery, it's not proportional to the value of the goods.

One of the services we offer is called the silver service and its generally geared around one of our customers who deals with files for banks and things like that, so it is very time critical, we are talking of 10s of thousands of pounds which needs to be delivered very quickly to prevent down time for these big organisation, so we are able to pick parcel anywhere in our network within 4hrs, so that's one of the services we offer.

**1b. Interviewer: Does your system handle a time critical delivery. Prompt**

**Respondent:** Yeah

**2. Yes- Interviewer: What would you say are the factors responsible for the increasing demand for the same-day market drive?**

**Respondent:** because a lot of people now shop online, and in the attempt to react to the changing market or delivery demands, some retailers want to use delivery speed as one of the strategies to woo customers to their business. Since the internet boom, the retail market has become highly competitive, and we will continue to hear and see other new developments.

**3. Interviewer: Do you think same-day delivery can become commonplace?**

**Respondent:** With new entrants like Amazon and may be Walmart, it can popular, but cannot become commonplace, perhaps because it can never be a free service, and customers would prefer a free next day or even standard delivery, except in extreme cases.

**4. Interviewer: How will same-day delivery becoming commonplace affect your business?**

**Respondent:** I already said it that it can only get more popular and a bit affordable, but cannot become commonplace. However, should it become commonplace, we wouldn't be caught unaware. It is a service we already have in place, so all we have to do is to expand our networking strength, get more partners' systems integrated, improve our track and trace technology and the freight mapping technology, and I am sure we will remain competitive.

**5. Interviewer: What are the general industrial requirement that you think could make the same-day market a success?**

**Respondent:** There won't be too much in terms of infrastructure. Don't get me wrong, I am saying this simply because the demand is not out there in the market, it is only a business driven competitive strategy. With instances like this, you leave the investment to the drivers. So let Amazon, and may be Argos invest in it first, and if it appears there are future prospects, other LSPs may work with their TSPs to extend their business models to accommodate the service. Other than that why would I be worried about a business idea

that even though sounds good, does not really have the prospect. Business should be driven by customers' wants, you don't change your business strategy unless it is important, and no business owner would invest in a service without a high chance of success. Until then.

**6. Interviewer: What is the fastest delivery you have offered, and do you think this can be improved.**

**Respondent:** One of the customers will come back that want a .....that's probably the fastest service we offer, so we deliver and get the exact ....the M25, we aim to have an order come to us, in a bit part and on a van and delivered within 4hrs, so that's quite quick turnaround time if the service is shipped by 9oclock in the morning, by 1o'clock, we should have it delivered. So that's probably the quickest we offered.

**7. Interviewer: How do you think medium carriers like yours will benefit from the same-day delivery service?**

**Respondent:** One of any ways we are looking to offer same-day delivery but the biggest issue of age/ purely location, the ability to be able to offer same-day delivery is reliant on a, multitier strategy because we are centrally based within the country. We are based in the south and same-day delivery would be ....to like Edinburgh, Manchester it get higher and higher. so it's challenging, so what we are looking at doing is to partner with other companies to be able to offer to be able to may be offer like some of these customers, they may hold small amount of stocks at different location across the UK, and depending on which customer requires it, they will select the closest store and then deliver from these, and that keeps the cost down.

**8. Interviewer: Do you think same-day delivery market will influence delivery types e.g. home delivery, and click and collect?**

**Respondent:** : The home delivery fall within issues, that's why a lot people want parcels delivered to their work, so they keep in opportunity to just focus on B2B delivery. I think if you look at the click and collect in the last few years, it's been huge, you know you've got companies like UPS etc. I did a lot of UPS delivery to local, again it's generally you get parcels delivered to your local store, so there's no reason your parcel cannot be delivered to the local store. It's fine but remember that 20% of those parcels are reattempted for delivery.

So if you ask any carrier where they have problems, it's all the ones they don't get delivered and cost them a lot of money, so anything they can do to increase their 1st time delivery. As LSP, there is huge benefit in other delivery options over home delivery. There have been a huge loss record to the carrier industry, resulting from first time failed home delivery. In terms of space and cost of return, I am sure carriers would prefer to drop/ deliver parcels to local shops and would not worry about failed home delivery. However, in this instance, since most customers work during the day, and carriers would not work overnight, should same-day delivery become commonplace, I am sure there would be preference for other delivery types over home delivery types. Besides same-day delivery, other delivery types will be beneficial even for standard deliveries, and in fact, our system now supports delivery to local shops.

**9. Interviewer: How can collaboration help same-day inter-city delivery?**

Large firms with own logistics unit collaborate and consolidate to drive volumes, and also share resources such as the hub, transport fleet, warehouse and manpower/labour. For example, we do a lot of pick up and last mile deliveries for inter-city shipments which may not have been possible without consolidation. (...) the parcel volume we pull at the local level may not be profitable for inter-city shipping.

**10. Interviewer: Does your company electronically collaborate with other Logistics Service providers?**

**Respondent:** Yes we electronically integrate with a lot of PPS and .....so we constantly put in place systems to pull back information on delivery requests.is not a multiplayer service, we are not constantly requesting for job quotes electronically, because we.....Same place so in terms of same-day delivery, a lot of the quotes that we attain are outside of electronic system. Although there is capability to do that based on we are looking at moments to improve our rate, we can increase a lot of permanent rate or minimum rate with suppliers, and use a lot of API integration with google map for auto delivery price generation.

Yeah, all system works on at least cost route model, so by default, it will always choose the least route cost for the customer, then obviously depending on the number of factors like the value, the goods, the weight etc. it will present options that are available e.g. it won't give you an expensive option because that won't be the best. We have for a long time

benefitted from reduced operations cost and has earned us improved revenue. The reduced operations cost directly impacts on shipping cost, through which we have been able to offer our clients and customers competitive delivery rates. We partner with other carriers to pull volume for pick-ups and deliveries.

**10a. Interviewer: *Why is collaboration popular amongst carriers in recent time? prompt***

**Respondent:** High pressure is felt from general retail competition, and the recent approach of vertical integration by the TORs will not only put pressure on the medium carrier but also large carriers who risk losing key clients whilst we are all exposed to reduced profitability.

I see collaboration as the way forward in logistics, to drive effective supply chain management

Collaboration is important because firms take advantage of reduced transport cost provided by carriers who possess significant buying power, through the freight volume they control, and they benefit from the leveraged load consolidation and backhaul opportunities.

Medium and smaller firms collaborate to have access to resources beyond their reach and means, through which they improve their service performance and realise efficiencies in the inventory management.

**10b. Interviewer: *So the collaboration is just a way of pulling information and not a marketplace? prompt***

**Respondent:** Yeah, I have seen software similar to what you are talking about, it's like a bidding kind of set up where you kind of present say you have one box, three pallets, 100k or whatever to go to Germany, then the system automatically provides the quote.

**10c. Interviewer: *Do you know Metapack, and do you collaborate with them. prompt***

**Respondent:** Yeah, but we don't use them, we have spotted them in the past and had conversation with them but because of the cost per labour model, it's quite expensive piece of software, so it's not just per job, it's per labour, so if you are sending five pieces, so you pay for each labour you produce and obviously it's quite a huge cost on every job which is

fine if you send in like ten pieces to courier because ...which is not much like you send job to royal mail in the UK they will eat into your margin significantly, so what we are looking at doing is look at one of investment of a piece of software which has exactly the same, so we've got a system 3x software does something similar where it will produce labour for multiple carriers, which works similarly to Metapack. If you think of our system as similar to Metapack, that will be fair.

Metapack has a fantastic software, have you seen the software yourself. If you want me to give you contact to Metapack, I can give that to you.

**10d. Interviewer: *is your framework based on electronic means or just a traditional way of collaborating with companies? prompt***

**Respondent:** With collaboration for the system, we are fully integrated with UPS, DHL and other number of wholesalers and carriers like Royal Mail, UK Mail, so we are fully integrated with their system to be able to interact with them, to be able to send and receive information. Also, every job that we do is a job within the same rate, with price specifics.

**11. Interviewer: *How does Technology help you achieve cost effective collaboration and delivery?***

**Respondent:** All kind of ...a certain system wherein we are able to utilise many different carriers, so and that keeps the cost service driven, so for example if you there some very..... Then we are able to benefit from using the carriers, so what we do is to offer our customers what we call a blended terms that our customers pay the same price no matter what carrier we use. So we are able to use lots of different carriers to get them the best service across, so I suppose that's what allows us to be different. That's the same model that Metapack uses, but there are lots of different factors again within our system, so we can literally by post code can turn on and turn off carrier so if a carrier is not performing well within a post code of a region, we can turn off such carrier which blocks them from seeing available jobs, and the system will also fail to recognise them at that point in time, so no quote is obtained from such carrier.

**12. Interviewer: *do you think any technology can be designed to get inter-city parcels delivered the same-day?***

**Respondent:** Yeah, I think it will work on the same principle, because if you think of the time to consolidate, so you need a technology that can do this very quickly and put together because where same-day becomes is where you forget the cost base or got one van on the run around M25 and then I've got multiple shipment to deliver, so you are not necessarily discounting it to the customer, and that consolidation can be very powerful if you can land ten jobs that you charging £20 for all rather than discounting them all. So the consolidation is benefit to the provider as supposed the buyer, so you are creating economy of scale by increasing the volume. I think there is technology that can support and you can grow things by postcode area and things like that. So it's having the technology to work the deliveries you can do within what time.

**13. Interviewer: So what are the likely challenges that could hinder the operation?**

**Respondent:** The first thing to think of is what the travelling distance is, will the volume be profitable, and above all, there could be government regulation and restrictions. An example of this could be the restriction on Amazon with its drone trial. There would surely be more, but that is all I can think of now.

**14. Interviewer: So what impact do you think volume will have on same-day delivery success?**

**Respondent:** There is no delivery success without volume shipping, except for time critical parcels that attract special premium. Even if I am to deliver to the next door, I will appreciate having volume parcels to ship and get them delivered once. With that I would have saved a lot, and it will be more profitable. Definitely, volume is very important, and can never be ignored.

**15. Interviewer: Do you have a hub and spoke system that you use, and can it support the same-day delivery service.**

**Respondent:** We don't personally, as a business model, we obviously ship through network that do have the hub and spoke system like Royal mail, DHL, UPS etc. I think the key to success is being able to have multiple locations across the country. It depends on which side of the coin you looking from. If you the same-day delivery partner, you need to have multiple sites and I think the success will be from delivering within densely populated areas where you can have a large deliveries in the small areas, so I think same-day delivery will

be sort of challenging if you try to cover the whole of UK. So if you try and look at it from the city e.g. London, Manchester, Glasgow, Liverpool, you are talking of not very much in terms of distance and population, I think there is a lot of possibility in that area and high demand.

**15a. Interviewer:** *Do you think there could be a way to do this to have effect on the small towns and villages.*

**Respondent:** You first of all think about what network exists, so you got the postal network, royal mail postal network, still the biggest network in the UK, you know 180 depots compared to other carriers with 30 to 40 of some of the biggest carriers in the UK and almost everyone knows their postman. So you know you can potentially tap into the post network about it can be utilised. You got rubbish collection, you got milk delivery, they got cost based associate, so you can entice those companies to partner with you.

**15b. Interviewer:** *The hub and spoke system, is it the same the carriers use for both standard and next day delivery? prompt*

**Respondent:** Generally you find that the majority of powerful network like DPD, Royal Mail, UK Mail etc. they won't offer much slower delivery than the next day because they don't want the parcels hanging around there network and as far as I know, they operate major hubs across the UK and distribute across the country. It's kind of ridiculous with the hub and spoke because for example if you ship from here to Crawley or Brighton and in reality I'm shipping something less than 20 miles, what's going to happen is when I ship from here, it's going to travel to Coventry or Birmingham before it comes back , so in terms of same-day and whether hub and spoke can work for the same-day, I think that is...to be honest with you because particularly with the centralised hubs because of the time it takes to transport that distance, you lose a lot of time and then just doing that.

**15c. Interviewer:** *Do you think the hub and spoke system has been effective for the logistics service providers?*

**Respondent:** The reason its effective is from the point of view of consolidation, so you know they running thousands of parcel and they want the trailer to be as full as possible, so that's why they have the centralised hub for huge parcel.

### **Other prompts**

**Interviewer:** *Who are your partners? Ok you have mentioned them UPS...Have you got other partners? prompts*

**Respondent:** Our System service provider is called Exack Herbacus, so they developed a product called 3x, it's an off the shelf package you can buy, it's like a warehouse management and e-commerce platform, we basically spend and continue to spend lots of money on change of quest to adapt it to work in the best way possible for us, so they are our technology service provider, and they have been servicing us for the past 14 years.

**Interviewer:** *do they customise the service to suit you? prompt*

**Respondent:** Yeah, exactly. It's an off the shelf package that can be completely customised, I think we've spent more on the customers over the year than we did on the original based package, so obviously because the market is so demanding in terms of what it requires in our sector, so we can make tens of thousands every year to develop the package so we can remain ahead of the game.

**Respondent:** There is a lot of people out there offering delivery management technologies (DMT), i.e. similar things to what Metapack is doing, offering systems like: integration solutions, small concise. Metapack has been around for huge amount of time, so they have managed to build a massive portfolio with big retail clients, so they are the big client in the sector.

**Interviewer:** *If there is a proposal that talks about these parcels consolidation or like a marketplace collaboration platform, do you think your company will embrace such for same-day delivery? prompt*

**Respondent:** As a business, we are very open to new ideas and initiatives and we always want to be at the forefront of the market. So as a LSP, we work on behalf of hundreds of customers, so it just depends on the price, the demand. The market is changing now and the readiness of the availability, so people want quicker and quicker delivery option. Yeah it's an interesting project.



## 4.0 Shipper data

### 4.1 Large enterprise shipper data

#### 4.1.1 Large shipper 1 + Pilot

**Interviewer:** *Are there demands for same-day delivery from your customers?*

**Respondent:** There are no such requests yet from our customers, and I don't really think it is a service customers would really want because of the shipping cost implication.

