

# **INVESTIGATING E-FULFILMENT IN GULF COOPERATION COUNCIL BUSINESS-TO-CONSUMER MARKETS**

*Majed Alotaibi, David B. Grant, Terry Williams*  
Hull University Business School, United Kingdom

## **INTRODUCTION**

This paper reports on a literature review and research objective development pertaining to a current PhD research project on electronic commerce (EC), specifically e-fulfilment, in Gulf Cooperation Council (GCC) business-to-consumer markets (B2C). The increase in the number of Internet users and GCC government investment has prompted this research to investigate how EC firms provide e-fulfilment services and what kind of logistical processes they implement. This research has also been motivated to explore e-fulfilment logistics in GCC countries, which have similar language, religion and beliefs. The overarching aim of this study is to suggest new strategies to make EC and e-fulfilment more efficient, effective and relevant in GCC countries. The study has the following three research objectives:

1. To investigate extant electronic commerce (EC) and related e-fulfilment logistics processes in GCC B2C markets;
2. To explore differences between international and GCC e-fulfilment purchase and delivery methods; and
3. To determine the extent of a cultural effect on e-fulfilment process in the GCC.

This study investigates three categories of actors: pure player (PP) and multi-channel (MC) e-stores, third-party logistics (3PL) service providers, and consumers from different cities within the six GCC countries (Kingdom of Saudi Arabia or KSA, Oman, Qatar, Kuwait, United Arab Emirates or UAE, and Bahrain).

The motivation for this study is to learn more about e-fulfilment logistics service in the GCC countries as EC there is expanding rapidly with growth in the number of PP and MC retailers. More than 200 e-firms are classified as either PP or MC with attendant issues such as transportation choice between road that may be slow or air cargo that is costly; no payment gateways except credit cards; inaccurate postal systems; and hard to return shipments. Further, 3PLs do not recognise customers by only using English language with Arabic native customers. E-firms have thus not developed or provided satisfactory models to fulfil customer needs in the region. Thus, investigating e-fulfilment in the GCC countries offers the opportunity for an in-depth study to provide contributions to literature and practice. Finally, studying the e-fulfilment literature and undertaking this study of a variety of firms' experiences can provide two important outputs: first, the various methods in developing and managing e-fulfilment logistics services; and second, an exploration of e-fulfilment in developing countries and how they benefit from previous experience with regard to current infrastructure and cultural effects. Finally, few previous studies have mentioned e-fulfilment logistics in Arabic countries or the GCC nations, which has also encouraged this in-depth investigation from a business perspective.

## **LITERATURE REVIEW**

Any consideration of e-fulfilment requires an understanding of B2C relationships within which various logistical processes take place. E-fulfilment involves services that interact with various logistics activities from checkout until the shipment arrives. Moreover, the GCC and cultural factors both need to be assessed to reach an in-depth understanding of e-fulfilment element within that scope. Therefore, in this study the EC market has been classified into PP, which are firms that only sell online, and MC firms, which operate both online and have a physical store (Boyer, 2001; Burt and Sparks, 2003). Building trust is important for both types of operation. For example, a PP can be established and build trust to create a strong position in relation to consumers, as the processes are more flexible and more tightly controlled and the process and delivery flow easily to help the

continuous development of the business (Elliot and Joseph, 2004). At the same time, MC firms have a way of reaching consumers easily with a smooth delivery process due to their ability to assemble a logistics system quickly and launch a delivery process as they are already in the market; this point can represent a risk for PPs as they have to create an effective logistics system (Gurău et al., 2001; Maltz et al., 2004). Further, EC has expanded globally and in 2011 the market was estimated to be US \$10 trillion, with a \$240 million share going to B2C (Veronica, 2012). Nielsen has listed the top products and services sold online globally: books, clothing/accessories/shoes, airlines tickets, electronic equipment, tours/hotel reservations, cosmetics/nutrition supplies, event tickets, computer hardware, videos/DVDs/games and grocery (2010: 2).

