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A Literature Review On Management Of Supply And Distribution In The UK Online Grocery Retailing: A Resource-Based View

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A LITERATURE REVIEW ON MANAGEMENT OF SUPPLY AND DISTRIBUTION IN THE UK ONLINE GROCERY RETAILING: A RESOURCE- BASED VIEW

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Abstract

Although much has been discovered about online grocery retailing of Asda, Sainsbury's, Tesco and Waitrose (ASTW) in the UK; research that provides a resource-based view (RBV) of stores and managerial capabilities advantages in supporting supply and distribution (S&D) of online groceries has not been discussed. In view of this gap, this research reviewed the literature, in the context of the four grocery e-retailers, on how stores and managerial capabilities contribute to sustainable competitive advantage (SCA), superior performance, success and minimisation of supply and distribution challenges. First, current status and challenges to supply and distribution of online groceries are examined. Second, the prerequisite of store and managerial capability to RBV resource criterion is discussed. Finally, a provisional link is outlined that demonstrate SCA through a comparison of ASTWs' online S&D models in relation to Fahy's (2001) RBV criteria; necessitate further investigation; and indicate critical success factors to grocery e-retailing.

Key words: Grocery e-retailing, RBV and ASTW

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Key words: Grocery e-retailing, RBV and ASTW

1. Introduction

Evidence from literature reviewed indicates a potential significant growth in UK grocery e-retailing. An example of this evidence is: a market share of 3.2% (Yousept and Li, 2005), an estimated rise of £5bn (Institute of Grocery Distribution, 2007), a plan to digitalize Britain and a prediction of £1 in every £5 of e-commerce to be online by 2012 (BERR, 2009). On the contrary, Ken Cassar, a senior analyst of Jupiter research was quoted as saying that: “Online grocery business is very expensive to sustain and consumer habits die hard” (Hays et al. 2005). This was supported by Marketspace (2001) and Scott and Scott (2008) who highlighted problems that led Webvan in the US to file for bankruptcy, and the example of Somerfield in the UK closing its e-grocery operations (Mckinnon and Tallam, 2002). Further criticism was given by Murphy (2007) who pointed out that because of the requirement for distribution systems, new or existing stores, in-store or stand alone, as opposed to the use of pre-existing mail or courier networks, online grocery is primarily an urban experience. However, if it is argued that grocery e-retailing is profitable for Asda, Sainsbury’s, Tesco and Waitrose (ASTW), it remains a matter of serious concern that there is no resource-based model that explains resources that gives ASTW a sustainable competitive advantage (SCA) and better performs in managing supply and distribution of e-groceries.

This research proposes to investigate some of the key resources not covered by previous scholars (Ellis-Chadwick et al. 2007; Zhuang and Lederer, 2006; Malts et al. 2004) in their research of resource-based view (RBV) and grocery e-retailing. In particular the stores and managerial capabilities in relation to the online channel, and contributes to filling a substantial gap in the e-commerce literature. The use of RBV to investigate grocery e-retailing market offers a valuable framework, through which to analyze ASTW development of supply and distribution strategy. This is because RBV emphasize on the internal resources and capabilities in formulating strategy to achieve a SCA as opposed to traditional strategy such as Porter’s five forces model which focus on the external environment. The aim is to give an overview of the connections between the strategies, resources and performance in order to help managers evaluate the potential sources of such advantage. The resource-based view model explains why all firms in the industry do

not and cannot pursue strategies that are likely to offer the highest return. Instead, firms adopt strategies their resources can support (Ekeledo and Sivakumar, 2004). This research builds upon Fahy's (2000) RBV model of the firm model. However, to avoid the sometimes narrow definition of RBV and to prevent confusion, a theoretical structure of resource-based view is provided in section 4, before exploring how the RBV can be applied. This will offer insight into the usage of the terms, as well as appropriate definitions.

2. Literature review

Early studies in the grocery e-retailing predominantly focused on the online fulfilment models (Scott and Scott, 2008; Murphy, 2007; Hackney et al. 2006; Hays et al. 2005; Delany-Klinger et al. 2003; Jones, 2001; Lewis, 2001; Enders and Jelassi, 2000), e-retailing loyalty (Rafiq and Fulford, 2005), or profitability of the internet grocery retailing (Tanskanen et al. 2002) as depicted in Figure 2. Whilst there is extensive research exploring various aspects of e-retailing in the grocery sector, little is available to assist e-retailers in the UK grocery sector in analysing the management of supply and distribution models against different resources and unique capabilities (RBV). Exception is given to Maltz et al. (2004) research into management of logistic as a key to successful e-retailing; Zhuang and Lederer's (2006) resource-based view of electronic commerce; and Ellis-Chadwick et al. (2007) into a resource-based analysis of e-strategy in the general UK retail grocery sector, which focused on IT and RBV.

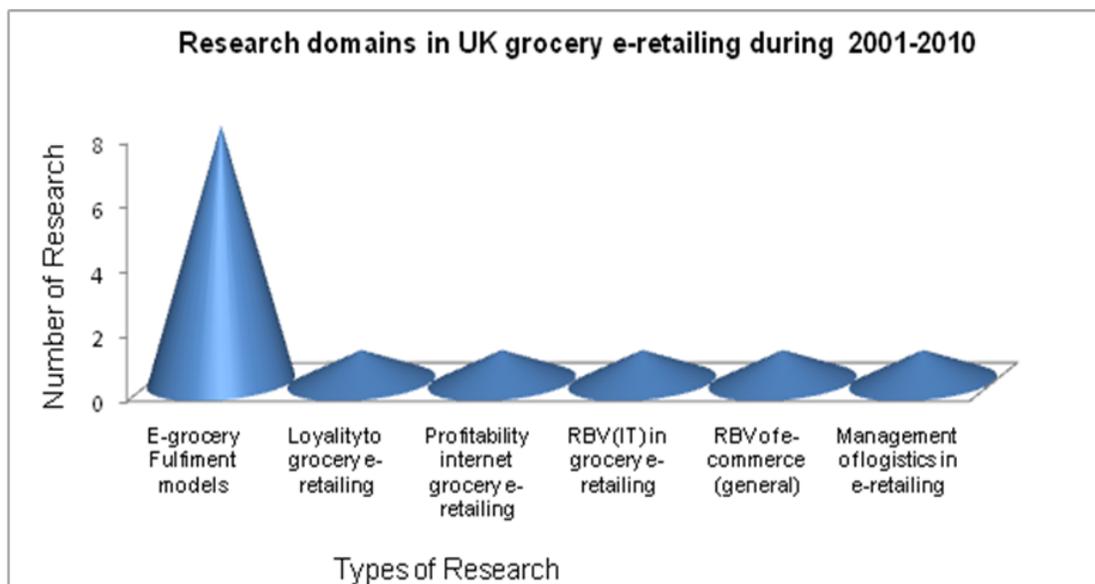


Figure 1: Research domains in UK grocery e-retailing during 2001 - 2010

2.1. Supply and Distribution Models adopted by ASTW

Although the four main UK grocery retailers operate similar supply and distribution networks for their existing bricks-and-mortar grocery stores, the supply and distribution models and strategies of these retailers to support their internet sales channels are quite diversified. For example, both ASDA and Sainsbury invested hugely in distribution centre-based (DC) infrastructure to support their online business (Hackney et al. 2006; Delaney-Klinger et al. 2003) and later traversed to a hybrid store-warehouse model (Figure. 3) because order volumes were insufficient to offset the expense and slow stock turnover (Hays et al. 2005; Murphy, 2007). Conversely, Tesco regarded its online grocery program as a bolt-on service (piggyback: Figure. 4) and used its existing store-based supply network for both its physical and virtual grocery business (Hays et al. 2005; Scott and Scott, 2008). Although Tesco's strategy is predominately the fulfilment of e-groceries from their stores, in February 2006 it opened its tesco.com-only store for dedicated picking (Tesco, 2006; cited in Scott and Scott, 2008). The third initiative, adopted by Waitrose, is a rolling-based development plan. Although it is still a DC-based model (Figure. 5), its strategic focus is a joint-venture business by which to offer online shopping delivery through a warehouse-based distribution system. These practitioners provide evidence that supports the analysis made by Sawhney (1999b; cited in Reynolds, 2000) that distribution is a series of approaches rather than a single strategy.

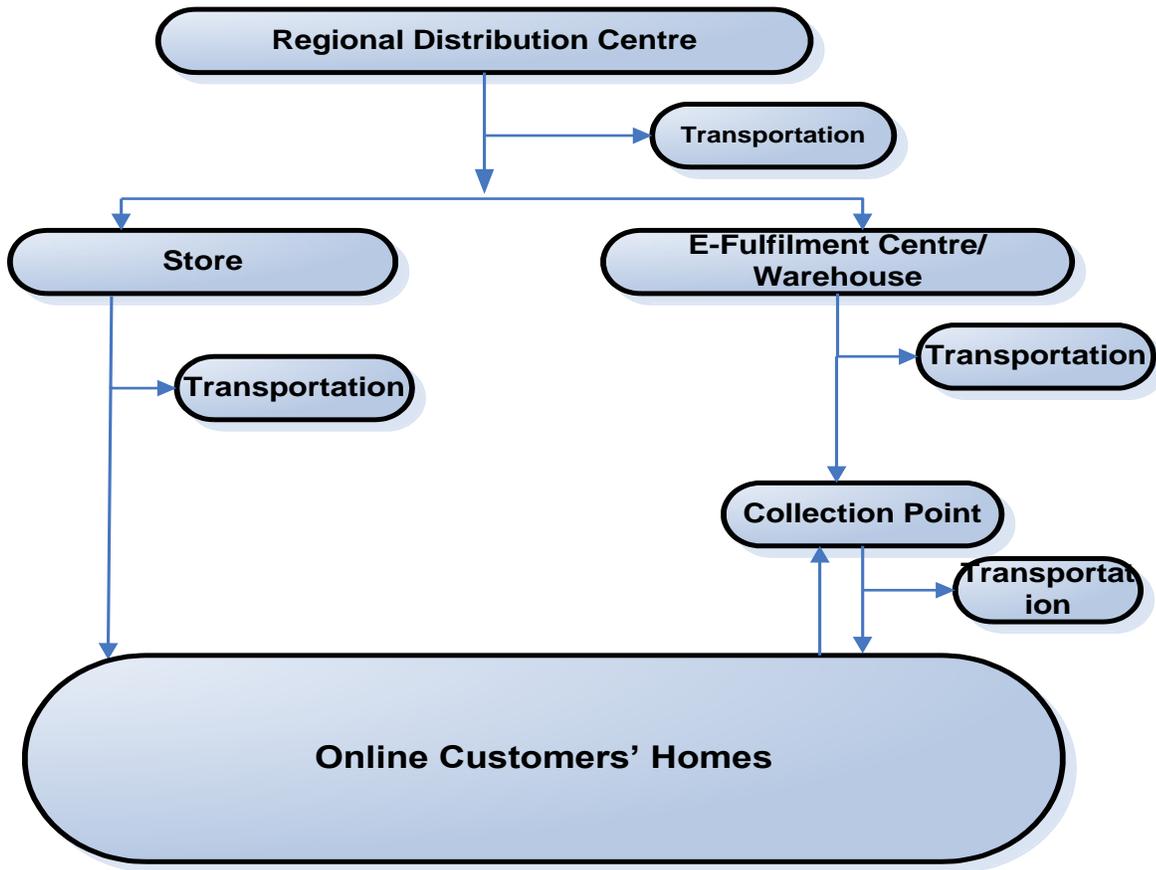


Figure 2: Asda and Sainsbury's supply and distribution model (Hybrid Model)