**Interviewer:** *Between customers, retailers and carriers, who do you think is responsible for the increasing demand for same-day delivery?*

Although in recent time, some of the online retailers have started pushing for this, they can bear the full responsibility, but not customers, neither can it be carriers, and since customers wouldn't unconditionally pay for speedy deliveries, they should not be linked to the drive for same-day delivery. With regards to same-day courier, we have not felt any pressure whatsoever from our customers, and I doubt high volume in same-day demand

**Interviewer:** *Would you regard your online retail business as effective?*

**Respondent:** I think our retail is effective in multiple ways in terms of customers trust us, they love the brand and find what they are looking for which makes it competitive and where I think we can improve against our competitors is the delivery and convenience. As in we have good delivery system, but there is room for improvement. The industry is moving and certainly to that now, and that's not something we want to look at now.

**Interviewer:** *You said the retail business is effective, but is it in terms of the online retail as well? Prompt*

**Respondent:** I think online retail could improve. It can be more effective

**Interviewer:** *Do you or would you use delivery speed as one of the competitive strategies?*

**Respondent:** Currently, we have a fairly standard delivery service, and one thing you can't take away from us is professionalism. We may not have same-day and our next day may not be free, but we do ensure our products are intact, and the delivery team ensures

professionalism until the last mile. As it stands, we may not use the speed as a competitive strategy.

***Interviewer: Would same-day affordability and popularity not negatively affect small and medium business owners (retailers and carriers)?***

**Respondent:** Again, I think the point we should note here is that there is no demand for same-day, in fact, there is no awareness about it. May be in future, and by then many things would have changed, and everyone at all business level will be prepared for it. I also would not think SMEs would be bothered, simply because they are able to deliver parcels freely, which is what customers want. They may only be bothered if the same-day delivery becomes free, which will never happen.

***Interviewer: If yes, how would you compare it to the conventional system, because you just said there is still need for improvement?***

**Respondent:** I think the reason is to expand from the....is because we are ...we can sell something very small like a ...but we will also sell something huge like fridge and freezer and the delivery is different. So some deliveries like parcel might fit in a courier whereas other may require 2 men in a truck.

**Respondent:** Our small parcels, we have small couriers, we have big trading etc. Our ability to deliver quickly is less effective. We are effective in reliability in packaging and on our products but not on delivery.

***Interviewer: In your opinion, what are the factors responsible for the same-day increasing demand?***

**Respondent:** It's all competition from a few online retailers. If there is no need for the service, I doubt if carriers would invest in such, and without carriers involved, there won't be a successful same-day delivery practice.

***Interviewer: Will you regard the introduction of same-day delivery as a factor resulting from competitive pressure?***

**Respondent:** From a business point of view, there is no pressure anywhere. It is a levelled playing ground, where everyone sells there products. However, there is no problem when you take new dimensions to improve your business base, and I think that is what we may

be experiencing today about same-day delivery. It could just be a way to stand out in the market, which could be some sort of competition.

***Interviewer: What impact will collaboration have on making same-day delivery an affordable service?***

**Respondent:** A lot of benefits are derivable through collaboration. Since the same-day delivery approach will be a radical delivery approach, collaboration will be very useful for information sharing. With timely and reliable information, there would be parcel delivery efficiency, and may as well be useful towards same-day delivery

***Interviewer: In your opinion, how has collaboration/partnership contributed to the success to your company?***

**Respondent:** Partnership, to us as shipper is a welcome development particularly for coverage expansion...partnership has greatly worked for us in terms of flexibility for our delivery services. This has further helped us reduce the operations cost of reaching out to rural communities where our service may ordinarily struggle to cover, or instances when we are unable to satisfy a timely delivery commitment. Partnership has helped to keep a lot of customers, especially in the aspect of next-day deliveries.

I think the partnership has been a phenomenon to our business and has helped us with improved flexibility towards responding quickly to the changing market, while collaboration has helped us through our coverage expansion.

An example could be partnership of a large retailer with shutl, and only in cities where shutl operates.

***Interviewer: You said you are looking at the possibility of improving on the online retail business, if well implemented eventually, do you think it will take over the conventional system? Prompt***

**Respondent:** I think one of the challenges I see that we have is we are in partnerships with Waitrose stores which gives us more locations nationwide. So a convenient way is to dispatch from the nearest store to the order placed. So our delivery click and collect is next day and the thing to us, the challenge is cost model, and the stress of last minute...so a high delivery cost is where we may have a challenge.

**Interviewer:** *How flexible is your company in terms of the delivery system?*

**Respondent:** Choice of delivery option is available, we offer click and collect, local store and home delivery, but the challenge is how quickly are we able to deliver this, so we are looking at next day delivery, so click and collect is next day.

**Interviewer:** *What is the fastest delivery you think you have offered?*

**Respondent:** I think its three days Click and collect is next day

**Interviewer:** *Lately, people have been looking at the possibility of parcels delivered to them in their homes. So do you think you can use this delivery option as a competitive strategy against competitors?*

**Respondent:** I think competitors use the delivery speed against us and I think we do look the market to see some that do an hour delivery within the M25, but it's very difficult from a USP point of view, I suppose the challenge of retailers is not for customer, it's about during the ...and I think that's why we probably ...to make sure we can deliver and ensure that we can maintain the trust level we want to maintain. So it's easy to ship within an hour. So we are just making sure we improve on our delivery system.

**Interviewer:** *Going by the recent urgent delivery need, what is your view on same-day parcel delivery?*

**Respondent:** I think it's fantastic, if you can deliver to your customer without stress and you alleviate the stress, you will be rewarded by their coming back to you. I.e. be loyal. I think it's absolutely true and the challenge the business has is not been sure of the delivery time.

Logistics is the challenge, because you must be available to cover all cities and because you can't always sell to people in London only. ...quite often customers ask what about me, I am a new customer, what delivery service would you offer.

**Interviewer:** *I've noticed that what some of the companies do now is to partner with same-day parcel delivery, I don't know if you've heard of Shutl.*

**Respondent:** That's why I think they operate on the M25, and they harness there business wherein individual logistics companies subscribe and work with them.

***Interviewer: Do you think you can offer a same-day delivery at some point and on what condition would you do that?***

**Respondent:** Yeah, absolutely. In the nearest future, same-day delivery is to your customers but I think one thing is to want to do it and another thing is how much demand it really has. The higher the volume demand, the cheaper the cost model for the shipper and I just think the better option than same-day delivery but that's my thought. I think it's something we may have to think of.

***Interviewer: You never had course to carry out a survey as to how much people would want a same-day delivery.***

**Respondent:** Well I think there is probably so many options like next day delivery is still being patronised than to worry about same-day delivery.

***Interviewer: Does your company manage its logistics system or is it in partnership with a third party?***

**Respondent:** we have what we call green man van and it's managed by us, which we use in serving the local community, however for places beyond the coverage of our service, we use third parties for the deliveries.

***Interviewer: Would you embrace the package if a logistics company approaches you for the same-day delivery.***

**Respondent:** I think so, but I think we will stand a bit to step back because we will have to check the infrastructure they have put in place and also to be sure of the infrastructure and their success rate in offering the service.

**Interviewer:** The ELM, there is something we call TSP, and before the ELM can come into play, it has to go through the TSP. Now the challenge is who manages the platform between the TSP and the LSP? Now if TSP comes up with the platform, they need to get shippers and LSPs to subscribe. So all they do primarily is to consolidate parcels together and get them onto the carrier.

***Interviewer: So do you think you can subscribe to such package as well?***

**Respondent:** the way they monetise such model, and I think what they need to provide is probably the monetisation. But shuttle in a way probably might be that, I think as a small company may not have that technology, but I don't the client like us would want to run such technology. I think in my own opinion, the TSP will be better to run the platform but will possess a high collaboration/partnership with top player logistics service provider.

**Interviewer:** *So with that, that means you are not tied to any LSP but depend on the TSP to assign your parcel to the available LSP.*

**Respondent:** I think the only challenge there is that once you work with any LSP, you want to set your own terms of service, because you want to control the business and you want your customers' expectation to be met, and I think that may be the challenge. I think delivery is not... enough, it is something that is a challenge for the company. We want our customers to receive our package as they would in store, so we would want a partnership that would not have any negative side/ effect on the quality of the service and product we render, and equally maintain an acceptable delivery speed.

**Interviewer:** So reliability, professionalism, speed, everything has to be factored in. I think the only challenge with the TSP is except they are able to set a standard for the LSP s that would work with them, I think with that it will be a nice package for clients to subscribe to. So all that will happen is if the standards are OK, clients can subscribe to the package.

**Respondent:** Google is providing the technology for taxis (Uber) and if the taxes owners are individuals and they are able to maintain the standard, so you can compare such to Google's service and their level of customers' service and to support and ....but in that if you...

**Respondent:** even with the Uber service, all this taxi drivers that are less busy or wouldn't get customers, can as well deliver parcels.

**Interviewer:** I have also thought of it for the last mile delivery.

**Interviewer:** There is also this service by Yodel, wherein individuals do the last mile delivery. So if for example they have a parcel to be delivered, all they do is assign the available job to available car within the delivery proximity, and such parcel is delivered with

a maintained standard. That also means while a parcel is in your car, such car is insured by Yodel's insurance.

**Respondent:** Physical mass is something that has to be considered alongside its effect and what customers really feel about it. So how to get that commercial quote should be a major concern before new service or product introduction. An example is name it now (a dating website). It is a mobile app and works in a way works in a way that it recognises you by your mobile, location and detects everything that surrounds you. So if such app could be developed for logistics as well, where your parcel is automatically assigned to the nearest LSP collector.

**Interviewer:** *I think this is similar to Uber, where you can track and know the distance of the cab.*

**Respondent:** Also the concept of lockers, if you are shopping, but don't want to stop shopping and equally don't want to carry bags around, I could pick a locker in a cheap store and collect my shopping when I am done. So as for me I think delivery has to be time specific and trackable because I am not always at home, but I want to know the exact delivery time, and where the parcel is at each point in time in order to make provision as regards the delivery point.

**Interviewer:** *How would customers react to a same-day success as commonplace?*

**Respondent:** it will be a competitive advantage because if you can deliver on time to customers their need, it will increase the loyalty, but if retailers fail to deliver, it means I don't trust them and will not return to them.

**Respondent:** If I think I want something now, I should be ready to pay for the service. Sometimes delivery is more expensive than parcel itself, which means they should be considering a threshold.

**Respondent:** Amazon is very commercial, critical mass, high volume and large capacity, and as a result every penny counts.

**Interviewer:** *Is your business strategy driven by customers demand*

**Respondent:** Yes, I think a business strategy goes by what's your desire, internal vision, mission, and all of that is dependent on customers want. We therefore listen to our customers, carry out customer surveys, MPS-make power store, analyse data and what drives customers' loyalty.

**Interviewer:** *Can same-day delivery practice become commonplace?*

**Respondent:** It may be possible within cities.

#### 4.1.2 Large Shipper 2 (Pilot)

**Interviewer:** **Are there demands for same-day delivery from your customers?**

**Respondent:** No, that's not possible. Customers go by what service you offer them. Retail business is very easy to practice. You list your product and their prices, if I'm OK with it I buy it, and if otherwise, I leave it, it's very simple. The same thing applies to the services that come with retail. The key service is the logistics. For our online retailer, at checkout you'll see the available delivery types and that is what you see on most retail websites. Even when you check with the merchants like Amazon and eBay, you'll see that each retailer is allowed to list the available delivery services and their costs. The point I am trying to make here is that you only show customers the available services, and that is what they go with. Having said this, to include same-day service is not realistic. Even though our systems are integrated via an ERP system, our stores are few or let me say not nationally spread, so how realistic can it be to ship a parcel from M25 store for delivery at Bristol on the same-day. Except the item is urgently required, will customers bear that cost? No. It is costly to maintain, it is going to be a point-to-point delivery service. In other words, if we don't make such a service available, customers would not request for it. As a matter of fact, should we assume we have same-day delivery to be one of our delivery service options, and at an exorbitant rate, no customer will go for it. Ordinarily customers would not pay for delivery services, and that is why the economy delivery is mostly patronised. Our courier partners would not even do that.

**Interviewer:** *Between customers, retailers and carriers, who do you think is responsible for the increasing demand for same-day delivery?*

**Respondent:** Do you think it is increasing in demand? If so, it should be everywhere. I don't think there is demand for it, what I think is this: There is this news linking Amazon to same-day delivery, and I have also read a few articles about different R & D going between Amazon and its partners. Just as I said earlier that it is a service that you can offer, you will sell. If Amazon eventually comes up with one, they may be able to spearhead the service, but making this a reality will be a very challenging and expensive task. I think I already said this in your previous question that courier companies will not buy into it, of what benefit will it be when express/ next day delivery is not yet at its peak, why would they want to start a same-day delivery service. Courier companies rely so much on parcels from small and medium companies, and since delivery is nationwide, the fastest will remain next-day delivery service. So if customers would not pay for fast deliveries and the courier companies would not add it to their service, I will choose a retailer, and that is Amazon.

**Interviewer:** *Would you regard your online retail business as effective?*

**Respondent:** Oh yes, our e-retail is very effective. We sell on our own website, and on eBay. We have done this for many years. I totally understand customers' behaviour with online shopping. Our online sales has grown really big, it now appears that we make more sales even online than in store sales.

**Interviewer:** **Do you or would you use delivery speed as one of the competitive strategies?**

**Respondent:** It can actually be a good competitive strategy, but before you are able to do that, it goes down to your purchasing strength, your negotiation strength, and your courier providers. Also if you partner with more than one courier provider, then you may be able to provide a competitive delivery rate. In terms of economy delivery, most of our items qualify for free delivery, but with next day/recorded delivery, they mostly come with charges. Our record shows a significant difference between the economy delivery and next day delivery, and the preference is always economy delivery. Only a very few customers opt for next day delivery. If our business grows, we may be able to negotiate more and deliver some or qualified items the next day at no additional cost. So yes we can, but there would be conditions to be met or boxes to tick. When there are no assurances of volume, it will be difficult to get any carrier to invest in such a service. Also, until it becomes market driven, and there is demand from customers, then we can start to think of getting involved. But with this

current market, same-day delivery is the least of what we will consider to incorporate into our business.