### Offline and Online Markets

Competition between PP and MC retailers is still growing according to several studies (Kauffman and Walden, 2001; Urbaczewski et al., 2002; Ngai and Wat, 2002). However, this has carried more pressure to fulfil consumers from ordering to processing and ending with minimizing delivery lead time (Lieber and Syverson, 2011). At the same time EC has had significant growth. Figure 1 shows a rapid increase during 11 years from \$4.5 billion to \$41.5 billion (Ramcharran, 2013). There is still significant competition between PPs and MCs with regard to prices and products; Brynjolfsson and Smith (2000) examined 42 offline and online firms and found online prices to be lower by 9%-16% compared with offline. However, buying online is still a controversial subject. Buying offline has strong points such as not having to wait for a delivery, cost of travelling, and the availability of products with the option to exchange immediately at lower cost, whereas on-line leads time are still critical, consumers are not very sure about the suitability of products, and the challenge of returning products at extra cost and the process taking a long time.

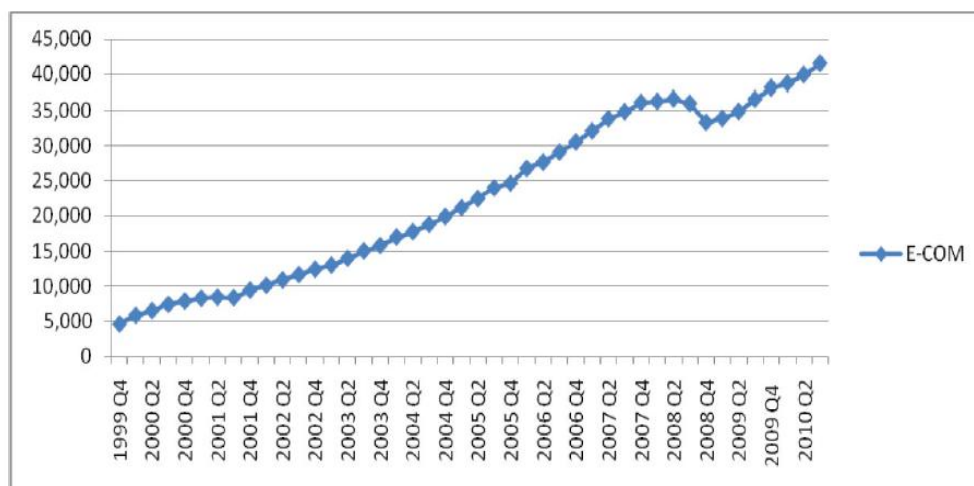


Figure 1: EC sales growth (in \$ millions) from 1999 to 2010 (Ramcharran, 2013)

PPs have greater advantages and profitability than MC firms because investment in technology and developing a supply chain provides them with an advantage in the market when looking to develop strong relationships with customers and makes the process faster with lower prices. Amazon.com, the giant PP with a mass product operation model, can still achieve success in sales and customer loyalty. Amazon is valued at more than \$79 billion, which is 40% higher than Target and Kohl's that have 2,800 stores (Lieber and Syverson, 2011). Amazon and some pure-player corporations have created distinctive brand names and customer loyalty, and individuals will pay \$1.72 extra to buy a product from Amazon (Brynjolfsson and Smith, 2000). Global offline sales in 2008 were considered to be \$18.7 trillion, whereas online sales were recorded as \$3.7 trillion (Ramcharran, 2013).

### Factors Influencing Electronic Commerce (EC)

EC has certain factors that can affect the fulfilment process, whether PP or MC. Consumer culture, for example, is considered an important part of the process as some consumers prefer to deal directly with product so that they can touch them, such as food or clothes. Further, there is differentiation between large and small cities in terms of services; in large cities the extent of sharing pictures and downloading music and movies is still higher than in small cities with regard to the availability of technological tools and population numbers (Hortaçsu et al., 2009). Quaddus and Achjari (2005) classified the drivers of EC success and impediments to it from internal and external factors as shown in Table 1.

Contribution to success	Locus of impact	
	Internal	External
Driver	<ol style="list-style-type: none"> <li>1. Cost leadership</li> <li>2. Reputation</li> <li>3. Market</li> <li>4. Business entry</li> </ol>	<ol style="list-style-type: none"> <li>1. Product pricing</li> <li>2. Time spent</li> <li>3. Convenience</li> <li>4. External relationship</li> </ol>
Impediment	<ol style="list-style-type: none"> <li>1. Financial</li> <li>2. Risks</li> <li>3. Expertise</li> </ol>	<ol style="list-style-type: none"> <li>1. Customer's expense</li> <li>2. Delivery time</li> <li>3. Transaction risk</li> <li>4. Access</li> </ol>

Table 1: Internal and external factors that affect EC (Quaddus and Achjari, 2005)

### Types of Grocery and Non- Grocery Electronic Commerce Operations

In many developed countries firms sell groceries online and deliver them, but not so much in GCC countries. Delivering groceries to consumers is still a difficult process to accomplish easily, as there are challenges involved that are of greater concern than for non-foods, such as temperature, speed and quality, the ability to exchange, the variety of brands and physical delivery (Sherah, 2008). In addition, launching an online grocery business is considered by PPs and MCs to be both costly and risky. Table 2 shows some of the leading grocery firms throughout the world and highlights the differences in their experience and various services (Tanskanen et al., 2002; Al-Nawayseh, 2012).