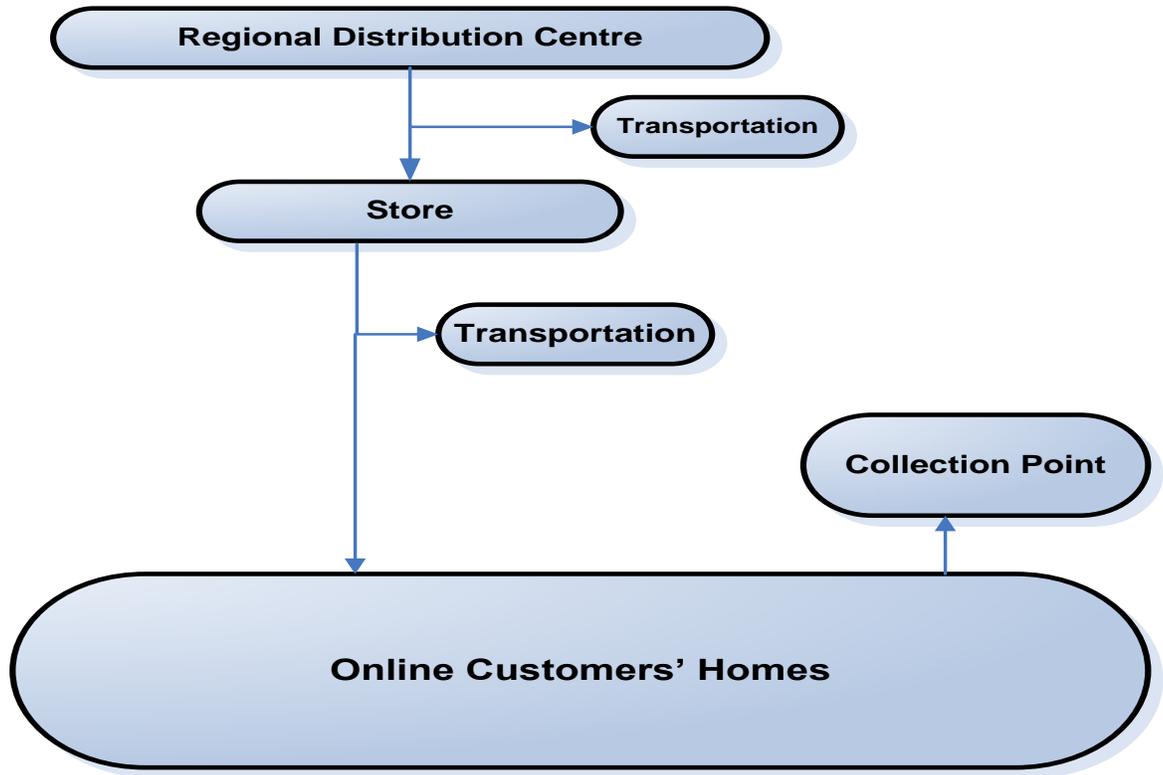


Figure 3: Tesco's supply and distribution model (Piggyback/ in-store model)

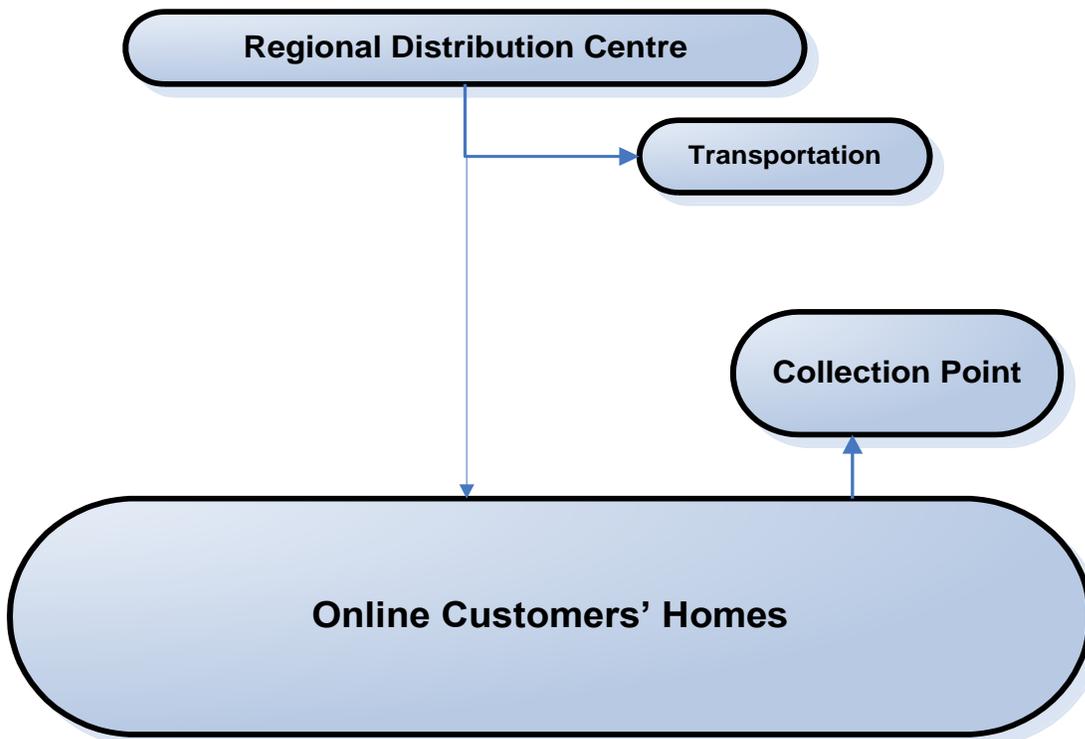


Figure 4:

Waitrose/ Ocado's supply and distribution model (Distribution Centre Model)

2.1.1. Overview of e-grocery process, systems and market position

Supply and distribution models	Process description	Information systems used	Market positions
Piggy back or In-store model	Online order via website; sent to server; orders allocated to stores; picked using trolleys; items scanned into customer trays and checked to the electronic point of sales (EPOS); orders inspected in stores; allocated to the vans; delivered to e-customers; and e-customers check if order complete.	<ul style="list-style-type: none"> • Computer • Picking trolleys • Scanner • EPOS • 700 color pocket PC (for signatures) • Electric Vans • EMC network storage • EDI 	<ul style="list-style-type: none"> • 700 stores (Hays et al. 2005) and 1 dedicated picking store in London (Reynolds, 2000). • 97% population access (Murphy, 2000). • An online market share of 27.1% (Chaffey, 2008).
Hybrid model	Online order via website; sent to server; orders allocated to stores; picked using trolleys; items scanned into customer trays and checked to the electronic point of sales (EPOS); orders inspected in stores; allocated to the vans; delivered to e-customers; and e-customers check if order complete	<ul style="list-style-type: none"> • Computer • Conveyer belts • Scanner • EPOS • Optimization modelling software • Routing systems • Interchangeable pods • EDI and electric vans 	<ul style="list-style-type: none"> • 200 stores (J. Sainsbury's plc, 2007) and 2 DC (Hay et al. 2005). • 72% population access (Scott and Scott, 2008). • An online market share of 6.9% (Chaffey, 2008) • Asda 400 stores, online share of 10.1%
Distribution centre model (DC)	Online order via website; sent to server; orders allocated to DC; picked using conveyer belts; items scanned into customer trays and checked to the electronic point of sales (EPOS); orders inspected in stores; allocated to the vans; delivered to e-customers; and e-customers check if order complete	<ul style="list-style-type: none"> • Computer • Picking trolleys • Scanner • EPOS • Autonomy technology • RFID • Electric vans • Automated guided vehicles 	<ul style="list-style-type: none"> • 120 Waitrose stores (Johnson et al. 2000). • Ocado 2 DC centres in London. • An online market share of 4.2% (Chaffey, 2008)

Table 1: Overview of process, systems and market position

2.2. Reasons behind the adoption of different models

Research indicates a combination of rational and intuitive reasoning, or either, taken by the four e-retailers in deciding on their adoption model. For example, Tesco's reasons were: the economies of picking goods from the warehouse presented difficulty due to the penetration level, delivery times, geographical reach outside London; customers' demand (Jones, 2001; Marketspace, 2001); and customers preferences of purchasing online from their existing offline brand as reported by Gary Sargeant head of Tesco Direct in 1996 (Tesco.com, 2002). Hence Tesco's rivals, Sainsbury's and Asda based their decision on the belief that while a store-based system is operable in principle, it is neither viable nor capable of dealing with significant volumes without affecting the quality of service offered to in-store customers; and later on switched to hybrid model due to low order

volumes and slow stock turnover (Murphy, 2007; Hays et al. 2005). Waitrose, operating under a number of web identities e.g. Waitrose.com and Ocado.com (Hackney et al. 2006), believed that it can pick orders roughly three times the rate achieved by in-store pickers at Tesco (300 items per hour) and by not having physical stores it can remove a link in the supply chain, thus reducing the cost of delivering to customers' homes and getting fresh produce items and meats to the customer faster (Delaney-Klinger et al. 2003).