**Interviewer: Would same-day affordability and popularity not negatively affect small and medium business owners (retailers and carriers)?**

**Respondent:** If it does become popular, that means the courier providers are involved, and if that is the case, small and medium retailers can as well benefit from it. And if they benefit from this, then there will be no negativity. But for as long as it is a delivery service for Amazon and may be some others that may want to follow suite, it will remain a special delivery package with special delivery charges, which implies it cannot compete with economy delivery and small and medium retailers are also not bothered.

**Interviewer: In your opinion, what are the factors responsible for the same-day increasing demand?**

**Respondent: Answered.**

**Interviewer: Will you regard the introduction of same-day delivery as a factor resulting from competitive pressure?**

**Respondent:** Not exactly. You can relate it to competitive pressure, if the service would compete with the popular economy delivery, and since that is not the case no one is under any pressure for a same-day service, it is just an innovative thought for the business, and perhaps the tough to create a difference in the market. Customers will always go for any available service, but in most cases, they choose standard delivery because it is free, so I can't see any pressure for a same-day service, when no one will pay for it

**In your opinion, how has collaboration/partnership contributed to the success of your company?**

**Respondent:** There is no success without these two terms. Firstly, we collaborate for volume purchase, and secondly we partner for delivery. As a way to reduce our cost price, we collaborate with other businesses of similar size for stronger negotiating or purchasing power, which has helped us with the selling price, and we can compete. We partner for parcel delivery services. We have more than one delivery partner. We have also partnered to add flexibility to our retail delivery service. You have to play safe in business. For bigger businesses, they dictate their business requirements for service provider to work with, but

in our situation, we go with available services, and we negotiate for some compromise for a win-win package. As a business, you cannot do without the two, they play crucial role in the business, and has to be embraced by all. **Interviewer: *How flexible is your company in terms of the delivery system?***

**Respondent:** The delivery flexibility is with the courier companies.

**Interviewer: *What is the fastest delivery you think you have offered?***

**Respondent:** Our fastest is the fastest that our courier partners can offer, which I think is next day.

**Interviewer: *Lately, people have been looking at the possibility of parcels delivered to them in their homes. Do you think you can use this delivery option as a competitive strategy over competitors?***

**Respondent:** It is very simple. We are only a service user when it comes to delivery, and what happens is couriers also try to add new services to create a difference. It will be interesting to get that as part of the delivery package, because it brings more flexibility, and will reduce missed delivery. Any retailer will be glad to have such. Of course you always want good services from your partners. Don't forget that in a way, the courier company represents us, and we have an obligation to the customer from that moment an order is placed, until the parcel is delivered. If anything goes wrong, customers contact us immediately, and it is until we investigate that we are able to understand clearly what the problem is. Whenever the couriers commit blunders we hold them responsible, and they take care of the cost. They try to avoid mistakes, whilst trying to improve with the services, as any business owners will do to protect the interest of the business.

**Interviewer: *Going by the recent urgent delivery need, what is your view on same-day parcel delivery?***

**Respondent:** My view is exactly what I have told you.

Same-day delivery is not a market requirement, but will be a value added service, and only a niche in the delivery packages. Because it will be charged, and from experience with the next day delivery, the same-day delivery will only be occasional.

**Interviewer:** *Do you think you can offer a same-day delivery at some point and on what condition would you do that?*

**Respondent:** Yes we can, on the condition that it is available as one of the services by our courier partner. It doesn't cost us a money, it only becomes an added service that gives more options to the customers.

**Interviewer:** *Would you embrace the package if a logistics company approaches you for the same-day delivery.*

**Respondent:** Yes, we will.

**Interviewer:** *How would customers react to a same-day success as commonplace?*

**Respondent:** How do you define commonplace? Economy delivery is commonplace. If you are thinking same-day delivery will become commonplace, you are joking. Have you sat to think about the cost of implementation, the required infrastructure and the direct labour required?

**Interviewer:** *What impact will collaboration have on making same-day delivery an affordable service?*

**Respondent:** I can't think of what that would be. Just like what we have mentioned in this discussion, same-day is best served within cities, as a point-to-point service, and so may not require any form of collaboration. Although, large retailers enjoy a large rebate through volume purchase, and can spread the rebate on to reduce costs and delivery charges in order to compete. This may in some ways be useful, but how with same-day delivery, I don't know.

**Interviewer:** *Is your business strategy driven by customers demand*

**Respondent:** Yes, our partners are fully aware of customers' requirement, they work every day to improve their services and professionalism.

**Interviewer:** *Can same-day delivery practice become commonplace?*

**Respondent:** No, it cannot.

### 4.1.3 Shipper 3: Large shipper with carrier service engagement

#### Shipper 3

**Interviewer:** *Will you regard your company's online retail business as effective?*

**Respondent:** I will say our online business is effective, and has been in use for a long time now. We have improved on the usability of our online platform, and has since attracted high traffic. E-commerce has played a huge impact on the economy of most of the leading companies today, and the current nature of the retail business now requires business owners to have very good foresight, and be innovative in responding to the changing market.

**Interviewer:** *In your opinion, what are the factors responsible for the same-day increasing demand?*

**Respondent:** This is simply a highly competitive industry where players need to proactively and innovatively prepare. I think if we look at the market trend, most especially the online shopping and retail logistics competition, it is evolving and should be smartly and innovatively responded to. So my response to this question would be that the major factor driving same-day delivery increasing demand is competition amongst retailers, and the responsibility would in my view be placed on the top online retailers'. In addition to this, our recent survey has shown that until same-day delivery becomes commonplace or at a very low premium, investing in its infrastructure will be a waste. We have invested in it, made the cost highly attractive and it has been positive, with a record of rising demand for the service.

**Interviewer:** *Will you regard the introduction of same-day delivery as a factor resulting from competitive pressure?*

**Respondent:** This in my view will not be regarded as pressure, but the zeal to be proactive in responding to the needs of the market. As said earlier, responding to the current retail market has vehemently gone beyond traditional retail but now requires inclusion and systemic approach to delivery. Parcel delivery has for a long time played a significant role on retail business. However, the sudden boom in e-commerce adoption has exposed the market to complex competition, especially with the introduction of express delivery strategies.

**Interviewer: Can same-day delivery practice become commonplace?**

**Respondent:** The only delivery service you can refer to as commonplace is the standard delivery that does not attract payment in most cases. If we look at it from the view of affordability, the current price we offer is affordable, but we have to consider the price of the item and the delivery price. Customers have become regular online shoppers, but when such an item is not highly valued and not very important, customers would not pay additional quid for delivery. Also bear in mind that not all carriers and retailers have and will have such service. For as long as by all businesses, and premium will be paid, we will only refer to it as an affordable service, with perhaps increase popularity, and not commonplace.

**Interviewer: *Has the pressure from this service had any negative or positive impact on your business?***

**Respondent:** I won't say negative because there is no pressure on anyone to operate a same-day delivery service. Most retailers still struggle with next day delivery, so the idea of same-day would be the least of their worries. The idea of same-day delivery in my view is to be at the forefront of competition. Presently in the UK, only two of us have managed to break into the market, but it is still not popular in comparison to other delivery types. The impact may on the other hand be positive, after all, we are one of the two companies, in fact the only one with the national coverage and the cheapest premium for same-day delivery. It will amaze you that many customers no longer walk in to stores like before, they instead treat their purchases as urgent, and place same-day delivery orders that get delivered within 4 hours. This I think is in consideration of the travelling stress, and may be parking in some cities or city centres.

**Interviewer: *What impact will collaboration have on making same-day delivery an affordable service?***

**Respondent:** Collaboration and partnership in the retail industry work hand in hand for effective delivery service. The availability of the 3PL has further increased partnership rate in recent time. In our own case, one of the attempts to remain at the forefront of competition was to partner for same-day delivery, but due to the review in our service approach, one of which is the national coverage for an affordable same-day delivery, we

now offer this service outside of partnership. We have also collaborated to boost our delivery volumes, an example is the TOR drop-off service and the recent approach to partner with another GIANT retailer. All these we believe will pay off eventually, for reduced operational cost, boost profitability and improved service

Although, most of our deliveries are now done in house, we have partnered in many ways for improved efficiencies, and the achievements are countless over the years... in terms of our delivery services, partnership with carriers has brought flexibility to our delivery approach which has resulted in sales increase and customer loyalty

***How has collaboration/partnership helped your business with respect to delivery?***

***Respondent:*** We have overtime partnered for delivery services, and it has been efficient and reliable. We still partner for every other delivery services i.e. standard and next day delivery services, and they remain highly recommendable.

***Interviewer: Do you think collaboration can help achieve affordable inter-city same-day delivery***

I don't see a feasibility in the inter-city same-day delivery becoming affordable through collaboration, it is only possible within cities where there are same-day courier service providers. For example, I know of Manchester same-day courier, Shutl and city sprint, all these could deliver same-day parcels locally. (...)Anything outside this option in my own view will not drive a profitable deal. I foresee a lot of complications in such move, and I doubt any carrier will drive collaboration for this purpose. The question here is: Are there demands for same-day courier? If No, why would any carrier want to initiate such?

I think the only possible approach I can think of is mainly achievable through large retailers like us who has geographically spread distribution centres, and stores nationwide. In our own case, we have decided to take the bull by the horn and manage our delivery services in-house, and parcels are shipped from the nearest stores to the point of order. Although I categorise this as a radical approach that gulps an initial cost of investment, and I agree there are no demands from customers, but our approach has started to change customers' orientation, and we have started to notice an increase in the demand. Imagine sitting down in the comfort of your home, or at work, you place an order and able to choose a convenient delivery time slot and location, and delivered at a price even cheaper than the

cost of a car pack or bus ticket. We strongly believe there would be return on investment soon.

Our partnership with Shutl for same-day delivery was good...most especially to attract and retain new and old customers who wants, and would pay for same-day parcel deliveries.

In the case of large firms, some of them collaborate to maximally utilise their resources for reduced operations cost while some do this to have access to resources beyond their reach.

Firms will collaborate to meet up with deficiencies. Logistics wise, in our case, we collaborate with other retailers to drive volume for reduced operational cost and improved customer service.

**Interviewer: *Do you or would you use delivery speed as one of the competitive strategies?***

**Respondent:** This is simply a highly competitive industry where players need to proactively and innovatively prepare, so if we look at the market trend, most especially the online shopping and retail-logistics competition, it is evolving and should be innovatively responded to.

It is one of the major competitive strategies newly adopted by the top e-tailers, which we are one, and because we have the ability, and the required infrastructure, we have made it a value added service. In a way, since it is not one of the demands by customers, but a competitive strategy, it is being competition driven, rather than being customer driven.

**Interviewer: *Would you accept to partner for a same-day delivery package if offered by LSP?***

**Respondent:** As said earlier, we have partnered for it before now, but the problem is the inability of our same-day partners to provide a nationwide service. And since we are physically and strategically present nationwide, it was necessary for us to review our business model, which drove this new approach. It is strongly believed that its affordability will make it a replacement for the traditional retail, and will be widely accepted. Ever since the service started, the revenue generated has been on the increase, which implies increased patronage even beyond the company's projection. In other words, we have invested so much on the infrastructure, and in my opinion, I don't think we would go into another partnership for this service.

**Interviewer:** *Alternatively, would you subscribe to an electronic consolidation platform for same-day delivery service?*

**Respondent:** Why not, if it's well proposed, and a thorough review indicates increase volume and profitability, we will give it a go.

**Interviewer:** *Do you think SMEs need external help to cope with the changing retail market?*

**Respondent:** In terms of parcel delivery, the changes in the market may not necessarily require external help, but just to continue to patronise the available delivery services by carriers. However, to migrate from traditional sales to ecommerce, may require some technical and financial help. So in this case, a bit of help may be required, but not in all cases. It will depend on the size of the business. But for the small businesses who cannot cope with the requirements, they can just join the electronic sales through eBay and Amazon.

**Interviewer:** *Would same-day affordability and popularity not negatively affect small and medium business owners (retailers and carriers)?*

**Respondent:** in the event that the service really becomes popular, it may have a negative effect, however, it is believed that the large carriers will come up with a new business strategy that will favour small retailers, while the small carriers should embrace collaboration or partnership in order to attract volume shipping to their business. A technology service provider like Metapack pack can possibly drive a platform and incorporate services of the small carriers.

**Interviewer:** *Since you engage in a same-day delivery service, how do you tackle failed home delivery?*

**Respondent:** This I think is rare because anybody who places a same-day order would in most cases be available for collection. In our case, there are four time slots for you to choose from. This would allow a convenient delivery time. We also have in place the delivery update system that keeps you in the loop from order completion till delivery. Yes, it will be difficult to miss delivery in this regard.

## 4.2 SME shipper data

### 4.2.1 Medium shipper 4

**Interviewer:** *Will you regard your company's online retail business as effective?*

Our online retail service is getting better. We are relatively new in it, and have tried some online ads to boost our customer potentials. We have also recently launched our eBay sales, through which we have been able to boost our sales, especially with the introduction of free standard delivery. So, yes, our online retail is effective.

**Interviewer:** *Do customers buy goods with low premium for express delivery?*

**Respondent:** From our experience, we have observed that customers will rather stick to free standard delivery than pay even the cheapest price for express delivery. The only condition for additional payment would be when the total cost in addition to the delivery cost equals the same amount as the standard free delivery or less. We have noticed that customers look out for free and fast delivery service, and when there is none, they resort to the free and standard delivery. But they will not give preference to express delivery with premium, no matter how small over free standard delivery. A retailer therefore stands higher chances of sales if able to offer a fast and free express delivery.