Table 2 also reveals various firm strategies throughout the world, whereby each country has a particular economic situation and different sorts of culture. For example, the table begins with a multinational corporation, Tesco, which invested \$58 million in e-grocery to provide deliveries of products based on the pick-up model. The table also reveals other and different scenarios that have occurred, as businesses have either succeeded, been bought or have ceased trading, which suggests that selling groceries online is still a critical business. For example, Streamline began as a grocery PP by investing \$80 million and was later sold to Peapod. Moreover, Peapod started the logistics process as a delivery service before being bought by the second-largest e-grocer in the world, Royal Ahold. Also, in 1999 Webvan in the US had invested an estimated \$120 million to provide a high-tech model of picking groceries from a dedicated distribution centre, more than double the amount of Tesco. However, three years after the project started, Webvan went bankrupt.

Books and clothes appear at the top of the Nielsen list (2010) referred to above. In addition, one study (Ghezzi et al., 2012) analysed the percentages of EC penetration in both the US and Europe. As shown in Figure 2, the US online market still occupies a higher percentage than for the whole of Europe for clothing, followed by books and DVDs, with a low percentage for grocery for both regions. The previous figures increased the

demand for 3PL and companies such as FedEx and UPS hired more people for deliveries (Ramcharran, 2013).

	Tesco UK	Sainsbury's UK	Webvan USA	Streamline USA	Peapod USA	Carrefour France	Ito-Yokado Japan
<b>Background</b>	The biggest supermarket chain in the UK	The second largest supermarket chain in the UK	Started as a pure e-grocer in 1999	Started as a pure e-grocer in 1992	Started home delivery service before the Internet in 1989	The largest hypermarket chain in the world in terms of size	The largest supermarket chain in the Japan
<b>Investments in e-grocer development (Approx. in US millions )</b>	\$58	\$40	\$120	\$80	\$ 150	\$100	\$140
<b>Main operational mode</b>	Industrialized picking from the supermarket	Picking from the supermarket or (DC) in London.	Highly automated picking in distribution centre (DC)	Picking from the distribution centre, reception boxes, value adding services	Picking from both (DC) and stores	Picking from the supermarket	Picking from the supermarket
<b>Current status</b>	The biggest e-grocer in the world. Expanding its operations outside the UK. Partnering with Safeway and Groceryworks.	53 stores occupying 73% of UK	Operations ceased July 2001  <b>Bankrupt</b>	Parts of operations were sold to Peapod in September 2000. The rest of operations ceased in November 2000.	Bought by global grocery retailer Royal Ahold. Second biggest e-grocer in the world.	announced that it was "highly likely" that it would dispense with its Champion fascia, with all stores expected to be rebranded under the Carrefour name	There are 174 Ito-Yokado stores operating in Japan. Expanded to China, where they formed a joint venture with Wangfujing Department Store and China Huafu Trade & Development Group Corp

Table 2: Grocery market leaders and retailers (developed from Tanskanen et al., 2002; Al-Nawayseh, 2012)



Figure 2: Penetration percentage of EC in Europe and the US (Ghezzi et al., 2012)

### Logistics and Electronic Commerce Fulfilment or E-fulfilment

E-fulfilment has a complex relation in many organizations, whether locally or globally, as each logistics element can be affected from the point of despatch. Logistics has a strong

effect on an economy and can affect gross domestic product, economic growth and society as a whole. The cost classification of logistics can be divided into four major sectors: transportation, warehousing, inventory and administration (Grant, 2012). Focusing on logistics activity can lead to more production and enhance efficiency while maintaining the quality of products, which in turn leads to consumer loyalty that comes from speed of delivery with proper shipment conditions. For example, Logistics Manager (2004) reported that Procter and Gamble has 300 variously branded and named products and spent £23 million on restructuring its logistics infrastructure and focusing on its supply chains to keep the flow of products moving while taking into account its relationship with its suppliers. Two distribution centres were placed in the north and south of England, providing global positioning systems and using advanced information technology tools in seeking solutions.