2.3. Effective model in supporting e-retailing channel, focus on ASTW

Amongst the four supply and distribution models adopted by ASTW, the Tesco's store-based approach has by far been proved to be the most successful one (Ellis-Chadwick et al. 2007; Hackney et al. 2006; Delaney-Klinger et al. 2003) due to their store resources and capabilities; which generates earning growth, building scale and enabling them to breakeven with low volumes. The hybrid store-warehouse and DC-based format adopted by Asda, Sainsbury's and Waitrose is also a profitable case. However, it is highly risky to simply assert that one of the existing models is the best practice for the future e-grocery market; because in fairness, even Tesco Direct's predominantly store-based pick-and-pack service runs alongside an element of warehouse picking, and is very much a hybrid strategy (Reynolds, 2000). A sustainable supply network has been recognized, by both the academics and practitioners, as a key strategic factor for better realization of enhanced competitiveness, better customer care, and increased profitability in the future virtual grocery market (Delaney-Klinger et al. 2003). The table below summarise the strengths, weakness, opportunities and threats (SWOT) of each supply and distribution model.

2.3.1. SWOT analysis of each model

Supply and distribution models	Strengths	Weakness	Opportunities	Threats
Piggy back or In-store model	<ul style="list-style-type: none"> • Low investment and quick to initiate. • Serve wider population faster • Better utilization of resources. • Reduce environmental impacts. • Simplify supply and distribution. • Enables dual service thus Increasing efficiency. • Maintains consistent. relationship between digital and traditional customers. • Enables quick deliveries. 	<ul style="list-style-type: none"> • Inconsistence inventory • Congestion between shoppers and pickers • High picking error and inefficiency • Reduced freshness of food and quality 	<ul style="list-style-type: none"> • First mover advantage • Increased purchasing power. • Grow the size of the online business • Bring e-commerce closer to customers • Serve as a complementary i.e. marketing. • Creates learning curve 	<ul style="list-style-type: none"> • Stock-outs drive customers away • New entrants i.e. Amazon with free deliveries • Increase in demand might result in new infrastructure and technology which might be very expensive in future compared today due to inflation.
Hybrid model	<ul style="list-style-type: none"> • Provide balanced learning curve • Balance benefits of DC and Piggyback model • Serve wider population faster • Better utilization of resources. • Reduce environmental impacts. • Simplify supply and distribution. • Enables dual service thus Increasing efficiency. • Maintains consistent. relationship between digital and traditional customers. 	<ul style="list-style-type: none"> • Very expensive • High maintenance cost of dual services i.e. technology, staff, infrastructure. • Traffic delays and congestions from DC 	<ul style="list-style-type: none"> • Creates learning curve of copying with dual service. • Increased purchasing power. • Grow the size of the business, thus increasing scale • Bring e-commerce closer to customers • Serve as a complementary assets 	<ul style="list-style-type: none"> • Regulations in expanding the business. • Delays due to congestion might cause dissatisfaction and drive customers away. • Piggy back model remains a threat should the order volume remains low. • New entrants like Amazon promising free deliveries.
Distribution centre model (DC)	<ul style="list-style-type: none"> • High picking efficiency • Creates learning curve in DC operation. • Increased supply speed • Better concentration in DC, no disruptions. • Quality products Increasing Customer Satisfaction • Flexibility in managing in and out flow • Quality fresh products supply 	<ul style="list-style-type: none"> • Supply limited area • Slow growth of online business. • High start up costs. • Demand driven. • Problems with breaking bulk of individual order • Lack capacity to serve many customers • High CO2 challenges 	<ul style="list-style-type: none"> • Reputation of quality products assist DC model to compete with in store model and minimize threats from hybrid and new entrants. • Excellence in operation • Merging with Waitrose create advantages of buying powers. 	<ul style="list-style-type: none"> • High cost in expanding operation • Regulations in building warehouses • Piggy back and hybrid with high customer base • New entrants like Amazon with free deliveries. • Delays and congestion from DC drive customer away

Table 2: SWOT analysis

3. Challenges of supply and distribution on grocery e-retailing

Literature reviewed (Kroninger, 2005; Enders and Jelassi, 2000; Hays et al. 2005; Murphy, 2007) points out external and internal problems that challenge and complicate grocery e-retailing in managing supply and distribution. For example, external market pressures such as strong competition and changes in the market (Turban et al. 2008), challenged Ocado to raise funds in the stock market, with aims to help expand its distribution centre (Atherton, 2010). In the case of Waitrose's DC model, this implies costly additional fulfilment centres are required, and challenges in storage, labour, new technology, and enhanced security of handling and varied temperature control etc. This was stated as warehousing and distribution problems by Enders and Jelassi (2000). In the

case of a hybrid model, Asda was reported in Atherton (2010) to have an acquisition of discount retailer Netto, with hopes that it would boost its hybrid model in competing with Tesco's piggyback model. Another external problem is that of societal pressure such as new regulations from government. For example, rules and demands for reduction in CO₂ emissions, increased importance of ethical and legal issues, the policy to minimise environmental damage and revitalise town centres (Fernie, 1997; Brussels, 2008; Eurostat Panarama of Transport, 2009; Ends Carbon, 2009) challenged Sainsbury to switch to green electric vans for its online customer deliveries, with aims of reducing high levels of carbon emissions impacts to the environment (Sea and Water, 2008; J. Sainsbury plc, 2007). This also implies that to manage supply and distribution of online products, investments in van technologies are required. According to Hays et al. (2005) low inventory, smaller and more frequent deliveries, cross-docking and different pallet heights have an impact on truck fill, on the number of journeys and, ultimately, on 8% of the total 84% road transport CO₂ emissions caused by vans. All of which is an added challenge to grocery e-retailers. Furthermore, technological pressures such as increasing innovation and new technologies, and rapid technologies obsolescence described by Turban et al. (2008) challenge ASTW to use both private and public electronic markets. These pose a challenge of managing dual offline and online in all areas of supply and distribution i.e. stores, labour, technologies, transport, communication, storage, etc.

The next question could be how does this affect supply and distribution internally? There is a clear link or a cause and effect relationship between external and internal problems that challenge grocery e-retailers models of supply and distribution. For example, in the context of market pressure to the piggyback model used by Tesco; Lewis (2001) suggests that should the customers' order demand increase, more deliveries may be needed to supply the store. This has an impact upon overall transport flows. An increase in overall transport flows link societal pressures to internally challenges such as creating "dynamic" routes which will meet short time windows, and coping with an increased number of customer locations to be serviced in a day, for either of the three supply and distribution models (hybrid, piggyback and DC). The customers' demands for delivery timings make optimizing the transportation routes a unique challenge (Adexa, 2001) that requires

highly skilled managers with unique capabilities and an addition of stores for Sainsburys and Asda or fulfilment centres for Waitrose, positioned close to customers to minimize delivery time journeys and to cope with managing the challenges of delivery operations. In support of this, research by Hays et al. (2005) indicates that creating dynamic routes given tight delivery windows and uncertainties in demand and travel times is an extremely difficult task. Also, creating balanced delivery schedules that lead to assigning orders to stores, an e-grocers needs to trade-off the picking efficiency with delivery distances, times, and costs subject to constraints such as the capacities of the vans, the delivery time windows, the number of pickers or the picking capacity available at each store, etc. Moreover, e-grocers are challenged to use fairly expensive advanced optimization techniques and enterprise systems that will aid in meeting high expectations of on-time deliveries while keeping the delivery costs low. The overall challenges indicate the need for stores or fulfilment centres and the importance of managerial unique capabilities as an important resource that aid in coping with these challenges. Below is the summary of political, economical, societal and technological (PEST) challenges.

3.1. PEST analysis of the challenges

	Polical	Economical	Societal	Technological
Piggy back or In-store model; Hybrid model; and DC model.	<ul style="list-style-type: none"> • Compliance i.e. introduction of delivery rounds e-grocery has to abide to. • Authorisation to access urban areas i.e. e-grocers need special authorizations from local government to show compliance with environmental standards. • Permission and building regulations faced by Asda and Sainsbury's. 	<ul style="list-style-type: none"> • Strong competition i.e. Amazon and Morrison's launching online groceries. • Customers demand i.e. need to serve a wider population and delivery times. • Changes in the market i.e. stock market launch by Ocado. • Regional trades agreement 	<ul style="list-style-type: none"> • Rules and demands for reduction in CO2 emissions • Transparency of food packaging • Use of certain routes for delivery of e-groceries to ease congestion. • Demands to source from local produce. • Fair trade issues. • Changing nature of workforce i.e. equal employment opportunity issues. 	<ul style="list-style-type: none"> • Innovation and new technologies i.e. internet resulting in addition of online channel to the offline. • Increased innovation i.e. enabling customers to buy from mobile commerce. • Rapid technology obsolescence. • Advanced technologies i.e. need for electric vans & routing systems

Table 3: PEST analysis

4. Resource- based theory (RBT): Definitions

A number of studies have used a profusion of different definitions of the theory, which is in fact an ongoing development of a resource based view of the firm as originally offered by Birger Wernerfelt (1984). Within the relative diverse literature (Wernerfelt, 1984; Beard and Sumner, 2004; Helfat and Peteraf, 2003; Fahy, 2000; Teece et al. 1997; Barney, 1991 cited in Ellis-Chadwick et al. 2007) there's a common theme with different meanings and emphasis of RBV but all refer to phenomena suggesting that resources possessed by a firm are the primary determinants of its performance, and these may contribute to a sustainable competitive advantage of the firm.

4.1. Resources and capabilities in a RBV

Research in RBV (Ellis-Chadwick et al. 2007; Ekeledo and Sivakumar, 2004; Beard and Sumner, 2004; Wernerfelt, 1984) has used a proliferation of similar definitions and categorisation of resources, such as: capabilities, organizational culture, assets, large size, reputation and the firm's business experience to conceive and implement strategies that improve its efficiency and effectiveness. This study does not consider all resources of e-retailers in the grocery sector, rather stores (assets) and capabilities; and adopts the

definition of resources as offered by Wade and Hulland (2004), which reads: “assets and capabilities that are available and useful in detecting and responding to market opportunities and threats”. Based on the adopted definitions, an e-retailer’s assets in this research can be thought of in terms of its physical stores; and (capability) as the ability of e-retailers to use the stores to respond to market opportunities or threats.