**Interviewer:** *Will you regard the introduction of same-day delivery as a factor resulting from competition pressure?*

**Respondent:** The retail business has for the past decade been unstable, especially with the adoption of e-commerce. A lot has changed both in terms of the sales services, customer relations and delivery services. Most of the large retailers have taken advantage of the e-commerce early adoption to change business approach, and has therefore become more competitive. It appears to me that e-commerce has contributed immensely to the changes in delivery requirement, and definitely has some relationships with the call for same-day delivery.

**Interviewer:** *How can SMEs afford a free parcel delivery service?*

**Respondent:** Well, I will speak in the domain of our business. Since carriers like Royal Mail has reduced the standard delivery shipping cost of small parcels, we have been able to

incorporate that cost in the product price, whilst we ensure we remain competitive with the overall cost.

**Interviewer:** *In your opinion, what are the factors responsible for the same-day increasing demand?*

**Respondent:** In recent time, only two companies have come out boldly with same-day delivery service, i.e. Argos and Amazon. I think this is a form of online retail competition between the two large players. Experience has shown that customers would not pay high premium for speedy deliveries, when they can get free next day and standard delivery, So, I think the drive for it is the competition by the giant online retailers. I don't think such delivery service will be affordable in terms of infrastructure to the carriers, neither will it be economical for them. I think such service would require collaboration, and considering the high level collaboration that will be required, it will be difficult to find carriers to invest in such. I would say the booming embrace of e-commerce by customers has influenced large retailers to innovatively approach the retail market, through delivery logistics.

**Interviewer:** *What impact do you think this service will have on your business?*

I don't see same-day courier outstripping the existing delivery services, so the business will not likely feel the impact in this regard, neither will there be any pressure. It is still new to the industry, and being tested out by these top retailers. In my opinion, even the top retailers have still got a lot to invest in before the service can become national, and I don't see it ever becoming free service. I strongly believe people would rather prefer a free express or next day delivery over paying premium for same-day delivery.

I don't see same-day courier outstripping the existing delivery services, which means it is unlikely that the business will feel the impact in this regard.

**Interviewer:** *Can same-day delivery practice become commonplace?*

**Respondent:** In order to be profitable, there would be need for volume shipping, but because it will attract premium charges, and to the best of my knowledge, I doubt customers would pay additional premium. In view of these, it cannot replace the existing services, and would not become commonplace but gain popularity perhaps with reduced premium. Although in most cases, large retailers benefit from volume purchase discounts from suppliers, and this has helped them compete with the cost or free delivery charges.

**Interviewer: Has the pressure from this service had any negative or positive impact on your business?**

**Respondent:** Not at all in any way. You only get to know about the service through the media and research like yours. Customers will go for only available products and services. Except it becomes available on the list of options, there can't be demand for it. We can't feel it, neither have we got plans for it.

**Interviewer: How do you think collaboration can help you benefit from the same-day service?**

Large players mostly collaborate/partner to share resources, particularly for the inter-city freight system. Secondly, competition is highly intense that companies now need cost reduction strategies for improved service and variety, to meet customers' demands, grow markets and increase competitive market share.

Almost all shippers partner for delivery services. Partnership has also helped in terms of economy of scale, wherein carriers consolidate parcels for large volume, dividends of which is passed on to shippers that consequently yields reduced or free shipping to customers.

So through partnership, we have benefitted from improved network coverage and reliable delivery speed, and as a result, we've attracted more customers to our online service.

Others benefits we have derived through either collaboration or partnership are sales boost, customers' loyalty.

**Interviewer: Will collaboration/partnership drive inter-city same-day delivery?**

Even though partnership has brought about a reduction in operations cost over the years, and has helped immensely on improved competitive strength, for customer retention and other benefits we have derived through partnership sales boost and customer loyalty. I believe with collaboration, inter-city same-day delivery may be possible, but cannot become commonplace, as the operations cost wouldn't be economical, neither will customers pay an additional premium. The requirement to collaborate for such delivery service will be complicated, and would require top retailers and carriers coming together to drive an intelligent platform. A possible approach could be a collaboration with Carrier They have the infrastructure and required Manpower... and should same-day service

become a necessity... but I don't see customers driving the required volume that will make Carrier 1 want to offer such collaborative service. Driving collaboration for same-day delivery will be complicated, and would require an intelligent collaboration platform, that is technologically and innovatively driven.

**Interviewer:** *Do you think a company of your size can use same-day delivery as one of the competitive strategies?*

**Respondent:** I think no small retailer or carrier has the capacity and requirement to drive same-day delivery service, particularly inter-city delivery. In view of this, it will be difficult for a company of our size to make such move. For example, a carrier like Shufl started the same-day delivery service in London, and gradually moved to few other cities. You should note that the service is restricted to local cities, and would not handle inter-city delivery. In this case they will lack the capability to handle demand from companies like Argos and Amazon. Using same-day as a competitive strategy will only work if a large carrier offers such service that even SMEs can benefit from, otherwise I don't think it is possible.

**Interviewer:** *Do you think SMEs need external help to cope with the changing retail market?*

**Respondent:** Yes we do need external help. The market is now dominated and being controlled by the likes of Amazon and Argos for non-groceries, and I think the quick intervention by the government will at this stage be necessary, especially to control the offensive competitive strategies by the large retailers, who have embarked on in-house/own logistics service. Even large carriers have not been able to come up with any solution for the same-day delivery service, which I think could be due to the envisaged complexities.

**Interviewer:** *Would you accept to partner for a same-day delivery package if offered by LSP?*

**Respondent:** I said it earlier that until it is available as part of the delivery options, it can't be patronised. If any carrier can come up with it, we will also include it for customers who would occasionally want to pay the price.

#### 4.2.2 Medium shipper 5

**Interviewer:** *Will you regard your company's online retail business as effective?*

Our retail business is a mix of traditional and online retail, and with the online retail, there has been increasing patronage with the introduction of free delivery service. Effectiveness is when you have high sales record day in day out, and recently we have experienced increasing sales. So I can say the online retail business has been effective, but it would require you to do the needful. I mean free parcel delivery.

**Interviewer:** *Do customers buy goods with low premium for express delivery?*

**Respondent:** You know what? That is an interesting question. Last week I was in a conference in London, and this topic came up. It was discussed that customers want the fastest delivery service, and would possibly not pay a penny. This is what customers do, they compare prices from different sellers e.g. on eBay, add the cost price and the delivery cost together and then compare price and speed. Usually they give preference to the price, followed by the speed. It is a function of the cheapest gross price, then the delivery speed. In most cases, customers would go for the free standard delivery than pay premium for express delivery, except in urgent cases you see few customers pay the premium.

**Interviewer:** *What is your view about same-day delivery?*

**Respondent:** I see it as a special service that is used for urgent deliveries, and mostly patronised in the B2B sector. Based on your project, in recent times same-day delivery for retail is being introduced, some big retailers have been working on it, and as a matter of fact, it was mentioned at the conference.

A lot of people talked about it, but at the end of the day a concern about customers' willingness to pay for it was raised. Everyone is aware that e-commerce has increased the push for free delivery services, and several companies have been working with carriers on the possibility to make next day delivery free, so I am surprised to see the introduction of same-day, when it cannot become a free service. In another way, have you thought about carriers and the convenience or comfort? I think it is really a difficult business approach. If the service cannot be pushed forward by the national courier companies, then its chances of success are slim. When you take out Amazon and Argos, tell me the carriers that have

offered to include that service, it is difficult. For those retailers, I mean Amazon and Argos, it will turn out to be just one of those value added services, because there are no demands. Customers will go for it when urgent and or important.

**Interviewer:** *Has the pressure from this service had any negative or positive impact on your business?*

**Respondent:** Since the demand is not there, and carriers don't have the required infrastructure for such service, I don't think it is something we should worry about, and no negative impact will be felt on our business after all, neither will there be pressure on us to offer the service

**Interviewer:** *Who amongst customer, retailer and carrier would you say is responsible for increasing demand for same-day delivery and why?*

**Respondent:** Customers only patronise available services, and in terms of parcel delivery, all customers want is free delivery. In a way, I see same-day delivery as a newly embraced competition approach by the large retailers who are keen to dominate and control the retail market economy. I think the service may not be easily achievable by carriers, and the responsibility can therefore not be put on carriers, neither will it be on customers who wouldn't pay premium for delivery service even when express delivery service is required. The changing technology development can be linked to the unrest in retail logistics, as most of these large retailers have started to compete using technology, and has led to an increase in the demand for innovative approach to retail logistics.

**Interviewer:** *Will you regard the introduction of same-day delivery as a factor resulting from competitive pressure?*

**Respondent:** Yes, it is the new competitive strategy by Amazon and Argos. I've heard it is a new delivery service that Amazon and Argos intend to invest in as one of its competitive strategies. I've had some discussions with a few carriers who told me its chances of being successful will be very slim. They've established that a lot of high level logistics will be required, and may remain a service for the two companies for a very long time.

**Interviewer:** *How can SMEs afford a free parcel delivery service?*

This takes us to a situation where sellers give preference to volume sales with reduced profit margin. In order to remain relevant, you've got to be able to reasonably shift a part

of your margin to the parcel shipping. In this case, I mean small parcels in accordance to the dimension of the carriers. Most of the carriers have in recent time reduced the cost of standard delivery, which has been instrumental to SMEs ability to ship parcels freely. But I would say that, if the profit margin isn't good enough, do not dabble into free shipping for express delivery. SMEs are better off with standard delivery free shipping. So with little profit and volume sales, the overall turnover will be worthwhile.

**Interviewer:** *How would you describe the increasing same-day delivery demand?*

**Respondent:** I will simply refer to it as a radical competition approach amongst large online retailers who would stop at nothing to champion the market. Technology has been overly responsible for the unrest in retail logistics, and has left many retailers and carriers to fail, and the competition will eventually go in favour of customers

**Interviewer:** *What impact do you think this service will have on your business?*

**Respondent:** I am not even sure the investment will be worthwhile, going by customers' attitude towards premium payment. Customers always want free next day delivery service, and will rather stick to the free standard delivery in the absence of free next day courier. On this basis, I can't project or see high demand for same-day courier from customers, and, therefore, no negative impact will be felt on our business, neither will there be pressure on us to offer the service.

**Interviewer:** *How has collaboration/partnership helped your business with respect to delivery?*

Outside time critical deliveries, all other forms of delivery require volume shipping, which is very key to maximise profit and as a result, shippers have increased their partnership strength, through which the market is leveraged to equally favour small and medium shippers...because we are always in partnership with at least two carriers, we are able to offer our customers the cheapest delivery price, which has yielded increased patronage. Our online ordering system does an automated comparison of delivery prices and speed at the backend, to match and display the cheapest and fastest courier options to customers. With this in place, our business has benefitted from **customers loyalty**, wider delivery **coverage** and **sales increase**. With partnership in place, our business has

benefitted from customer loyalty and through partnership, we have been able to offer our customers the cheapest delivery price, which has yielded increased patronage.

**Interviewer: *Do you think collaboration will help with intercity delivery?***

I do know that collaboration may help with local same-day delivery, but I sincerely do not know how this service can be possible for national delivery through collaboration. I believe a lot of complexities will be involved. In reality, all I can imagine is complications. I believe there are still many other issues to be looked into by carriers than to worry about inter-city same-day delivery. Collaboration will require an initiator, but I don't think no carrier will want to initiate such drive. If same-day becomes commonplace, the value attached to speedy delivery/time critical parcel is worthless, and where will the profit margin come from? Considering the cost of investment in such collaboration, who drives such collaboration and how is the benefit sharing done?

**Interviewer: *Do you think a company of your size can use same-day delivery as one of the competitive strategies?***

**Respondent:** I don't see that as a possibility, except it is a service made available by one of the large carrier. I think there is no much worry about same-day delivery, because I don't see it as a threat to the retail business community, on the basis that it will definitely attract premium, but customers would rather go for free express or standard delivery over same-day delivery with premium. Many small and medium companies lack the negotiation power with suppliers and carriers, and as result, same-day delivery service may not in any way be offered, and can therefore not be adopted as a form of competitive strategy.

**Interviewer: *Would you accept to partner for a same-day delivery package if offered by LSP?***

**Respondent:** So long as it is an addition to other services, it wouldn't be a problem. We do not have anything to lose if customers don't want it. We will take it on board and customers who want it will go for it when required. Even though it will be occasional delivery choice, the good thing is, it is available as and when needed.

**Interviewer: *Do you think SMEs need external help to cope with the changing retail market?***

Respondent: I think with the recent developments in the retail market, competition is no longer what is used to be with cost price in the conventional market, but with e-commerce cost of delivery has become a major factor customers base their purchase decision on, and has hugely contributed to the recent free delivery offer we now experience in the online retail. In most cases, whilst we (SMEs) are to offer free standard delivery, the large players offer free express/ next day delivery. Customers take their time to search for free and fast delivery, and would only settle for free standard delivery when there is no good bargain for free and fast. In order to answer your question, I would say if SMEs have the negotiating capability, the imbalance in the retail industry wouldn't be this alarming. Based on this, it would be appreciated if the government initiatives and supports from the banks can include a boost in our purchasing power, I believe we will also stand good chance to negotiate better deals with suppliers. It will also be appreciated, if the retail competition can be regulated, so that the retail economy will not be solely controlled by the few large retailers.

**Interviewer:** *Can same-day delivery practice become commonplace?*

**Respondent:** If it gets cheaper, it may attract more patronage, but nowhere near becoming commonplace. Commonplace may be too strong a word you want to use.

## 5.0 Technology service provider data

### 5.1 TSP 1

**INTERVIEWER:** *What is your view on same-day delivery?*

**Respondent:** inside DHL I have done same-day delivery to two companies: Marks and Spencers and IKEA. The first thing is you have to think what is the demand, if I order 10 o'clock tonight and get it delivered tomorrow, or if I order by 8 o'clock tonight and get it delivered tomorrow, I don't know who will be able to do that.