Product delivery from point of origin to the point of consumption (Grant, 2012) is a complex process and combines two fields: marketing services and logistics activity. There are five activities common to both fields: people, processes, place of sale or distribution, power and planning and control. Further, packaging products and then delivering the shipment at a precise time in good condition to the right place and person relies on physical distribution, which in MC delivery systems can be assembled more easily than for PP. However, building a home delivery system or outsourcing outbound activity is considered one of the obstacles, particular for pure players. Amazon and Dell have similar supply chain strategies whereby they outsource the last stage of their delivery service to a 3PL service provider. Physical distribution is one of the processes that deal with finished products and integrates the satisfaction of firm and consumer requirements (Xing et al., 2010). An e-fulfilment physical distribution service quality (e-PDSQ) model was developed by Xing et al. (2010) for non-grocery and contains four constructs - timeliness, availability, condition and return - and 15 variables.

Grocery sales are discussed in the literature to a greater extent than non-foods, which reflects the various challenges in this sector that relate to the differentiation of consumer behaviour. The greater number of e-grocery studies from the business and consumer perspective have the advantage of providing feedback to help adapt e-fulfilment services. For example, Amazon.com has launched a new line to deliver groceries in some states in the US and Germany. There are further factors for consumer e-fulfilment support such as arranging online grocery delivery to avoid congestion, the availability of service 24/7, the ability to choose delivery time and method, the option of various brands with expiry dates, and consumer reviews (Ghazali et al., 2006; Scott and Scott, 2006).

Therefore, EC logistics has been growing and discussed from different angles, from retail to strategy. EC logistics is often involved in B2C and consumer-to-consumer (C2C) transactions and, because sales has a separate delivery channel, it often handles physical distribution (Benjamin and Wigand, 1995; Delfmann et al., 2002). Increased delivery capability has led to an expansion in network delivery to reach consumers and enhance cost efficiency. Bask et al. (2012) did a systematic literature review of EC and logistics and noted that logistics played a minor role in most studies. However, they found three areas of importance that need to be considered together due to their interactions: the retailer's online strategy, its logistics and delivery infrastructure, and consumer preferences. Tanskanen et al. (2002) noted that developing EC logistics systems should first be done locally and then tested in a wider market.

B2C is considered vital in EC logistics and affects capability and firm strategy, whereas business-to-business (B2B) often follows traditional logistics processes. In addition, EC can be influenced by the location of the inventory and whether the warehouse structure is centralized or decentralized, and if the inventory is outsourced or uses the same producer or retailer. Various logistics capabilities have been discussed (Cho et al., 2008), while others (García et al., 2007) argue that an efficient method would be to choose warehousing. However, some research has added a way of applying outsourcing that

comes from two parts of a strategy: capacity with flexibility and a global presence (Delfmann et al., 2002). Another concern is that different segments of customers emerge as a result of the differentiation of logistics strategies. Cao and Zhao (2004) have discussed customers' demands as individuals and as EC consumers, identifying that EC retailers should be aware of the performance of delivery and maintain service in e-fulfilment accordingly. Bask et al. (2012) argued that most EC studies focus on digital channels, which better combine the electronic channel and bricks and mortar. In addition, logistics needs to enhance the study of B2C and C2C trade in order to identify fulfilment solutions for the structures, services and processes of EC. Appropriate delivery has recently been considered in the e-PDSQ model by Xing et al. (2010), and the value of time in the shopping mode has also been discussed (Hsiao, 2009) and found to be related. Delivery time is considered a vital factor for customers when choosing between stores (Cao and Zhao, 2004).