4.2. Sustainable Competitive Advantage

The terms sustained advantage (Wright et al. 1993) and sustainable (Peteraf, 1993; Grant, 1991) have been used interchangeably. The interpretation is that within the resource based view, the sustainability of a competitive advantage depends only on the possibility and extent of competitive duplication and not on specific time (measured in calendar units) neither does it imply that advantages persist indefinitely. This suggests that a competitive advantage might not be permanent but can be sustained for a longer period. The extent of competitive duplication is assessed in terms of the nature of rents and heterogeneity (English, 2001; Peteraf, 1993) and other conditions of sustainable competitive advantage such as value, barrier (i.e. inimitability, immobility, and non-substitutability) and appropriability (Fahy, 2000; Tokuda, 2005; Wright et al. 1993). Figure 5 below depicts how the combination and persistence of resources can lead to sustainable competitive advantage and superior performance.



Figure 5: Superior performance model (English, 2001)

4.3. Superior Performance

Studies which discussed superior performance (Fahy, 2000; Peteraf, 1993; Montgomery and Wernefelt, 1991) suggest that the attainment of sustainable competitive advantage can be expected to lead to superior performance, where profit will be appropriated. Whilst, there's a common concurrence on this, differences arise in how the superior performance is measured. For example, Fahy (2000) suggests superior performance is measured in conventional terms such as market share and rents or profitability. However, research by Montgomery and Wernefelt (2001); Barney and Arikana (2001) indicate a different view held by the "classical" school in industrial economics. The view argues that a major component of superior performance is accrued from industry members to curtail competitive rivalry. For consistency with the literature of RBV, this research is confined using an important insight that Peteraf (1993) highlighted, that is as long as superior resources cannot be freely expanded, freely imitated and remain limited in supply (i.e. the case of stores in this research), then sustainable competitive advantage and returns will persist, thus resulting in superiority. The following sections will attempt to address RBV theories in particularly presenting stores and capabilities as potential source of sustained competitive advantage.

5. Stores resource as a competitive advantage resource

Evidence from academics and practitioners: J. Sainsbury plc (2007); Murphy (2007); Hays et al. (2005); Tesco.com (2002); Marketspace (2001); Enders and Jelassi (2000) present a perspective that provides a provisional resource-based view of how the online division of the four grocery e-retailers relies massively financially or operationally on the existing infrastructure (stores) for supplying and distribution products to their online customers. The firm's infrastructure (stores, warehousing) provides a potential value of sustainable competitive advantage and success for online grocery business. Whilst it is recognized that the imperative value of stores is applicable within the online grocery industry, other scholars argue for the complete opposite implications of the potential of

tangible assets (store) to constitute source and value of sustainable competitive advantage (Ireland et al. 2008; Clulow et al. 2003). In applying relevance characteristics of a resource (namely: value; barriers to duplication; and appropriability) Fahy's (2000), the scholars argue that tangible assets can not be leveraged simultaneously (Ireland et al. 2008) and can be easily duplicated and hence are not a source of sustainable competitive advantage (Clulow et al. 2003). Conversely, Ireland et al. (2008) and Wernerfel (1984) clearly indicate that typically any one resource, on its own, does not yield a competitive advantage; a competitive advantage normally is created through the unique bundling of several resources, which serves as the main base for this research.

Therefore, in this research, store resources and capability are taken as two sides of the same coin (unique bundling of resources) because it is unlikely that e-retailers could have developed and deployed their store resources effectively without their managers high capabilities and vice versa. The idea that managers play a critical role in the strategic decisions have been acknowledged in the existing research of strategic role of management to RBV (Fahy, 2000; Barney and Arikan, 2001; Kor and Mahoney 2004). The findings from these scholars demonstrate path dependence with evidence that management's capabilities, in developing and converting key resources into strategies, are the most essential determinants of sustainable competitive advantage, and thus lead to a firm's superior performance. The store resource is a necessity, but not a sufficient condition to act as a source of competitive advantage. The potential of stores is realized only to the extent that the managers choose to allow the firm to benefit from the resource through their skills, knowledge and decisions.

5.1. Sustained Competitive Advantage Criteria and Stores

Research in RBV has developed and applied different frameworks of criteria with overlapping emphasis for evaluating, assessing and measuring a resource's ability to constituting a competitive advantage. For example, Mills et al. (2002) used a framework of value, sustainability and versatility as an assessment metric. Grant (1991) proposed that resources must meet the level of durability, transparency, transferability, and replicability. Peteraf (1993) argues that resource heterogeneity, resource immobility, ex-

ante, and ex-post limits to competition are important determinants necessary for sustainable competitive advantage. Collins and Montgomery (1995) expanded the theory with five test metrics which included: inimitability, durability, appropriability, substitutability, and competitive superiority. Amongst other criteria that has been discussed and applied is Barney's (1991) popular framework of four attributes namely: value, rareness, inimitability, and non-substitutability (Clulow, 2003; Barney and Arikan, 2001; Wright et al. 1993). And last but not least is Fahy's (2000) RBV model which suggests that in order for a resource to qualify as a potential source of sustainable competitive advantage, key resources must be valuable or enable the creation of value, and unable to be duplicated by rivals and barriers exist when the resource is inimitable, immobile and non-substitutable. Fahy's (2000) RBV model provides narrower criteria that include management strategic choices in obtaining a sustainable competitive advantage. These far narrower criteria allows managerial choices to be clearly distinguished in using stores to create a strategy and therefore is considered the best criteria in this research for measuring stores resources. In this study, managers' capabilities are considered a fundamental building block of the combination of procedures and expertise that grocery e-retailers rely on for supply and distribution strategy of online products. Although this research follows Fahy's (2000) model criteria, the discussion will overlap into Barney's criteria where the barrier is broken down into inimitability, immobility and non-substitutability. This is because Fahy (2000) also emphasized barriers to duplication in terms of inimitable, immobile, and non-substitutable. This provides a much wider platform of justification as to what and how is the barrier created by stores resources.

5.1.1. Stores resources as valuable

Value in terms of RBV has been justified, explained and expanded in detail by several scholars (Mills et al. 2002; Fahy, 2000; Wade and Hulland, 2004). A key implication is that for stores to be a potential source of sustainable competitive advantage, they must enable value creation to customers by allowing the firm to implement strategies that improve its efficiency and effectiveness. Barney and Arikan (2001) point out two

resource based logic assumptions (i.e. resource heterogeneity - competing firms may possess different bundles of resources and resource immobility – these resources differences may persist) that provide an assessment through different propositions and attributes within RBV of the conditions under which resource value creation is and is not possible. Taking this logic assumption in to the context of stores, for example, if both the demand for stores is homogeneous (i.e. all grocery e-retailers have number of stores of the same kind) and supply of capabilities is also homogeneous (all managers in grocery e-retailing are equal in their productive capabilities); there is no variance in stores contribution to the firm. In that scenario, it is not possible to generate value through investment in stores-capabilities assets.

However, Barney and Arikan (2001) note that heterogeneity and immobility may exist, and some firms, some of the time, may possess resources that enable them to more effectively develop and implement strategies than other firms, and these resource differences can last. For example, when both stores demand is heterogeneous (i.e. all grocery e-retailers have different number of stores, in different places, of different kind) and the supply of capabilities is heterogeneous (i.e. managers differ in decisions, level of skills, knowledge, and experience). Consequently, there is variance in stores contribution to grocery e-retailing. This argues that stores resources can create value for grocer e-retailers. Grady's definition in Harris et al. (2008) provides a favourable measurement formula in this research, and that is $\text{value} = \text{benefits} - \text{cost}$.

5.1.1.1. Techniques for measuring value

In order to provide comprehensive evidence that will justify store value as per Grady's definition ($\text{value} = \text{benefits} - \text{cost}$), the further field investigation stage of this study will adopt some of the economic techniques used for calculating benefits minus cost of a project, or a given intervention etc. Return on investment (ROI) (NSGIC, 2006) and cost benefit analysis (CBA) also known as benefit cost analysis (BCA) (Kennedy, 1981; Hanley and Spash, 1993) are amongst the economic justification techniques provided as a means for estimating value, which is regarded as store value in this study. According to

NSGIC (2006) ROI is best for calculating tangible financial gains and benefits; hence, CBA is more comprehensive in that it attempts to quantify both tangible and intangible cost and benefits that can be expected from a project versus the costs for implementing the suggested program or solution. The formula of BCA is derived as: $BCA = (\text{net benefits} / \text{total cost})$, which according to NSGIC (2006) and Hanley and Spash (1993) should later be discounted to a present value in order to take into account the inflation rate effect and present an accurate calculation of today's value (e.g. Net Present Value, or NPV). To apply a discount factor, also known as the cost of capital, to determine the NPV of a future stream of benefits and cost, in the store resource calculation of BCA, the following equation and factors will be used:

According to NSGIC (2006) $NPV = \sum B_t - C_t \cdot \frac{1}{(1+r)^t}$ or Hanley and Spash (1993)

$$NPV = \sum B_t \cdot \frac{1}{(1+r)^t} - \sum C_t \cdot \frac{1}{(1+r)^t}$$

Where B refers to benefits, C refers to costs, t denotes the time period, r is the discount rate which Hanley and Spash (1993) suggests is usually assumed to be the (real) rate of interest and $\frac{1}{(1+r)^t}$ is known as a discount factor that have the property that always lies between +1 and 0, n is sometimes used as number of time periods. In summary:

B = Benefits; C = Costs; r = discount rate; t = time period; n = number of time periods.

Applying this formula to the latter literature, will assist to derive and demonstrate strong evidence that stores resources provide value to grocery e-retailing. Moreover, the results will demonstrate and answers some of the following:

- What are the individual benefits and costs accrued by each model (e.g. in using in-store model in comparison to hybrid and DC model)?
- How much each model will cost or be worth should the online grocery environment become complex and dynamic (i.e. increase in demand) or static (i.e. decrease or remain same)?
- How much each of the four grocery e-retailers might spend should they have to adapt or add the other models into their current models (e.g. should Ocado wish to

expand their operations by having stores, and supposedly have the permission to build, how much will they spend in future given inflation factors? Or should Tesco wish to add DC to cope with demands, what might be the expected expenditure take into account the inflation rate?).