**Interviewer:** My research so far as shown that same-day delivery is not necessarily home delivery, it could be click and collect. One of the challenges faced by LSPs now is the first time delivery, and in order to save cost, they are working towards introducing click and collect so as to save them cost.

**Respondent :** Now in the UK, there is an infrastructure being put in place so that within every mile, there would be a collection point, and this will reduce the challenge of first time delivery. In recent time, companies have been looking at what is called Last mile solution, to ensure for every delivery, someone is at home to receive the parcel. That's why I think for Marks and Spenser, they deal in food only. So what happens is customers come, do their shopping, book a delivery and with a delivery time appointment. So in this case, Marks and Spenser ensures no delivery will be made except with a time delivery confirmation with customer.

**Interviewer:** *How will you describe technology impact on parcel express delivery?*

**Respondent:** We don't do home delivery software, so what you are doing is about last mile solution, you are trying to group parcels for cost effectiveness for both customers and LSP, and make sure customers have got information already ahead of time, and to ensure delivery comes at the right time customer wants it. So technology is already taking care of all of that via a data management, and to give information back to the customer and also massively to the driver, another is the proof of delivery i.e. electronic proof of delivery. I suppose all these put together brings transparency in the logistics system. More often the person who is paying for the good is not the person who receives it. So people try to make provision for parcel delivery, but in situations where there are no information available to customers as regards delivery time, it becomes difficult for but the customer and the post

man. The challenge with 1st time failed delivery is the cost of processing and attempting to deliver one parcel, but when it fails, you have to repeat the same process. But with technology, you can incorporate same-day parcel with the next day or standard delivery parcel, ready for delivery. With IT infrastructure in place, you can even manage your order processing, because you have order catalogues, and with that you can give customers estimated delivery time, even to the collection point, same approach can be applied. I think with IT, you should look at how to maximise utilisation of your asset, because it's same-day, I can't start the delivery early and if care is not taken, the asset utilisation starts to get squeezed, but to avoid this, you need to use your IT to manage consolidation. I tell you what, the same-day implementation may be very demanding.

**Interviewer:** *As a logistics technology expert, how do you think technology can enhance inter-city same-day delivery?*

**Respondent:** How does information replace distance? I think it goes back to can you aggregate demand, for example if you have very big warehouse, e.g. in Milton Keynes you have Amazon and John Lewis together, here you can aggregate demand together, so that's more of data integration. But with technology, it's easy to do, but you going to have to get someone to invest. So if I am able to get trucks full then that's making me a lot of money otherwise, it won't be profitable and that is where you will come in i.e. capacity utilisation. I know IT can help with that, which is where we have capacity utilisation.

**Interviewer:** *Do you think technology can enhance same-day delivery through inter-modal/multimodal freight?*

**Respondent:** We do a lot of that, by intermodal, you are looking at road, rail, sea, air etc. So what we have got e.g. from Sydney to Luxemburg etc. so what we do is to try to track parcels from their origin, while in transit and as they change the transport mode. Each parcel is tracked at exchange point and there is always information as regards the current state and distance of the parcel.

**Interviewer:** *Since LSPs do overnight delivery, how do you think technology can turn this around to day time delivery for same-day delivery possibility?*

**Respondent:** From 10 O'clock tonight, the LSP has got to sort all parcels, and can easily make 9-10 am delivery, since I've got 10-12hrs to delivery, which gives me enough time,

also I've got less congestion overnight, less accident and less road work. But with same-day, I will have to compress all this within a very short time, so it seems to me really difficult.

**Interviewer:** *Who are your clients' and have you developed any same-day package for them?*

**Respondent:** We have got nothing in that way.

**Interviewer:** *What speed do you think technology can enhance with speed delivery.*

**Respondent:** John Lewis has got different products all coming out from different warehouse but still portraying the same John Lewis delivery system. In this case they make use of very complicated IT system to get all these consolidated, but the IT system is a very complex one that does everything you are trying to do. I think in your own case as an IT provider, you are trying to do this for a lot of companies, but John Lewis does this just within a company.

**Respondent:** It's what companies do every day anyway to consolidate and sort overnight.

**Interviewer:** *How can this work for SMEs?*

**Respondent:** SMEs cope in this environment via collaboration. For SME retailers, you see them outsource their delivery services to the 3PL, and for carriers, because they need volume to be profitable, there are series of ongoing collaboration between them. If you've been to distribution centres, you'll see how different carriers come together to consolidate. It used to be complex, but it has been simplified through technology. If large firms partner to drive volume shipping, then it is important for SMEs to do the same.

**Interviewer:** *In what way do you think technology can help carriers collaborate to achieve same-day parcel delivery?*

**Respondent:** I sent a file to your mail about IntelliTrans-iCargo. It is one of our new designs for intelligent logistics for collaboration of multiple players, and across various transport mode. I am sure it will be a good material for your work.

**Respondent:** the way technology can help is that it can allow different companies with different IT systems, to work together through the integration system. The integration system could be complex, and will require a lot of intelligent systems any chance of

successful implementation. To fully understand this, you will need to do extensive studies on series of intelligent devices and software that is newly introduced for innovative logistics business. Examples would be the track and trace system, RFID, the transponder, inventory management system, the delivery management technology system (DMT) and many others. The DMT is a collaboration system designed for an agent based logistics systems. The system mediates between shippers and carriers, where the collaboration is usually independently based. The DMT maps parcels between shippers and carriers, and also uses API from Google map, to help in delivery price generation. In a nutshell, I will say retailers and carriers now engage in intelligent logistics, and with technology, I'm afraid, a lot will still happen.

**Interviewer:** *Can technology be developed to enhance parcel consolidation through intermodal/ multimodal freight?*

**Respondent:** Track and trace is system that will help you monitor parcels e.g. a situation where you are able to know if there will be delay in delivery. DHL doesn't do same-day delivery, but consolidate and give parcels to Yodel for last mile delivery. So if any of the journey is missed, what this intelligent system does is to monitor freight journey and alert of any delay and rebooks or reschedules freight for the next available journey, and at the same time, it informs the customer of any form of delivery delay that could erupt as a result.

**Interviewer:** *Can a system be developed similar to journey planner?*

**Respondent:** What we do is load your journey and the intelligent system monitors each truck or freight, so from a control tower you can easily monitor the transit of any of your truck and with an estimated distance time.

**Interviewer:** *How can technology enhance freight capacity utilisation?*

**Respondent:** Just as I explained to you in the case of John Lewis and Amazon, the kind of technology they use in data aggregation helps with consolidation, and definitely ensures capacity utilisation.

**Interviewer:** *Can a system be developed to generate massive transit route*

**Respondent:** So if you going to track a change, so if you going to track through GPS on a cage in a truck could be difficult, but what we do is to put a trackable device, for example the route monitor, in place for all parcels on a truck to determine where parcels are at each point in time. With small companies, you can put in place a non-expensive package called electric PLD. A really simple technology that we already have in place.

**Respondent:** Demand, consolidation within the time frame and the coverage area.

**Interviewer:** *What would be your suggestion for same-day delivery be?*

**Respondent:** Its changing around the sector, people operate within products where typically fashion and beauty now are really increasing in the demand for same-day delivery, because people want the flexibility because people want it by Friday afternoon, and if you look at the market changing, companies like Amazon and Argos are retailers that are able to but not on the delivery network (...) they own lots of stores across the UK and are able to support and offer same-day delivery across the UK most especially with services like shutl. Amazon obviously uses Smith News network to deliver parcel same-day. So I think the growth for the same-day delivery will come from what network truly exists and in a sensible cost model because it requires additional vehicles or dedicated vehicles on the road, and that is a huge cost. The newspaper agents is another interesting industry to explore because they deliver within hours and will be interesting to work with. It may become more popular and affordable, but cannot replace standard and next day delivery.

## 5.2 TSP 2

**Interviewer:** *What is your view on same-day parcel delivery service?*

**RESPONDENT:** I would say same-day delivery is a premium delivery service that is usually patronised in the B2B for very special and important documents. It is a form of delivery that is not volume-centric, and would mostly operate a point-to-point service. I would also say that although in recent time, I have heard of some small carriers that are into same-day delivery service, but in my own opinion, I don't see it as profitable as the volume-centric delivery services. I have also heard of Amazon making series of moves towards implementing same-day delivery practice as a common delivery practice. Well, even if

Amazon achieves this, it wouldn't make it commonplace, neither will retailers nor carriers invest in it.

**Interviewer: How will you describe technology impact on parcel express delivery?**

**RESPONDENT:** Technology has played a huge role in the logistics industry. Technology has helped carriers with information management, parcel consolidation, collaboration and loads of new inventions. An unquantifiable level of efficiencies have been recorded with the help of technology, and it will be difficult in this jet age to survive any business without technology. Technology in logistics is massive, has been designed to suit different needs and requirements, there is no one size fits all, and yes its growth impact is unimaginable. You will also notice that retail and logistics businesses are being integrated at a rapid rate, and its future has become unpredictable. Examples of different technologies would be the RFID, the barcodes, track and trace software, inventory manager, GIS that handles smart city logistics, and most recently the news about the drone. I will talk about that later. A lot of carriers have also invested in automated sorting machine that has reduced manual sortation from approximately 80% to 20%, and improved efficiency. This is seen to have massively improved the next day or overnight delivery.

In another view, I will say that technology has brought market imbalance to the logistics industry, with massive technology investment from large players, both in the retail and logistics sector, while smaller business owners only enjoy some of the benefits through collaboration.

Technology has helped with improved inventory management, parcel consolidation, information sharing, and reduced failed delivery. Have you heard about follow my parcel by DPD? This technology does not only help drivers plan deliveries, it identifies the fastest route, whilst also informs and updates customers about the status of their parcel from the point of order till delivery. Customers are informed a night prior to delivery with an estimated delivery time, and with the option to change delivery address, day or time frame. Also on the day of the delivery, customers are further updated within the one hour delivery window. The technology does not only do these, but also through a unique mapping tool that helps customer find out the current location of the driver, and his closeness to their door post.

**Interviewer: As a logistics technology expert, how do you think technology can enhance inter-city same-day delivery?**

**RESPONDENT:** Inter-city same-day delivery, although may be achievable, will be a difficult achievement, that would require a huge investment in advance technology or a technology driven collaboration. Outside premium service, I will say making inter-city same-day delivery a regular practice will be non-profitable, and will therefore not worth it or attract the investment. But in order to answer your question, I think technology will help inter-city same-day delivery through innovative collaboration, alongside data or information aggregation from large retailers with national presence or with strategically located regional distribution centres. Also, it could be a possibility if carriers like Royal mail who has the largest UK distribution infrastructure invests in it. But I think before Royal Mail will put their investment in such, there must be the demand for it in the retail market. This is simply because such investment will be for a radical business model, and must have a bright and promising future. However, since customers are not likely to pay extra premium, it will be unlikely to get a high demand that would activate such innovative thinking. Although we have designed different innovative technologies for efficient delivery services, and for speed delivery like next day or overnight deliveries, but no company has come forward to request for a same-day delivery package. Also, it will be difficult to see carriers invest in inter-city same-day delivery, but may be in future, but I don't really see that as a possibility any time soon.

**Interviewer: Do you think technology can enhance same-day delivery through inter-modal/multimodal freight?**

**RESPONDENT:** Oh, very very possible. Most of our technologies support this, especially those designed for international freight. Don't get me wrong, we also have similar technologies for local deliveries but in this case, it is mostly a multimodal practice. We have designed technologies to monitor and track changes in status and at points of transshipment. Both Inter-modal and multi-modal freight could be useful in the case of same-day delivery, but we should bear in mind the transshipment time and the additional cost, and can therefore not be a regular practice, except with special orders and premium payment. It may on the other hand become a good practice if there will always be high volume to be transhipped. Technology will support inter-modal freight, but may not be a

profitable deal for same-day without volume shipping or premium payment. There is this new platform, accelerated time-value electronic collaborative platform. Both multimodal and intermodal services are coordinated here. It is a transparent collaboration platform, where you are able to negotiate deals before agreement. It is an intelligent system that supports real-time tracking, information update through automated messaging.

Another system is the freight forecast API that can be integrated into an electronic logistics collaboration system, helps collaborators with optimized inventories and forecast transportation, and drives economy of scale.

**Interviewer: Since LSPs do overnight delivery, how do you think technology can turn this around to day time delivery for same-day delivery possibility?**

**RESPONDENT:** I won't say there is much technology can do in this situation. There are several reasons why carriers chose overnight shipping over daytime, and these are factors beyond the control of technology. Shipping is faster overnight as there is less road congestion, less accident, and all the day's parcel will by this time have been consolidated, giving room for the required volume.

Also, if we go by the early explanation, most of the factors to be considered for a profitable shipping business are favourable with the night shipping, but would not during the day. So if that is the case, there is no way you will achieve the same result during the day as night, and would therefore not support a same-day delivery business. You also need to bear in mind that the next day and overnight shipping has been a function of the hub and spokes/ distribution centres that are not designed for a same-day delivery. Hub and Spoke have been set up for volume shipping and economy of scale through consolidation, but since same-day delivery cannot be a volume shipping reliant service, I don't think the existing shipping operation through the Hub and Spoke will favour a same-day delivery practice.

**RESPONDENT:** I don't think it will work with hub and spoke, but it has to be through networking A-B, A-B. But it's going to cost much because it is very cheap with hub and spoke. I can't really see it work.

I will just add one thing that, if same-day delivery will be successful, a lot will have to change with carriers operating hours, and night delivery service must be considered. There would

also be daily time limit to parcel ordering. All these wouldn't happen easily, and may be difficult to implement.

**Interviewer: Who are your clients' and have you developed any same-day package for them?**

**RESPONDENT:** We have clients both in the retail and shipping industry, but no one has come up with a new model in the tune of same-day delivery design.