### **The Gulf Cooperation Council (GCC)**

The GCC is composed of six countries: Saudi Arabia, Kuwait, Bahrain, Oman, the United Arab Emirates and Qatar. These countries are similar in a number of ways e.g. religion and culture, have a total population of 46.7 million, and inhabitants have full e-government support with plans to link networks. The highest number of Internet users in the Middle East is in Saudi Arabia, followed by Iran (Omari, 2013; Menatech, 2013). In addition, some factors are important to study PP and MC such as transportation, inaccurate postal systems, cash on delivery payments, and how women might receive orders under culture and religion factors. More than 200 PP and MC firms strive to find suitable logistics systems whereas 3PLs are still not considering B2C in GCC as a target market segment. Al-Nawayseh (2012) investigated e-grocery in Jordan and concluded that the collection model is an appropriate one for consumers and might help female customers in GCC countries, especially in Saudi Arabia where women are prohibited from driving. Another important factor is that delivery personnel cannot easily deliver a shipment, as this might be considered suspicious. On the other hand, a number of Gulf countries have been placed among the top 50 countries in a United Nations e-government report (Omari, 2013). Moreover, the World Bank's (2014) Logistics Performance Index (LPI) notes that the quality of logistics services is central to trade efficiency and is strongly associated with the reliability of supply chains and the predictability of service delivery available to producers and exporters. From the list of 166 countries included in the 2014 LPI, the Emirates, Qatar and Saudi Arabia are among the top 50 (at 27, 29 and 49 respectively), which reflects the condition of different factors, among them infrastructure and transportation.

### **CONCLUSIONS AND CURRENT STATE OF THE RESEARCH STUDY**

The foregoing trawl of the literature has noted different issues in offline and online markets, factors affecting EC and thus e-fulfilment, food and non-food EC, the interaction between EC and logistical processes to achieve e-fulfilment, and the growth of EC in the GCC and its economic impact. The review has thus led to the three research objectives noted in the Introduction.

The choice between different paradigms for this study was driven by the exploratory aim of the research and the resultant research objectives. Thus, this research attempts to understand the meaning of an applied interpretive paradigm. The major reason for adopting an interpretivist paradigm is that few data exist regarding logistics activity in e-commerce in GCC firms, whether PP, MC or 3PL logistics services and e-fulfilment between retailer and consumers requires more investigation. In addition, adopting an interpretive paradigm assumes that *"the social world is mostly what individuals perceive it to be, and that reality is socially constructed as individuals attach meaning to their experience"* (Narcisse and Harcourt, 2008) (p. 1156). Further, seeking details regarding such situations allows a researcher to obtain deep understanding of the phenomena of interest. An interpretivist paradigm was therefore considered suitable for this study.

Qualitative techniques for collecting relevant data are relevant to such an inductive strategy and thus semi-structured interviews were used to obtain data about the phenomena of e-fulfilment logistics across all six GCC countries. A total of 54 interviews were conducted in GCC fieldwork from the period May to September 2014: 16 with consumers, 28 with EC firms or retailers, and 10 with 3PL service providers. At present data analysis is currently being done on a within-case basis for each GCC country. Following that, a cross-case analysis will be done to determine similarities and differences among the GCC countries and to compare theory and practice to the literature in order to delineate the theoretical contribution of this study and provide suggestion for EC firm and 3PLs in the GCC.

## ACKNOWLEDGEMENTS

We thank the two anonymous reviewers for their positive comments and suggestions, which we have incorporated in this paper.