- Is waiting for changes in market a good decision given the rise of monetary value? Or will it be a costly option in future? And if so, amongst these three models who stands to benefit and why? Can the store resources still be sustained?
- Is hybrid model a costly but safe option should demand increase?
- Should changes occur in demand, for example, more and more people start buying groceries online, is there going to be a reverse in terms of model performance (e.g. is hybrid or DC going to perform better than in-store model).
- Should demand remain the same, is there a strategy or a method that DC and hybrid could use to match the in-store model or will Tesco always be appropriating and sustaining benefits from their store resources?

5.1.2. Stores resources as inimitable

In addition to the ability of creating value as discussed above, the resource will also have to be inimitable to constitute a potential source of advantage (Barney and Arikan, 2001; Barney, 1991 cited in Clulow et al. 2003). This implies that if the competitive advantage gained from having stores is easily imitated, then it is not possible for stores to constitute a source of competitive advantage. Is the stores resource in this research inimitable? Research example by Fahy (2000) suggests that “although plant or land may be geographically immobile, they are relatively imitable”. In respond to Fahy’s (2000) example, this research asks to what extent is the level of inimitable? Firstly, Wright et al. (1993) states that for a resource to be imitated competitors must be able identify exactly the source of competitive advantage. This implies that if the exact sources of competitive advantage cannot be easily identified (i.e. the exact number and format of stores, the store elements, and exact capabilities such as managerial knowledge, skills, type of decisions and experience of managers) or if the ability to generate superior performance is unclear, the resource is inimitable. Secondly, Fahy (2000) and Tukoda (2005) extend the level of

inimitability by indicating that where identifiable (as in the case of store physical infrastructure); a barrier of inimitability may exist due to regulatory protection, and economic deterrents such as pre-emptive large costs of investment. Thirdly, even in the case where cost and regulatory barrier can be conquered, Wright et al. (1993) suggest that the competitor must be able to duplicate exactly both the stores and capabilities including the circumstances under which these stores resources functions. Can the capabilities and circumstances be easily duplicated? Millmore et al. (2007) and English (2001) identify three more reasons that make it hard for capabilities and circumstances to be duplicated, thus creating resource inimitability, namely: the history and timing of the organisation, causal ambiguity, and social complexity. Therefore, it is reasonable to speculate that the stores (physical infrastructure and capabilities) might not be easily imitated given the evidence from theory and practitioners.

5.1.3. Stores resources as immobile

Previous studies (English, 2001, Fahy, 2001, Wright et al. 1993) suggest that in addition to value and inimitability, the firm will also have to sustain competitive advantage through immobility of its resource. In the context of stores (physical infrastructure and capabilities), English (2001) clearly identifies prime retail store locations and skilled workforce as examples of a strategy that can discourage rivals from imitating a winning strategy. How immobile are these resources? Location of the store is definitely said to be immobile and classified as land or plant (Fahy, 2000), perhaps it is possible to buy a store in a specific location, however, isolating mechanisms such as impediments to imitation and first mover advantages have been identified as driving factors to resource immobility, that is, legal barriers, scale and market share can make it difficult to package and sell, and therefore difficult to buy. An isolating mechanism is defined by English (2001) as the resource level analog of the industry-level barrier-to-entry concept. What about capability which lies in the skilled workforce (i.e. in this research study managers)? There has been ongoing debate on this particular resource (Kor and Mahoney, 2004; Wright et al. 1993), usually because managers' capabilities are classified on their own, under human resources, and perceived to be highly mobile. In response, studies that have been conducted to date in the issue of human resources provide some interesting findings in

relation to human capabilities as a resource. For example, an early investigation carried out by Wright et al. (1993) into human resource for RBV suggests that because output is not the sum of separable outputs of each cooperating resource, it may be impossible to identify the source of competitive advantage that arises from team production (i.e. there is causal ambiguity). This suggests that because the output of stores in supply and distribution of online products is a sum of different managers with different capabilities, it's impossible to replicate by hiring one manager, therefore the causal ambiguity involved makes managers capabilities immobile.

5.1.4. Stores resource as non-substitutable

Also of interest to RBV criteria is the question of whether the resource is not substitutable. The term non-substitutable is interpreted similarly by different scholars (Fahy, 2001; Barney and Arikan, 2001; Wernerfelt, 1984; Wright et al. 1993), and that is a resource constituting a sustainable competitive advantage must not be easily substituted. Earlier, Fahy (2000) gave an example that plant or land is substitutable. To what extent should the resource be non-substitutable? Barney and Arikan (2001) indicates that to the extent where a one-to-one correspondence exists between a resource and strategy, in a way that the resource can be uniquely used to help conceive of and implement a strategy. This raises a question of whether there is a resource (i.e. technology, transport et.c), that can substitute the role of stores (physical infrastructure and capabilities) in supplying and distribution groceries to online customers? Perhaps, evidence from previous researchers in online fulfilment (Murphy, 2007; Hays et al. 2005; Scott and Scott, 2008) and current practitioners (Tesco.com, 2002; J. Sainsbury pls, 2007) can serve as a clear response that stores are one of the resources possessed by grocery e-retailers that probably cannot become outdated and can not be transferable across a variety of technologies, products and markets. As virtual as the grocery business can possible be (i.e. Webvan, Peapod, Ocado, Amazon), it has been proved through Webvan's case (Johnson and Whang, 2002) not to be feasible to operate grocery e-retailing without physical infrastructure and the cost of acquiring or substituting stores pose a major challenge to grocery practitioners. Subsequently, until there are other resources (which are in themselves: valuable, rare, inimitable, non-substitutable) with abilities to substitute the advantages associated with

the store resources, for supply and distribution of grocery e-retailing, then it's reasonable to argue that the store resources meet the criteria for constituting a source of competitive advantage (i.e. add value to grocery e-retailers, rare, can not be imitated, and are not substitutable), in particular for the purposes of operating online grocery. The proposed link below highlights how store resources (physical infrastructure and Capabilities such as knowledge, skills, etc.) for Asda, Sainsbury's, Tesco and Waitrose meet the relevance characteristics of a resource as outlined by Fahy (2000).

6. Provisional link between supply and distribution models and Fahy's RBV model

After reviewing literature in this field, this study proposes the link between Fahy's RBV model and supply and distribution models in meeting the relevant characteristics of value, barrier and appropriability as:

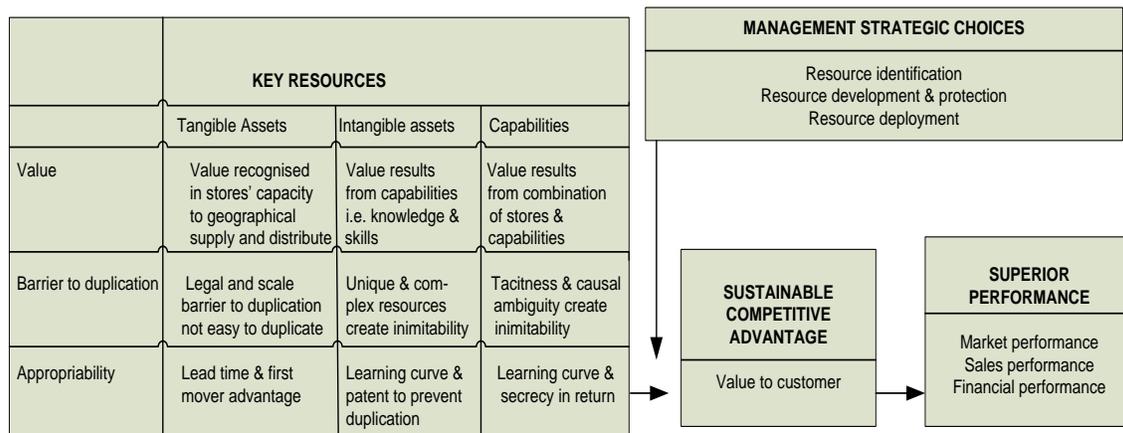


Figure 6: RBV model (Provisional link emphasized in point A-I)

(Source: Adapted from Fahy's RBV model)

A. Increased capacity to geographical supply and distribution

John Browett, CEO of Tesco.com was quoted as saying that: "the in-store model is the critical reason why our business is successful" (Marketspace, 2001). The geographical penetration of stores for online service gave Tesco access to high a

proportion (70%) of the population (Lewis, 2001) which helped Tesco in getting to the online market faster (Marketspace, 2001; Yousept and Li, 2004) and allowed advancement of the existing customer base, which strengthened the customer web, (Brussels, 2003) whilst minimising the cost of developing brand and the cost of acquiring customers. On the contrary, Asda, and Sainsbury's faced legal limitation barriers to imitation imposed by government (Kroninger, 2005), since each region can support only one store due to its size. As pioneers of in-store offerings, Tesco appropriated lead time advantages over Sainsbury's and Asda for a time period. Succinctly put, this meant Tesco's rivals were not utilising the strategy.

B. Improved efficiency in operations

Tesco's distribution of stores as: Tesco Metro, Tesco Express, supermarkets and compact superstores led to a reduction in transportation cost due to shorter distance, increase in delivery time accuracy, customer satisfaction and lower risk for return in investment (Hays et al. 2005; Scott and Scott, 2008; Brussels, 2003). This gave Tesco an advantage over Ocado, delivering in London only, and over new entrants like Amazon.com. The latter (Ocado) has limit of geographical coverage and content with cost barrier in acquiring the stores. This ultimately leaves Tesco to appropriate from the learning and experience acquired by virtue of being the first to leverage its stores as distribution centres. Therefore, Asda and Sainsbury's are thrust into the unenviable position of playing "catch-up".

C. Better workforce utilization

Tesco made better use of their existing store personnel to pick web orders at times when traffic was low in the aisles of the nearest store. This eliminated the need and cost for new staff, training and the overall service cost (Kroninger, 2005). Subsequently, Tesco achieved superior sales and services (complementary assets)

through an in-store offerings strategy. This enhanced customer satisfaction more than its imitators; as echoed by Keupp et al. (2010).

D. Increased performance and adaptation to evolving demands

By eliminating the need for any new bricks and mortar, Tesco increased their distribution performance and response to demand through their existing stores; whilst delaying the need for a fixed-cost investment in dedicated distribution centres (Brussel, 2003; Kroninger, 2005; Hays et al. 2005). On the contrary, Sainsbury's and Asda experienced enormous amount of cost on their new fulfilment infrastructures.