**Interviewer: In what way do you think technology can facilitate same-day delivery practice?**

**RESPONDENT:** There is no speed that technology cannot enhance, even same-day deliveries. The fact remains that RESPONDENTS cannot just develop technologies to drive same-day delivery, it should be noted that other infrastructure would be required. Also note that there will be regulatory and environmental factors that are beyond technology in the case of same-day delivery.

**Interviewer: How can this work for SMEs?**

**RESPONDENT:** If you think about the processes and requirements that I just explained to you, you will see that the requirement for same-day delivery is not a burden for SMEs. This is because the demand is not there in the market, so they are not under any pressure to worry about introducing such service. However, they may benefit from the service if they collaborate or partner with large players who offer such service. So what I would say is that SMEs would benefit from the service possibly through collaboration and partnership. Anything other than this, will make it difficult for SMEs.

**Interviewer: In what way do you think technology can help carriers collaborate to achieve same-day parcel delivery?**

**RESPONDENT:** To design a technology for same-day delivery will be complex, and in this case, I see the need for retailers and carriers' systems integration. This implies the need for en-route carrier matching technology, intelligent inventory management technology, automated freight space management, parcel to freight matching technology, intelligent journey rerouting technology, real time information update from customers to carriers i.e. instant alert to the retailer after completed order, and instant pick up alert to the carrier,

as soon as order is processed and ready for shipping. I am sure there would be need for more technologies to be designed. But considering that many innovative and radical designs will be required, it could imply that although same-day technology design is possible, a huge investment will be required, and it will be difficult to find investors.

Achieving this service may require a form of partnership between large retailers that have stores nationally and carriers who possess national freight facilities that could be useful for same-day delivery service. Technology will help match the delivery postcode to the nearest shipping point and the nearest and available carrier. This in a way can be referred to as local same-day delivery, and it is similar to the service on offer by shutl. Unfortunately, shutl being a small carrier, without national coverage has hindered their ability to nationally deliver for even large retailers. An example that I am aware of is their partnership with Argos to delivery same-day. There have therefore been instances when Argos has got an order available in a local store, but because of shutl's unavailability, same-day delivery wouldn't be a possibility.

**Interviewer: Can technology be developed to enhance parcel consolidation through intermodal/ multimodal freight?**

**RESPONDENT:** Yes, the technology already exists. I think we've earlier mentioned this. One of this would be the track and trace, where small and large parcels can monitored from the point of initial shipping to the point of transshipment, and the point of final delivery. I also mentioned freight space management, where the systems computes the amount of space left on a truck and matches to a new or available freights or parcels. Also most companies that collaborate for logistics purpose consolidate, and have mostly made use of technology for information aggregation. So, yes technology has massively influenced parcel consolidation, and has changed delivery processes to achieve faster, economy of scale and freight capacity utilisation.

**Interviewer: Can a system be developed similar to journey planner?**

**RESPONDENT:** Can you clarify further?

**Interviewer:** I mean a system that automatically matches a parcel from shipping point to the destination post code, by identifying trucks en-route, identify space, match parcel and space and compute distance and estimated arrival time.

**RESPONDENT:** Although we don't have an exact technology in place, but we have different technologies that serve similar purposes uniquely. Putting these systems together may not come cheap, but it is achievable, and there would be the need for a high level of partnership from small, medium and large players, for open and integrated journey planners with an envisaged high level integration

**Interviewer: How can technology enhance freight capacity utilisation?**

**RESPONDENT:** Just as I said earlier, the integration of retailers and carriers' system, or there could be an electronic central hub for carriers and retailers, where collective journey/freight itineraries are stored in real time, to be pulled for intelligent mapping. In this case, it will be possible to match an item or a parcel to registered freights en-route, and with the adequate or required space, thereby driving the possibility of a same-day delivery. In this case, it will be the responsibility of retailers and carriers to adequately and timely update information about their freights for effectiveness and reliability. I believe if this works, it may not only drive effective capacity utilisation as asked, but also same-day possibility, alongside effectively addressing series of issues identified in reverse logistics.

**Interviewer: What would be your suggestion for same-day delivery?**

**RESPONDENT:** Even though same-day delivery will be classified as a radical approach to delivery, it is a possibility only when there are investors, possibly large retailers and carriers that are willing to engage in a technologically driven innovative collaboration.



## 6.0 Survey Questions

### Introduction

This survey is part of an academic research project at the University of Brighton investigating the feasibility of “same-day” parcel delivery services (excluding grocery shopping). The survey has been made as short as possible – it should only take about 10 minutes to complete. All data obtained from the survey will be handled securely and anonymously and only aggregated data will be used for the purpose of academic research.

Questions about your online shopping and delivery experience

Q1 Do you shop online?

- Yes (1)
- No (2)

Q2 Select the options that best describe you

	Never (1)	Once a month or less (2)	2-5 times a month (3)	6-10 times a month (4)	More often (5)
How often do you shop online? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you choose express (next day) delivery? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you do choose express, how often does the parcel arrive late, e.g. after promised delivery date/time? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 How satisfied are you with online shopping delivery?

- Very dissatisfied (1)
- Dissatisfied (2)
- Neutral (3)
- Satisfied (4)
- Very Satisfied (5)

Q4 How important would you rate the following on your purchase decision?

	Not at all Important (1)	Unimportant (2)	Neither Important nor Unimportant (3)	Important (4)	Extremely Important (5)
Delivery speed (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Delivery cost (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Delivery rescheduling/flexibility option (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information update such as online tracking (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information update such as text message (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 How much would you be prepared to pay for same-day delivery in the following scenarios?

	Less than £5 (1)	£5 (2)	£10 (3)	£20 (4)	£30 (5)
For an item costing £100 that you need urgently, e.g. a gift for a special friend whose birthday is the next day. (1)	<input type="radio"/>				
Clothing costing £100 that you want to wear to a job interview tomorrow morning (4)	<input type="radio"/>				
A precious but not very important item, e.g. the latest book by a favorite author costing £25 (3)	<input type="radio"/>				
Two tickets costing £25 each (£50 total) to take a close friend to a music concert this evening (5)	<input type="radio"/>				
A regular parcel, assuming same-day delivery has become commonplace (2)	<input type="radio"/>				

Q6 What delivery type do you prefer?

- Home delivery (1)
- Neighbour delivery (2)
- Click and collect (3)
- Pick up from a local store (4)
- Place of work (5)

Q7 What time of the day do you prefer to receive a home delivery?

- Morning (1)
- Afternoon (2)
- Early evening (3)
- Anytime of the day till 10pm (4)
- Late evening (5)

Q8 Select the options that best describe your parcel delivery experience.

	None (1)	Between 1 and 5 (2)	Between 6 and 10 (3)	More than 10 (4)
How many parcels have you received in the last eight weeks? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How many of these parcels were express(next day) delivery? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 How far are you willing to travel to collect a parcel?

- Less than half a mile (1)
- Between 3 and 6 miles (2)
- Less than one mile (3)
- Between 6 and 10 miles (4)
- Between 1 and 3 miles (5)
- More than 10 miles (6)

About You

Q10 Please indicate your age group

- Less than 18 (2)
- 35-44 (3)
- I prefer not to say (4)
- 18-24 (6)
- 45-54 (5)
- 25-34 (7)
- 55 and over (8)

Q11 What is your gender?

- Male (1)
- Female (2)

Q12 Indicate your employment status

- Employed for wages/salary (1)
- Self employed (2)
- Out of work and looking for work (3)
- A homemaker (4)
- Out of work and not currently looking for work (5)
- A student (6)
- Retired (7)
- Unable to work (8)

Q13 Which of the following best describes where you live?

- City centre (1)
- City suburbs (2)
- Town (3)
- Village (4)
- Countryside (5)

Q14 Do you have any comments on same-day delivery services

## **6.1 Customers' comments on same-day delivery**

In the body of the survey conducted for this research, the author included a comment section for customers to share their opinions as regards same-day delivery. Table 48 below shows the verbatim comments as received from customers, which further confirms the result that customers would not pay an extra premium for same-day delivery.

I have Amazon Prime, which means next-day delivery as standard for Amazon products, hence, I purchase online from Amazon or probably not at all.

Important to have good system if the parcel is not delivered due to us being away from home.

I don't really ever even THINK about same-day/next-day delivery. I'm more than content to pay standard fares, and wait for them to arrive in a week to 10 days.

In the past month when I have had 'next-day' delivery I have NOT paid for it. Rather, (a) it was a free option because my total purchase amount qualified me or (b) I am a member of that company's premier scheme that entitles me to free next-day delivery (e.g., ASOS, Amazon).

I have a couple of next-day delivery subscriptions e.g. ASOS premier and Amazon Prime so rarely need to pay separately for NDD.

A nice idea but I wouldn't be prepared to pay excessively for it. Most times I am happy with next-day or 2-day delivery arrangements.

Usually, I buy stuff online that does not have any urgency in terms of getting the product ASAP. I don't spend much on delivery. I expect free-of-charge delivery to take any time between "next-day" and one week. I don't order online that are anything expensive. If I need something urgently then I will visit shops in the locality.

I shop online very rarely at present so I do not need same-day delivery services.

I could only see this as being useful to me in the most exceptional of circumstances, and then I would expect to pay highly for it.

The express delivery I have started to get is via Amazon Prime, more because of the extras (streaming video, music, early access to deals than the express delivery.)

Great concept but doubt the costs would make it worthwhile. My bug bear is the amount companies charge for postage!

I have just bought a fridge and next day was available as standard but it was not required to next week so two choices.

I very rarely buy anything online that can't wait a couple of days to turn up, so same-day delivery isn't of much interest to me and I certainly wouldn't pay extra for it.

## 7.0 Electronic marketplaces and free shipping

EBay: Selling with eBay fast and free. <https://pages.ebay.co.uk/help/sell/fast-n-free.html> [online]. [Accessed 2<sup>nd</sup> February, 2016].

Thomas Lauren 2017. EBay is taking on Amazon prime and Wal-Mart in guaranteed delivery, free shipping. <https://www.cnbc.com/2017/03/20/ebay-guaranteed-delivery-free-shipping.html> [online]. [Accessed 4<sup>th</sup> April, 2017].

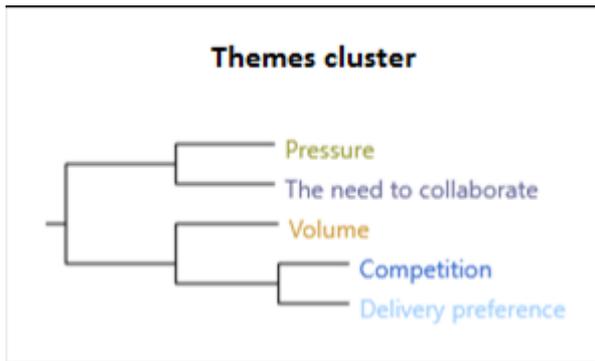
Gustafson Krystina 2017. Wal-Mart scraps Amazon Prime competitor in favor of new free shipping tactic. <https://www.cnbc.com/2017/01/30/wal-mart-scraps-amazon-prime-rival-in-favor-of-new-free-shipping-offer.html> [online] [Accessed 2nd February, 2017].

Amazon: Free delivery & Free standard pickup terms and conditions. <https://www.amazon.co.uk/gp/help/customer/display.html/?ie=UTF8&nodeId=201385020> [online] [Accessed 5<sup>th</sup> February, 2015].