E. Growing the size of the business

The 650 Tesco stores (Johnson et al. 2000), were key in transferring reputation of the brand to the internet (Ferne and Pierrel, 1996, Rowley, 2003, White and Daniel, 2004 cited in Hackney et al. 2006). This is one of the key elements in growing the size of online business (Rafiq and Fulford, 2005) and minimizing brand development and customer acquisition cost (Brussels, 2003). As a result, Tesco increased its business size, leveraged economies of scale, operated at a lower cost, undercut prices of competitors and exploited more opportunities. Their established high cost structure is hard to match and imitate, thus creating a scale barrier. This allows Tesco to appropriate the profits from the exploitation of its opportunity and survive. Early in 1997, for example, Sainsbury's was reported to be considering price cuts to retrieve some of its lost market share. The next day Ian MacLaurin, then leading Tesco, said in the financial press that very price would be matched. Sainsbury's believed Tesco as it has a reputation or track record of sensitivity on price that underlines its determination and no price war ensued (Hooley et al. 2008).

F. Purchasing power

Tesco used its stores to leverage scale advantages in procurement to secure cost-competitive supply as well as economies of scale in purchasing (Ireland et al. 2008; Brussels, 2003; Stalk et al. 2000; Harris and Ogbonna, 2001). This also created a scale barrier and allowed Tesco to appropriate more profits.

G. Better utilisation of IT/IS resources

The use of stores meant Tesco did not have to invest in new EPOS. Hence, their rivals (Waitrose, Sainsbury's and Asda) spent on IT for their new fulfilment centres.

H. Operational excellence

Prior researchers (Hays et al. 2005; Murphy, 2007; Brussels, 2003) have demonstrated Tesco achieved excellence through the store model by including its core processes of order fulfilment, logistics, service delivery, and transaction processing for online grocery business. According to Hooley et al. (2008), providing middle-of-market products at the best price with the no-frills or least inconvenience supports a value proposition that is valuable to customers and hard for competitors to match at any cost, whilst enabling the company to benefit from its secrecy.

I. Potential source of an effective marketing strategy

Evidence from Murphy (2007; Brussels (2003); and Stalk et al. (2000) highlight the importance of stores in marketing, promoting the brand, and (Rafiq and Hulford, 2005) transferring reputation to the web. According to Hooley et al. (2008) brands are difficult to build, yet they add value to and build customers' retention whilst creating defensible competitive positions; and create a reputation barrier to competition (Shane, 2003). This is because they build up goodwill, loyalty and making customers suspicious of any new entrants, which Tesco fulfils at no extra cost due to the use of existing stores

According to Stalk et al. (2000), points A to I are crucial to sustainable competitive advantage and success in a mature and low-growth industry.

7. Methodology

Relevant journals, books, papers, and articles reflecting the management of supply and distribution of e-groceries and RBV were identified and reviewed from primary; secondary; tertiary; and internet sources. Most of which was a combination of qualitative and quantitative, because, although resource-based approach has good explanatory ability Madhok's 1997 cited in Ekeledo and Sivakumar, 2004). Previous scholars (Priem and Buttler, 2001 cited in Barney, 2001) warn of the methodological challenges inherent in measuring resources (e.g. intangible resources), which generates concerns about the testability of the RBV. The aim of using mixed methods was to draw from the strengths and minimize the weakness of these challenges as recommended by previous studies in RBV.

8. Conclusion

The literature reviewed is about how Asda, Sainsbury's, Tesco and Waitrose (ASTW) manage their supply and distribution for their online grocery channel. Previous research in management of supply and distribution of e-groceries focused on fulfilment models, theft, loyalty and IT which previous research has shown as crucial to grocery e-retailing. However, another key component of grocery e-retailing was not given much attention, the stores and managerial capabilities. The combination of the two resources offline might not bring so much advantage or even lead to superior performance but for the online channel is different due to the nature of the products. This is mainly because it creates value, barrier and appropriability necessary for obtaining sustainable competitive advantage and superior performance and other benefits discussed on the provisional link section. Moreover, stores and managerial capabilities are important because even with a good brand, marketing strategy, and logistics; without these resources it is hard to reach large population, compete and even expand the business. An example of this can be the

case of Ocado struggling to expand its business due to cost (Atherton, 2010). In some cases it is even hard to sustain the business without a number of stores as in the case of Webvan in US (Scott and Scott, 2008). It is also costly to obtain and create a major barrier to new entrants like Amazon who has a wealth of experience in other e-retailing products. Hence, grocery e-retailing continue to grow and those with a number of stores combined with excellent managerial capabilities continue to benefit from it such as Tesco. It is anticipated that this research programme contributes to knowledge and practice of grocery e-retailing. From the perspective of knowledge contribution, the research program is expected to empirically test the robustness of RBV in the context of the grocery sector through illustrative examples of broad sector trends and e-strategies in the exploitation of success in the e-grocery retailing sector rather than a conclusive chronology of competitive e-strategies. In practice, the findings of the research program may also be highly valuable in that it could offer useful insights for practitioners to improve the efficiency and resilience of their e-retailing system in the context of grocery supply chain. The outcome may:

- Indicate how the stores combined with managerial capabilities provide value; barrier; and appropriability which are crucial to obtaining sustainable competitive advantage and superior performance. This may extend findings from previous research as RBV has not been applied in relation to these resources and add knowledge to the body of e-business literature. In addition, it may also raise awareness to practitioners as it will also highlight how the same resources can be used to minimise other problems (i.e. logistics) experienced in grocery e-retailing; whilst demonstrating how it can be used to maximize or supplement those key and expensive resources such as building of brand, reputation, trust and marketing.
- Add to the analysis of another critical success factor which might not be key to other e-retailing but key to grocery e-retailing. It will also highlights some of the key developments in grocery e-retailing that might provide a basis for the explanation of potential future sources of competitive advantage to the mainstream of supply chain and e-retailing literature.
- Provide useful direction for the development of an e-grocery mix model. This may provide a broader outlook of the extent of supply and distribution resources

that stand to be considered in the either journals of e-business or e-supply chain. Its relevance can be extended beyond e-retailers, to other geographies and other industry contexts. In practice it may add in analyzing the management of supply and distribution network that will help not only grocery sectors, but will also improve management decisions and will make vital contributions to their development of business and performance. Subsequently, the strategy may encourage and lead to managerial ideas and insights to anticipate and avoid deficient or flawed grounds in the management, planning and evaluation of supply and distribution networks.

9. References

- Adexa (n.d.) 'The Consumer Packaged Goods Supply Chain: Optimized Supply Network Management Solutions'.
http://www.adexa.com/PDF/cpg_industry.pdf [11 May 2010].
- Atherton, J. (2010) 'Asda sales slip as stores grow'. Metro News. 18 August, (2010), pp. 31.
- Atherton, J. (2010) 'Ocado aims for £1bn price tag'. Metro News. 7 July (2010), pp. 33.
- Barney, J. B. (2001) 'Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management* 27 (2001) 643-650. Pergamon, Elsevier Science Inc (2001).
<http://jom.sagepub.com/cgi/reprint/27/6/643> [29 June 2010].
- Barney, J. B. and Arikan, A. M. (2001) *The Resource-based View: Origins and Implications*. Blackwell Publishing Ltd. 2001.
- Barney, J. (1991) 'Firm Resources and Sustained Competitive Advantage'. *Journal of Management*, vol. 17, no. 1, pp. 99.
- Beard, J. W. and Sumner, M. (2004) 'Seeking strategic advantage in the post-net era: viewing ERP systems from the resource-based perspective. *Journal of Strategic Information Systems* 13 (2004) 129-150. Elsevier.

- <http://csz.csu.edu.tw/pp/RBV/RBV%20papers/JSIS/Seeking%20strategic%20advantage%20in%20the%20post-net%20era,%20JSIS,%202004.pdf> [6 July 2010].
- BERR (2009) 'Digital Britain, Interim report'.
http://www.culture.gov.uk/images/publications/digital_britain_interimreportjan09.doc [2 February 2009].
- Brussels, B. (2008) 'ICT and E-Business Impact in the Transport and Logistic Service Industry'. E-Business Watch, 2008. Report presented to European Commission, DG Enterprise and Industry. http://www.ebusiness-watch.org/studies/sectors/transport_services/documents/Study_04-2008_Transport.pdf [11 May 2010].
- Brussels, B. (2003) 'ICT and E-Business in the Retail Sector'. E-Business Watch, 2003. Report presented to European Commission, Enterprise Directorate General e-Business, ICT Industries and Services. http://www.ebusiness-watch.org/studies/sectors/retail/documents/Retail_2003_II.pdf [11 September 2010].
- Clulow, V.; Gerstman, J.; Barry, C. (2003) 'The resource-based view and sustainable competitive advantage: the case of a financial service firm'. Journal of European Industrial Training, Vol. 27, No. 5, pp. 220-232 (2003). MCB UP Ltd.
http://www.google.co.uk/imgres?imgurl=http://www.emeraldinsight.com/fig/0030270502004.png&imgrefurl=http://www.emeraldinsight.com/Insight/ViewContentServlet%3FFilename%3DPublished/EmeraldFullTextArticle/Articles/0030270502.html&h=1633&w=1596&sz=85&tbnid=pNIZEdEvIFgNvM:&tbnh=150&tbnw=147&prev=/images%3Fq%3Dresource%2Bbased%2Bview%2Bmodel&hl=en&usq=__T7r2F8fJw09wO1d8oBaR3qFgbO8=&ei=6C_QS-evD6HgnAO4jKRH&sa=X&oi=image_result&resnum=6&ct=image&ved=0CBkQ9QEwBQ [25 May 2010].
- Collins, D. and Montgomery, C. A. (1995) 'Competing on Resources: Strategy in the 1990s'. Harvard Business Review, 73 (July-August), pp. 118-128.
<http://staffweb.ncnu.edu.tw/clhung/MOT/papers/8.pdf> [11 December 2010].
- Delaney-Klinger, K.; Boyer, K. K.; and Frohlich, M. (2003), "The return of online grocery shopping: A comparative analysis of Webvan and Tesco's operational methods", *The TQM Magazine*, vol. 15, no. 3, pp. 187.