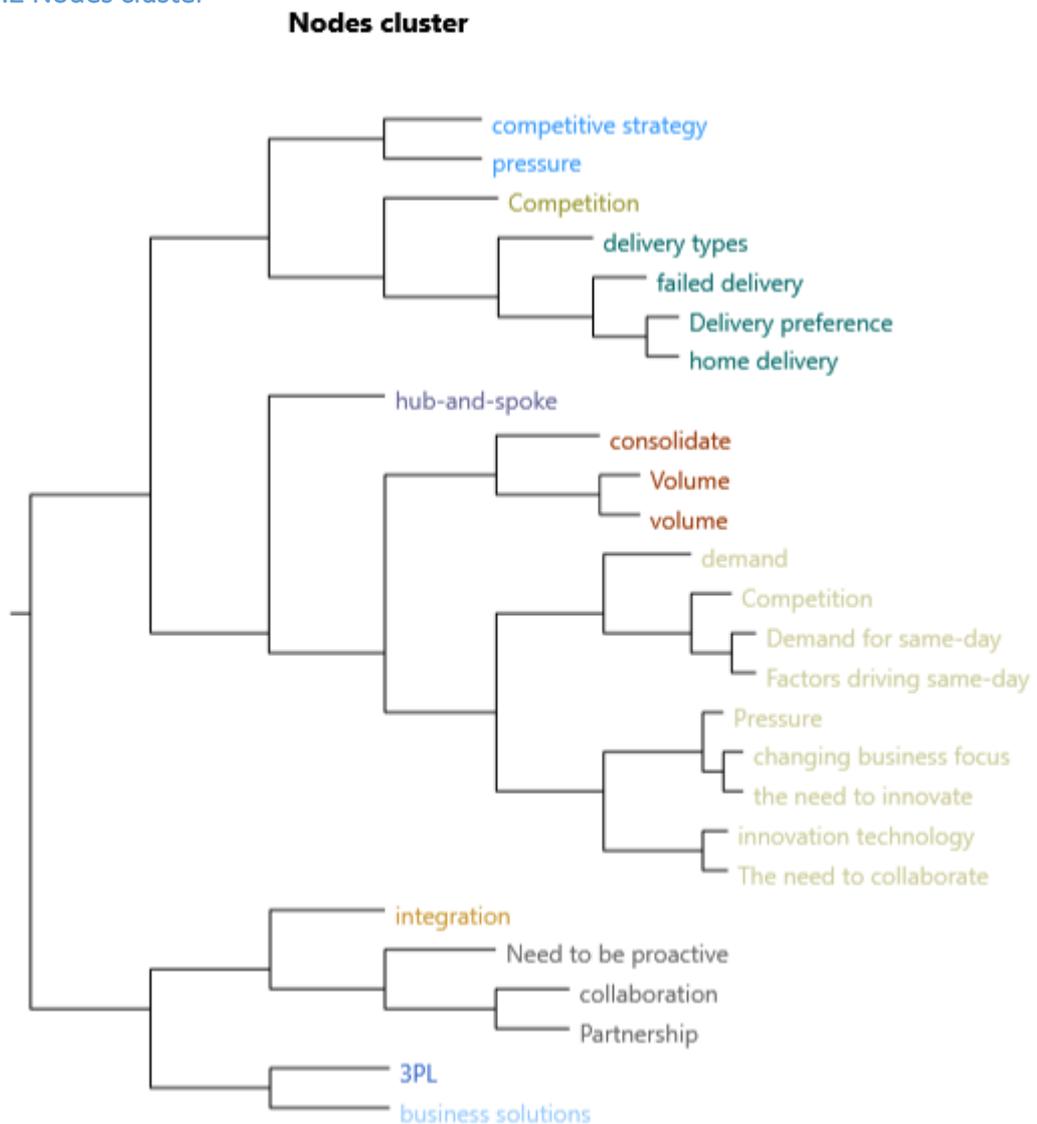


## 8.0 NVIVO Analysis reports

### 8.1 Themes cluster

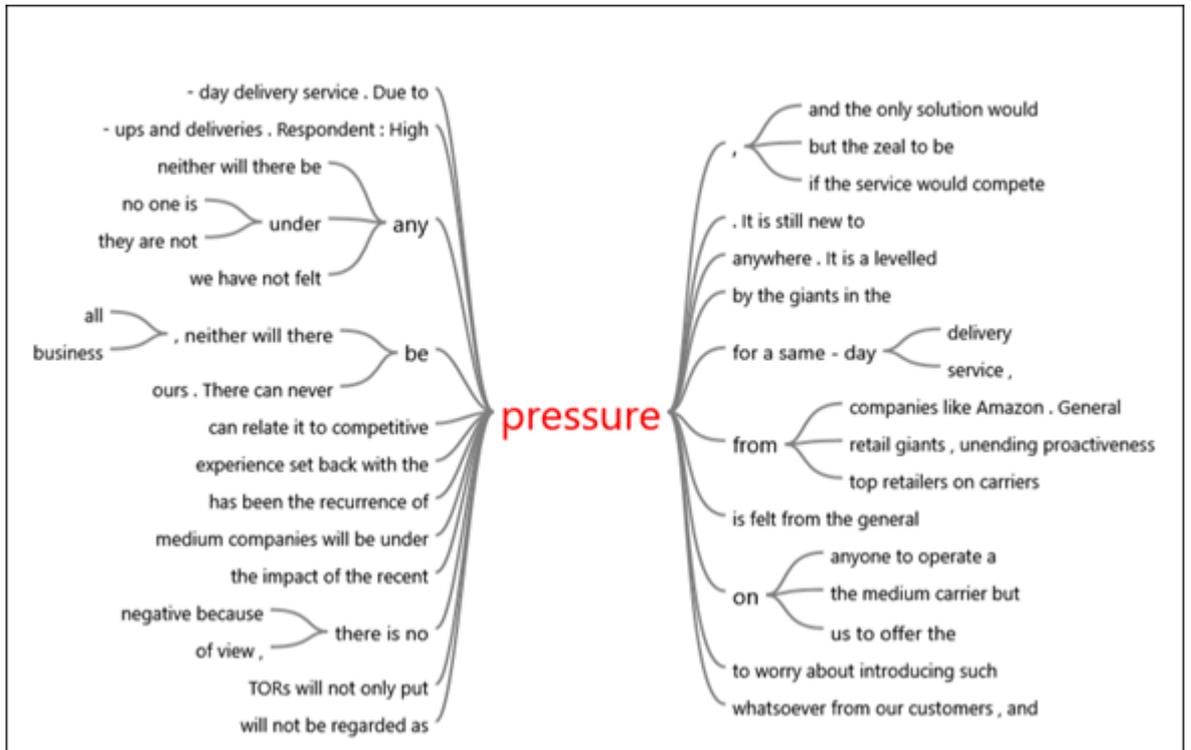


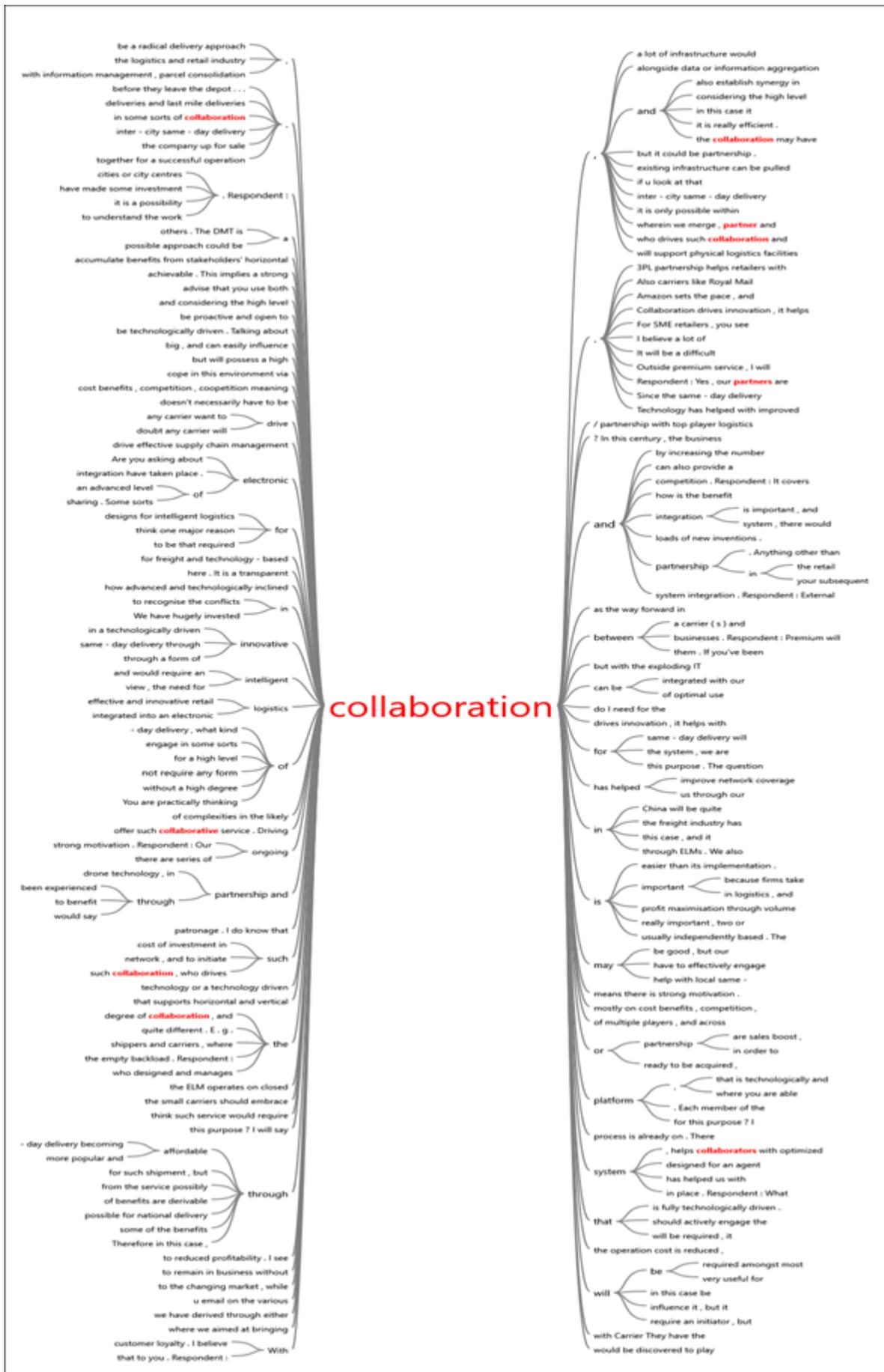
### 8.2 Nodes cluster

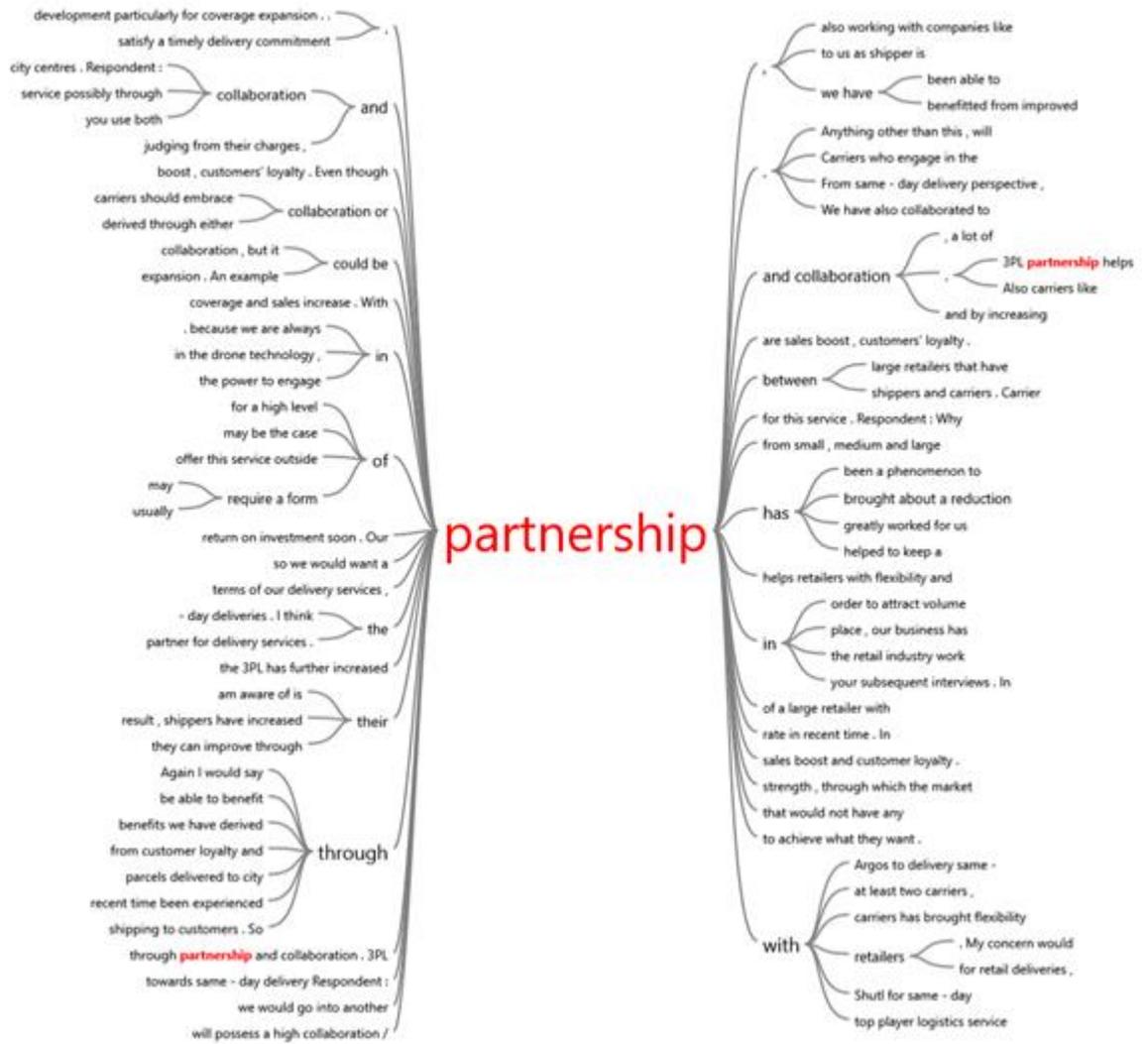


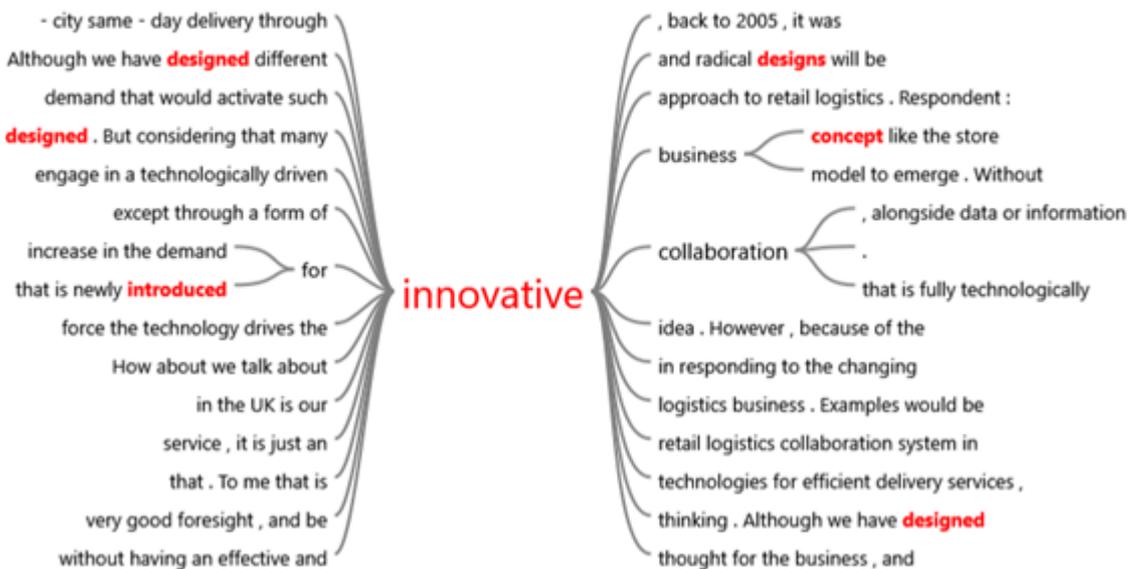
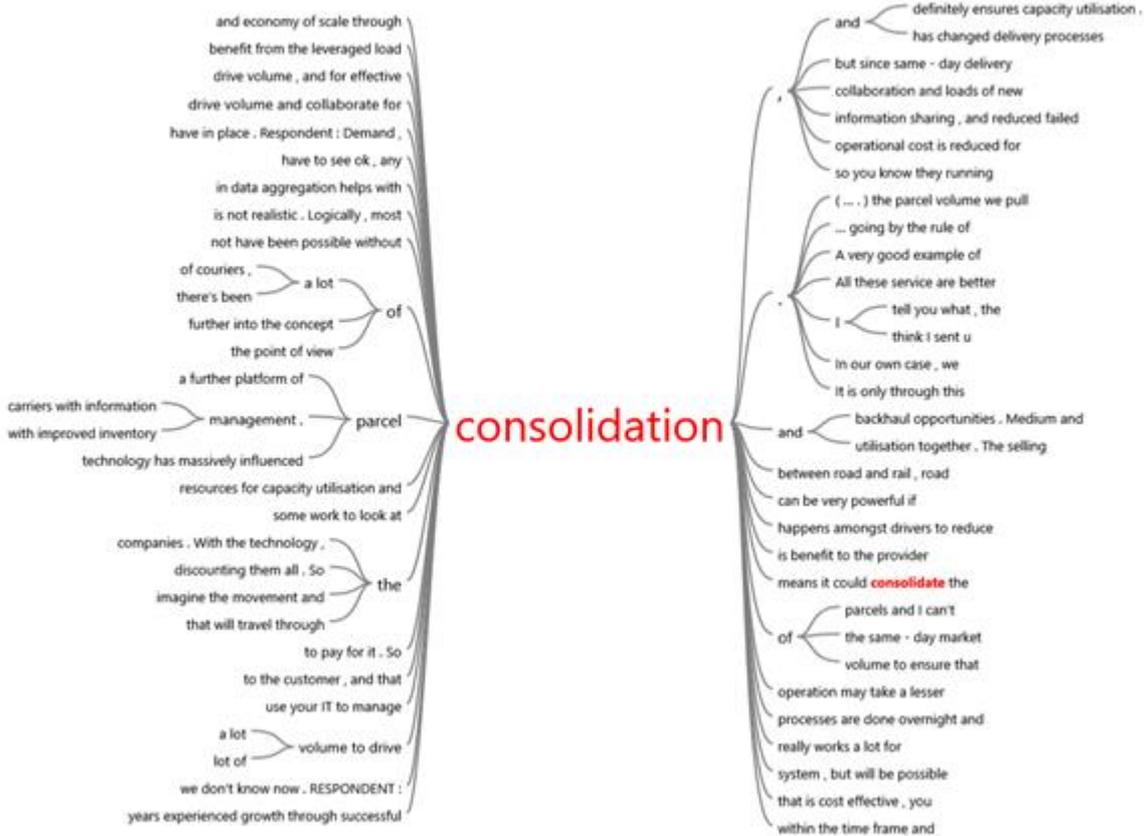
### 8.3 Few Codes/ words trees

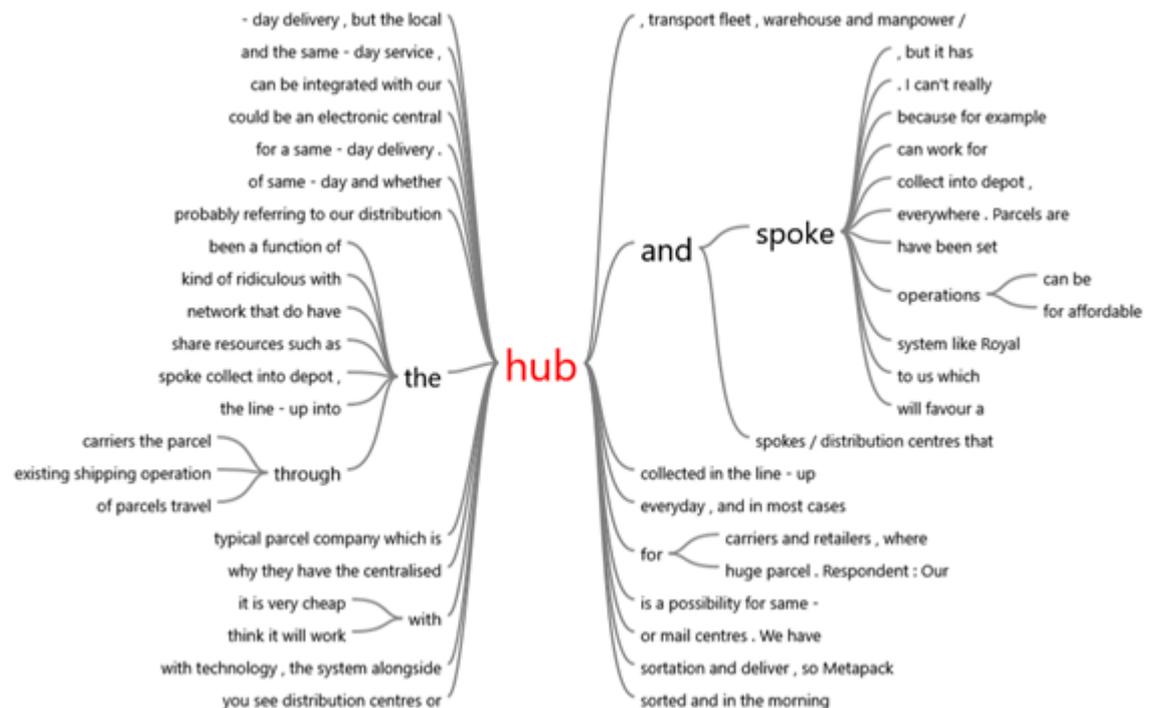
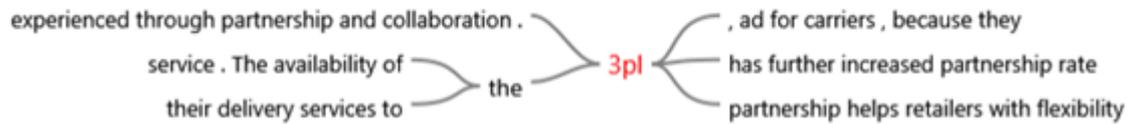
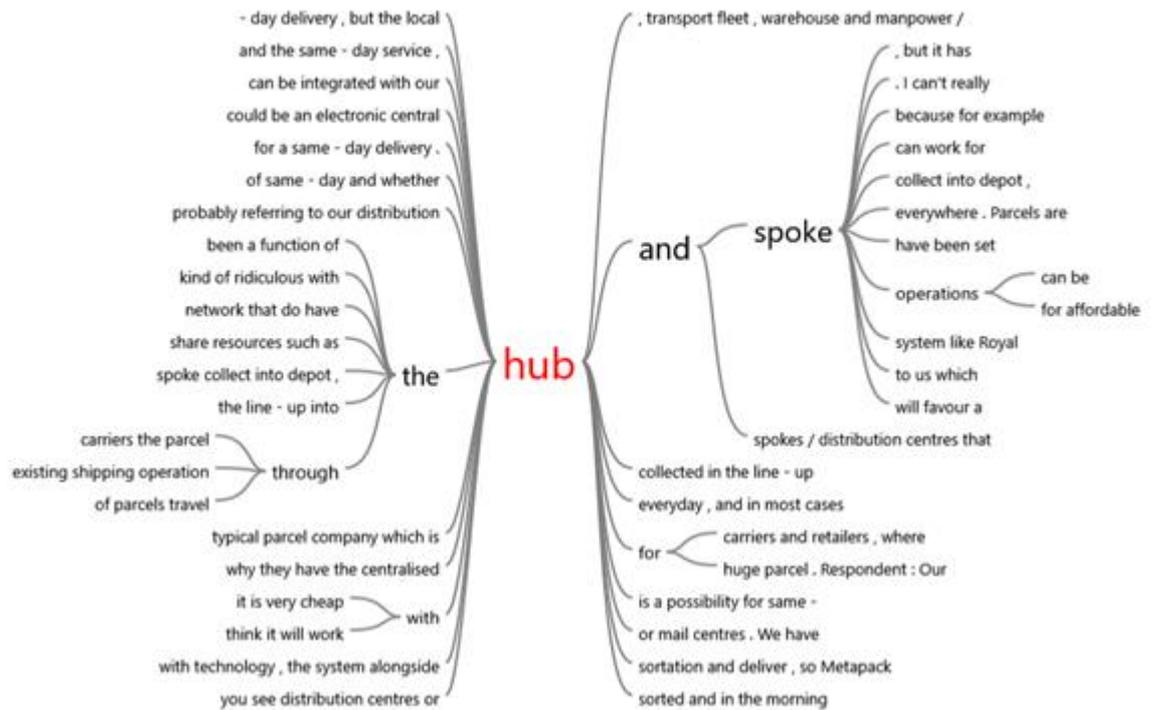


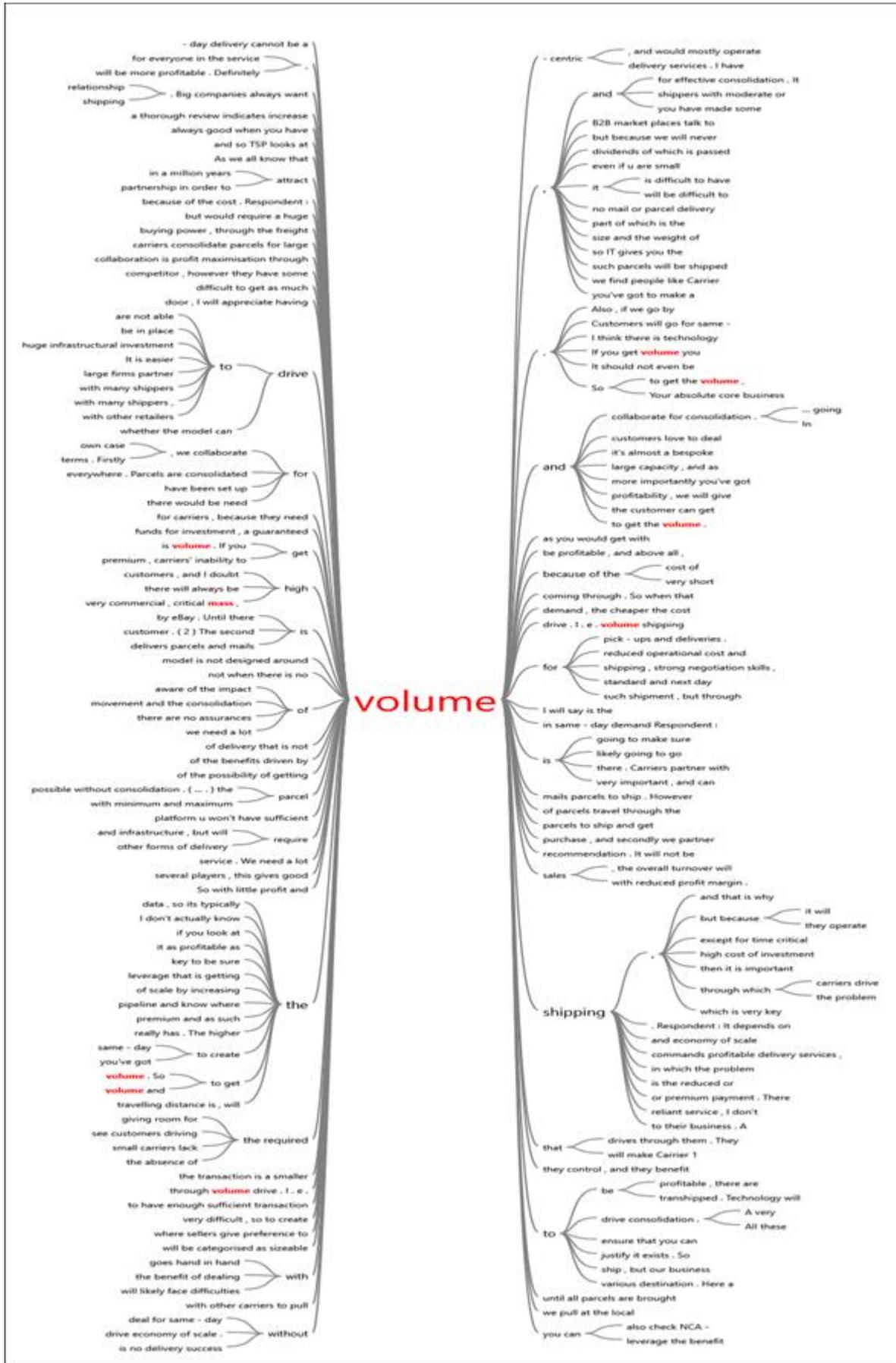












## 9.0 Data collection participant consent form

### Data collection to investigate the UK rising demand for same-day parcel delivery

Print  
your  
initial or  
tick box

I agree to take part in this research which is to investigate rising demand for UK same-day parcel delivery.

The researcher has explained to my satisfaction the purpose, principles and procedures of the study and the possible risks involved.

I have read the information sheet and I understand the principles, procedures and possible risks involved.

I am aware that I will be required to answer questions, relevant to my area of specialisation.

I agree to the researcher taking photographs/making audio/video recordings during the project.

I understand how the data collected will be used, and that any confidential information will normally be seen only by the researchers and will not be revealed to anyone else.

I understand that I am free to withdraw from the study at any time without giving a reason and without incurring consequences from doing so.

I agree that should I withdraw from the study, the data collected up to that point may be used by the researcher for the purposes described in the information sheet.

I agree that data collected may subsequently be archived and used by other bona fide researchers.


Name (please print) .....

Signed ..... Date .....