- <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/1060150307.html> [12 October 2010].
- Ekeledo, I. and Sivakumar, K. (2004) 'International market entry mode strategies of manufacturing firms and service firms: A resource-based perspective'. *International Marketing Review*, volume: 21, No: 1, pp: 68-101 (2004). Emerald.
- http://www.google.co.uk/imgres?imgurl=http://www.emeraldinsight.com/fig/0360210104002.png&imgrefurl=http://www.emeraldinsight.com/Insight/ViewContentServlet%3FFilename%3DPublished/EmeraldFullTextArticle/Articles/0360210104.html&h=1008&w=1383&sz=42&tbnid=Y_55sRERbwFIXM:&tbnh=109&tbnw=150&prev=/images%3Fq%3Dresource%2Bbased%2Bview%2Bmodel&hl=en&usg=__jdNocLR24PMge3CFhs09nN9aHEU=&ei=6C_QS-evD6HgnaO4jKRH&sa=X&oi=image_result&resnum=5&ct=image&ved=0CBcQ9QEwBA [15 June 2010].
- Ellis-Chadwick, F.; Doherty, N. F.; Anastasakis, L. (2007) 'E-strategy in the UK retail grocery sector: a resource-based analysis'. *Managing Service Quality*, Vol. 17, No. 6, pp. 702-727 (2007). Emerald Group Publishing Limited.
- <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=/published/emeraldfulltextarticle/pdf/1080170606.pdf> [24 May 2010].
- Enders, A. and Jelassi, T. (2000) 'The Converging Business Models of Internet and Bricks-and-Mortar Retailers'. *European Management Journal*, Vol. 18, No. 5, pp. 542-550, 2000. Pergamon, Elsevier.
- http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6V9T-419BG65-9-C&_cdi=5907&_user=788780&_pii=S0263237300000438&_orig=search&_coverDate=10%2F31%2F2000&_sk=999819994&view=c&wchp=dGLbVtz-zSkzS&md5=5793dac0aaa93105076b285950798f5a&ie=/sdarticle.pdf [11 May 2010].
- Ends Carbon (2009) 'UK Supermarkets 2009 carbon benchmark report'. http://www.endscarbon.com/_pdf/ends-carbon-supermarket-summary.pdf [11 May 2010].

- English, J. R. (2001) *Applied Equity Analysis: Stock Valuations Techniques for Wall Street Professionals*. McGraw-Hill, 2001.
http://books.google.co.uk/books?id=dZ_mTUhc7JQC&pg=PA90&lpg=PA90&dq=is+retail+store+immobile?&source=bl&ots=esBXYLKwfn&sig=Cw398dkN4V64vpRpUlqLl3sIqC8&hl=en&ei=Jnf2TKaPC4SGhQex0aHhBQ&sa=X&oi=book_result&ct=result&resnum=3&sqi=2&ved=0CC0Q6AEwAg#v=onepage&q=is%20retail%20store%20immobile%3F&f=false [1 December 2010].
- Eurostat Panorama of Transport (2009) 'Optimisation of Distribution System'. Add publication place.
http://ec.europa.eu/environment/industry/retail/pdf/issue_paper_optimisation.pdf
[11 May 2010].
- Fahy, J. (2000) 'The resource-based view of the firm: some stumbling-block on the road to understanding sustainable competitive advantage'. *Journal of European Industrial Training*, No. 24/2/3/4 (2000), 94-104. MCB University Press. <http://www.emeraldinsight.com/journals.htm?articleid=837007> [6 July 2010].
- Fernie, J. (1997) 'Retail Change and Retail Logistics in the United Kingdom: Past Trends and Future Prospects'. *The Service Industrial Journal*, Vol. 17, No. 3, pp. 383-396 (1997). Routledge.
http://pdfserve.informaworld.com/410876_751308528_739244648.pdf [4 May 2010].
- Grant, R. M. (1991) 'The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation'. *California Management Review*.
<http://faculty.fuqua.duke.edu/~moorman/Marketing%20Strategy%20Course%20Materials/Grant%20-%20The%20Resource-Based%20Theory%20of%20Competitive%20Advantage.pdf> [11 October 2010].
- Hackney, R.; Grant, K. and Birtwistle, G. (2006) 'The UK grocery business: towards a sustainable model for virtual markets'. *International Journal of Retail & Distribution Management*, vol. 34, no. 4/5, pp. 354.
<http://emerald2010.cjb.net/Insight/ViewContentServlet;jsessionid=A21A36A5356>

- [0C82566B19C8527B97E15?contentType=Article&Filename=Published/EmeraldFullTextArticle/Articles/0890340407.html](http://www.emerald.com/FullTextArticle/Articles/0890340407.html) [8 July 2010].
- Hanley, N. and Spash, C. L. (1993) Cost-Benefits Analysis and the Environment. Edward Elgar Publishing Limited, 1993.
<http://www.ima.kth.se/utb/mj2694/pdf/CBA.pdf> [1 December 2010].
- Harris, M. D. S.; Herron, D.; and Iwanicki, S. (2008) The Business Value of IT: Managing Risks, Optimizing Performance and Measuring Results. CRC Press, Taylor and Francis Group, 2008. http://books.google.co.uk/books?id=SXE5ixJTd-UC&pg=PA14&dq=definition+of+value+in+business&hl=en&ei=zWxHTIWfIMH34gb4o7T7CQ&sa=X&oi=book_result&ct=result&resnum=1&ved=0CDYQ6AEwAA#v=onepage&q=definition%20of%20value%20in%20business&f=false [22 July 2010].
- Harris, L. C. and Ogbonna, E. (2001) 'Competitive advantage in the UK food retailing sector: past, present and future. Journal of Retailing and Consumer Services 8 (2001) 157-173.
http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VGN-41XV8Y1-5-1&_cdi=6043&_user=788780&_pii=S0969698900000096&_orig=search&_coverDate=05%2F31%2F2001&_sk=999919996&_view=c&_wchp=dGLbVlzSkzV&_md5=79c9162a65aeab2f9291d31be2e50684&_ie=/sdarticle.pdf [11 May 2010].
- Hays, T.; Keskinocak, P.; De Lopez, V. M. (2005) Strategies and Challenges of Internet Grocery Retailing Logistics. Book titled "Applications of Supply Chain Management and E-Commerce Research". Springer US, 2005.
<http://www2.isye.gatech.edu/~pinar/egrocer.pdf> (link for the main chapter in the book). <http://www.springerlink.com/content/wv3464/front-matter.pdf> (link for the main book) [11 August 2010].
- Helfat, C. E. and Peteraf, M. A. (2003) 'The Dynamic Resource-Based View: Capability Lifecycles'. Strategic Management Journal, No. 24, pp. 997-1010, (2003). Wiley InterScience.

- <http://course.shufe.edu.cn/jpkc/zhanlue/upfiles/edit/201002/20100224121706.pdf>
[6 July 2010].
- Hooley, G. J.; Saunders, J. A.; Piercy, N. F.; Nicoulaud, B. (2008)
Marketing Strategy and Competitive Positioning 4th Ed. Financial Times,
Prentice Hall, 4th Ed.
http://books.google.co.uk/books?id=Xlq6CZcZ4A0C&pg=PA145&lpg=PA145&dq=barrier+to+duplication&source=bl&ots=KeUBVb0Wge&sig=jD237z_G54v12j1SjQsaB1WsNAA&hl=en&ei=e7RJKSSOpDKjAfJuL3MDg&sa=X&oi=book_result&ct=result&resnum=6&ved=0CDUQ6AEwBQ#v=onepage&q=barrier%20to%20duplication&f=false [23 July 2010].
- IGD (2007) 'UK Grocery Outlook 2007: Channel Management'. IGD
Reports.
<http://www.igd.com/analysis/hub.aspx?id=60&tid=9&mr=1&mtab=5&cid=17>
[15 January 2010].
- Ireland, D. R.; Hoskisson, R. E.; and Hitt, M. A. (2008) Competing for
Advantage. Thomson South-Western, 2008.
http://books.google.co.uk/books?id=ptLXkW9IT2gC&pg=PT125&lpg=PT125&dq=competing+on+tangible+assest&source=bl&ots=ga_tAsAUKu&sig=BjEhLbIpHu-I04ajN1I-wrPirnE&hl=en&ei=104zTJrME5ihOOeYtPoB&sa=X&oi=book_result&ct=result&resnum=2&ved=0CBoQ6AEwAQ#v=onepage&q&f=false [6 July 2010].
- Johnson, E. M. and Whang, S. (2002) 'e-Business and Supply Chain
Management: An Overview and Framework'. Social Science Research Network
Electronic Paper, No. 03-06, 2002.
<http://www.gsb.stanford.edu/scforum/login/pdfs/0143MA.pdf> [2 December
2010].
- Johnson, R. R.; Killgallon, L.; Lockhart, K. (2000) 'Online Grocery: How
the Internet Is changing the Grocery Industry'. University of Virginia Darden
School Foundation, Charlottesville.
<http://www.csus.edu/indiv/c/chingr/mis270/darden-PeapodCaseStudy.pdf> [24
May 2010].

- Jones, D. T. (2001) 'Tesco.com: Delivering home shopping'. ECR Journal, Vol. 1, No. 1, (2001).
http://www.leanuk.org/downloads/general/delivering_home_shopping.pdf [11 May 2010].
- Hampton, P. (2007) 'JSainsbury Preliminary Results 2006/2007'. J. Sainsbury plc, 2007. <http://www.j-sainsbury.co.uk/files/results/prelims07/prelims07.pdf>
[May 2010].
- Kennedy, D. (1981) 'Cost-Benefit Analysis of Entitlement Problems: A critique'. Stanford Law Review, Vol.33, No. 387, 1993. HeinOnline.
<http://guweb2.gonzaga.edu/~dewolf/torts/pdf/33stanlrev387.pdf> [3 December 2010]
- Keupp, M. M.; Beckenbauer, A.; Gassmann, O. (2010) 'Enforcing Intellectual Property Rights in Weak Appropriability Regimes, the Case of de Facto Protection Strategies in China. Management International Review (2010) No. 50, pp. 109-130. Gabler-Verlag (2010).
<http://www.springerlink.com/content/022277v02137nv54/fulltext.pdf> [23 July 2010].
- Kor, Y. Y. and Mahoney, J. T. (2004) 'Edith Penrose's (1959) Contribution to the Resource-based View of Strategic Management'. Journal of Management Studies, 41, 1, 2004. Blackwell Publishing Ltd, 2004.
<http://www3.interscience.wiley.com/cgi-bin/fulltext/118756673/PDFSTART> [23 November 2010].
- Kroninger, S. (2005) 'Teaching the Big Box New Tricks'. Fortune Industrial Management & Technology, 2005. Solution Economy, November 14, 2005. Free Press, a division of Simon & Schuster.
<http://www.lean.org/Library/LeanSolutions/TeachingtheBigBoxNewTricks.pdf>
[5 April 2010].
- Lewis, A. (2001) 'Future Models of Retail Logistics in an Age of E-commerce'. Transport and Travel Research Ltd, Association for European Transport, 2001.

- Maltz, A.; Rabinovich, E.; Sinha, R. (2004) 'Logistics: The Key to e-Retail Success'. Supply Chain Management Review; Vol. 8, No. 3, pp. 56 (2004). ABI/INFORM Global.
- Marketspace LCC (2001) 'Online Grocery Retailing: Building the Last Mile to the customer'. MarketspaceU.
<http://www.marketspaceu.com/DashboardDocumentDisplayServlet061e.pdf?ci=146&docid=15792&dashBoardEntityTypeId=21> [23 May 2010].
- McKinnon, A. and Tallam, D. (2002) 'New Crime Threats from E-tailing: Theft in the Home Delivery Channel'. Department of Trade and Industry (DTI) Office of Science and Technology (Foresight Directorate).
[http://www.foresight.gov.uk/Crime%20Prevention/Theft-in the Home Delivery Channel April 2002.pdf](http://www.foresight.gov.uk/Crime%20Prevention/Theft-in%20the%20Home%20Delivery%20Channel%20April%202002.pdf) [11 June 2010].
- Mills, J.; Platts, K.; Bourne, M.; Richard, H. (2002) 'Strategy and Performance: competing through competences'. Cambridge University Press, 2002. <http://assets.cambridge.org/97805217/50301/sample/9780521750301ws.pdf> [10 September 2010].
- Millmore, M.; Saunders, M.; Lewis, P.; Thornhill, A.; Morrow, T. (2007) Strategic human resource management: contemporary issues. Pearson Education Limited, 2007.
http://books.google.com/books?id=9A2s7vy4ZUwC&pg=PA28&dq=inimitable+resources&hl=en&ei=Oof1TJbTN4ywhQebvPDRBQ&sa=X&oi=book_result&ct=result&resnum=1&ved=0CCMQ6AEwAA#v=onepage&q=inimitable%20resources&f=false [15 October 2010].
- Montgomery, C. A. and Wernfelt, B. (1991) 'Sources of Superior Performance: Market Share Versus Industry Effects in the U.S. Brewing Industry'. Management Science, Vol. 37, No.8, pp. 954-959 (1991).
<http://web.mit.edu/bwerner/www/papers/SourcesofSuperiorPerformance-MarketShareversusIndustryEffectsintheU.S.BrewingIndustry.pdf> [10 November 2010].
- Murphy, A. J. (2007) 'Grounding the virtual: The material effects of

- electronic grocery shopping'. *Geoforum* 38 (2007), pp. 941-953. Elsevier.
http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6V68-4ND7111-1-W&_cdi=5808&_user=788780&_pii=S0016718507000061&_orig=search&_coverDate=09%2F30%2F2007&_sk=999619994&_view=c&_wchp=dGLbVzW-zSkzV&_md5=7d40771a38da0fd026808b88d0af78aa&_ie=/sdarticle.pdf [10 May 2010].
- NSGIC (2006) 'Economic Justification: Measuring Return on Investment (ROI) and Cost Benefit Analysis (CBA)'. *Advancing Statewide Spatial Data Infrastructure in Support of the National Spatial Data Infrastructure (NSGIC)*. FGDC, version 1.1. http://www.nsgic.org/hottopics/return_on_investment.pdf [13 December 2010].
- Peteraf, M. A. (1993) 'The Cornerstones of Competitive Advantage: A Resource-Based View'. *Strategic Management Journal*, Vol. 14, 179-191 (1993).
<http://www.xbzhu.cn/jlq/upfile/upattachment/2009-4/200942094258.pdf> [2 December 2010].
- Rafiq, M. and Fulford, H. (2005) 'Loyalty transfers from offline to online stores in the UK grocery industry'. *International Journal of Retail and Distribution Management*, Vol. 33, No. 6, pp. 444-460 (2005). Emerald.
<http://www.emeraldinsight.com/Insight/ViewContentServlet?contentType=Article&Filename=Published/EmeraldFullTextArticle/Articles/0890330603.html> [11 May 2010].
- Reynolds, J. (2000) 'eCommerce: a critical review'. *Journal of Retail and Distribution Management*, Vol. 28, No. 10, pp. 417-444 (2000). MCB University Press.
<http://www.emeraldinsight.com/Insight/ViewContentServlet;jsessionid=DC48967841EFC014DA6EEE31865B5059?contentType=Article&Filename=/published/emeraldabstractonlyarticle/pdf/0890281001.pdf> [12 May 2010].
- Scott, J. E. and Scott, C. H. (2008) 'Online Grocery Order Fulfillment

- Tradeoffs'. Proceedings of the 41st Hawaii International Conference on System Sciences, 2008.
- <http://www.computer.org/plugins/dl/pdf/proceedings/hicss/2008/3075/00/30750090.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253AAddress%253A%2B%2B193.63.48.50%252C%2B%255B172.16.161.4%252C%2B192.168.41.168%252C%2B%2B193.63.48.50%252C%2B127.0.0.1%255D> [11 May 2010].
- See and Water (2008) 'A vision for UK freight trends towards 2018 and beyond'. Sea and Water, 2008.
- <http://www.freightbywater.org/downloads/visionforukfreight.pdf> [11 June 2010].
- Shane, S. A. (2003) A general theory of entrepreneurship: the individual-opportunity nexus. Edward Elgar Publishing Limited, 2003.
- http://books.google.co.uk/books?id=0FxO_Wsh30kC&pg=PA199&lpg=PA199&dq=barrier+to+duplication&source=bl&ots=79_KBtq5Ef&sig=9OhLb8KFmrbbL MpgTEW9QVPYmEo&hl=en&ei=TKpJTLnKCJi8jAfUnPiqDg&sa=X&oi=book_result&ct=result&resnum=3&ved=0CCkQ6AEwAg#v=onepage&q=barrier%20to%20duplication&f=false [23 July 2010].
- Stalk, G.; Evans, P.; Shulman, L. E. (2000) 'Competing on Capabilities: The New Rules of Corporate Strategy'. Harvard Business Review.
- Tanskanen, K.; Yrjola, H.; Holmstrom, J. (2002) 'The way to profitable internet grocery retailing – six lesson learned'. International Journal of Retail and Distribution Management, Vol. 30, No. 4, pp. 169-178 (2002). MCB UP Ltd.
- <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/0890300401.html> [11 May 2010].
- Teece, D. J.; Pisano, G.; Shuen, A. (1997) 'Dynamic Capabilities and Strategic Management'. Strategic Management Journal, Vol. 18, No. 7, pp. 509-533 (1997). John Wiley & Sons.
- <http://faculty.fuqua.duke.edu/~charlesw/s591/Bocconi-Duke/Papers/C10/TeecePisanoShuenSMJ.pdf> [6 July 2010].
- Tesco.com (2002) 'Shopping Online at Tesco'. News Article. 3, 7 March, 2002. Tesco. <http://www.alunict.co.uk/GCSEict/TescoInfo.pdf> [18 June 2010].

- Wade, M. and Hulland, J. (2004) 'Review: The Resources-Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research. MIS Quarterly Vol. 28, No. 1, pp. 107-142 (2004). MISQ Review.
- Tokuda, A. (2005) 'The Critical Assessment of the Resource Based View of Strategic Management: The Source of Heterogeneity of the Firm. Institute of International Relations and Area Studies, Ritsumeikan International Affairs Vol.3, pp. 125-150 (2005). http://www.ritsumei.ac.jp/acd/re/k-rsc/ras/04_publications/ria_en/03_8.pdf [11 September 2010]
- Turban, E.; King, D.; Mckay, J.; Marshall, P.; Lee, J.; Viehland, D. (2008) Electronic Commerce: A Managerial Perspective. Pearson, Prentice Hall.
- Wernefelt, B. (1984) 'A Resource Based View of the Firm'. Strategic Management Journal, Vol. 5, N0. 2, pp 171-180 (1984). John Wiley & Sons. <http://web.mit.edu/bwerner/www/papers/AResource-BasedViewoftheFirm.pdf> [5 July 2010].
- Wright, P. M.; McMahan, G. C.; McWilliams, A. (1993) 'Human Resource and Sustainable Competitive Advantage: A Resource-Based Perspective'. Centre for Effective Organisation. <http://ceo.usc.edu/pdf/T9319239.pdf> [10 August 2010].
- Yousept, I. and Li, F. (2004) 'Online Supermarkets: Emerging Strategies And Business Models In The UK'. 17th Bled eCommerce Conference, eGlobal, Bled, Slovenia, June 21-23, 2004. [http://ecom.fov.uni-mb.si/proceedings.nsf/0/14a2c9e1e988dccac1256ee000272c96/\\$FILE/03Yousept.pdf](http://ecom.fov.uni-mb.si/proceedings.nsf/0/14a2c9e1e988dccac1256ee000272c96/$FILE/03Yousept.pdf) [12 May 2010].
- Yousept, I. and Li, F. (2005) Building an Online Grocery Business: The Case of Asda.com. Hershey, PA Idea Group Publishing, 2005. Netlibrary. <http://www.netlibrary.com/Details.aspx?ProductId=128179&Terms=the+grocery+sectors+in+the+UK&ReturnLabel=lnkSearchResults&ReturnPath=/Search/SearchResults.aspx> [3 September 2009].
- Zhuang, Y. and Lederer, A. L. (2006) 'A resource based view of electronic

commerce'. Information and Management 43 (2006) 251-261. Elsevier.

http://ctl.scu.edu.tw/scutwebpub/website/DocUpload/CourseTeaching/cyc2007839425_1.pdf [5 July 2010].