## REFERENCES

- Al-Nawayseh, M. (2012), "*Electronic Commerce Logistics In a Developing Country: The Case of Online Grocery Shopping In Jordan*," London, Brunel University. No of pages:177.
- Bask, A., Lipponen, M. & Tinnilä, M. (2012), "E-commerce logistics: a literature research review and topics for future research." *International Journal of E-Services and Mobile Applications (IJESMA)*, Vol. 4, No.3: pp. 1-22.
- Benjamin, R. & Wigand, R. (1995), "Electronic markets and virtual value chains on the information superhighway." *Sloan Management Review (Winter, 1995)*, No.
- Boyer, K. K. (2001), "E-operations: a guide to streamlining with the internet." *Business Horizons*, Vol. 44, No.1: pp. 47-54.
- Brynjolfsson, E. & Smith, M. (2000), "'Frictionless commerce? A comparison of Internet and conventional retailers'." *Management Science*, Vol. 46, No.4: pp. 563-585.
- Burt, S. & Sparks, L. (2003), "E-commerce and the retail process: a review." *Journal of Retailing and Consumer Services*, Vol. 10, No.5: pp. 275-286.
- Cao, Y., Zhao, H. (2004), "'Evaluations of E-Tailers' Delivery Fulfillment Implications of Firm Characteristics and Buyer Heterogeneity.'" *Journal of Service Research*, Vol. 6, No.4: pp. 347-360.
- Cho, J.-K., Ozment, J. & Sink, H. (2008), "Logistics capability, logistics outsourcing and firm performance in an e-commerce market." *International Journal of Physical Distribution & Logistics Management*, Vol. 38, No.5: pp. 336-359.
- Delfmann, W., Albers, S. & Gehring, M. (2002), "The impact of electronic commerce on logistics service providers." *International Journal of Physical Distribution & Logistics Management*, Vol. 32, No.3: pp. 203-222.
- Elliot, R. & Joseph, B. (2004), "Physical distribution service quality in internet retailing: service pricing, transaction attributes, and firm attributes." *Journal of Operations Management*, Vol. 21, No.6: pp. 651-672.
- García, A., Chang, Y., Abarca, A. & Oh, C. (2007), "RFID enhanced MAS for warehouse management." *International Journal of Logistics*, Vol. 10, No.2: pp. 97-107.
- Ghazali, E., Mutum, D. & Mahbob, N. A. (2006), "Exploratory study of buying fish online: are Malaysians ready to adopt online grocery shopping?" *International Journal of Electronic Marketing and Retailing*, Vol. 1, No.1: pp. 67-82.
- Ghezzi, A., Mangiaracina, R., Riccardo, M. & Alessandro, P. (2012), "'Shaping the e-commerce logistics strategy: a decision framework'." *International Journal of Engineering Business Management*, Vol. 4, No.
- Grant, D. B. (2012), "*Logistics Management*," Pearson Education, Limited.
- Gurãu, C., Ranchhod, A. & Hackney, R. (2001), "Internet transactions and physical logistics: conflict or complementarity?" *Logistics Information Management*, Vol. 14, No.1/2: pp. 33-43.
- Hortaçsu, A., Martínez-Jerez, F. A. & Douglas, J. (2009), "The geography of trade in online transactions: Evidence from eBay and mercadolibre." *American Economic Journal: Microeconomics*, No.53-74.

- Hsiao, M.-H. (2009), "Shopping mode choice: Physical store shopping versus e-shopping." *Transportation Research Part E: Logistics and Transportation Review*, Vol. 45, No.1: pp. 86-95.
- Kauffman, R. & Walden, E. A. (2001), "Economics and electronic commerce: Survey and directions for research." *International Journal of Electronic Commerce*, Vol. 5, No.5-116.
- Lieber, E. & Syverson, C. (2011), "Online vs. offline competition." *The Journal of Industrial Economics*.
- Logistics Manager. (2004), 'The innovative trailblazer' Available at: <<http://www.logisticsmanager.com/Articles/3303/The+innovative+trailblazer.html>>.
- Maltz, A. B., Rabinovich, E. & Sinha IV, R. (2004), "Logistics: the key to e-retail success." *Supply Chain Management Review*, Vol. 8, No. 3 (Apr. 2004), pp. 48-54.
- Mangan, J., Lalwani, C. & Butcher, T. (2008), "*Global Logistics and Supply Chain Management*," John Wiley & Sons.
- Menatech. (2013), 'e-government of GCCs will link together after 4 months' Available at: <Available at: <http://www.themenatech.com/mena-news/>>.
- Narcisse, S. & Harcourt, M. (2008), "Employee fairness perceptions of performance appraisal: a Saint Lucian case study." *The International Journal of Human Resource Management*, Vol. 19, No.6: pp. 1152-1169.
- Ngai, E. & Wat, F., 39, 415-429. (2002), "A literature review and classification of electronic commerce research." *Information & Management*, Vol. 39, pp. 415-429.
- Nielsen (2010), *Global Trends in Online Shopping: A Nielsen Global Consumer Report*.
- Omari, A. (2013), "Technology Adoption in the Arabian Gulf Countries: The Case of E-Government." *International Journal of Computer Science*.
- Quaddus, M. & Achjari, D. (2005), "A model for electronic commerce success." *Telecommunications Policy*, Vol. 29, No.2: pp. 127-152.
- Ramcharran, H. (2013), "E-commerce growth and the changing structure of the retail sales industry." *International Journal of E-Business Research (IJEER)*, Vol. 9, No.2: pp. 46-60.
- Scott, C. H. & Scott, J. E. (2006), "Efficient allocation of online grocery orders." *International Journal of Productivity and Quality Management*, Vol. 1, No.1: pp. 88-102.
- Sherah, K. (2008), "Exploring e-commerce readiness in China: The case of the grocery industry." *HICSS Digital Library and the IEEE Computer Society*, No.
- Tanskanen, K., Yrjölä, H. & Holmström, J. (2002), "The way to profitable internet grocery retailing—six lessons learned." *International Journal of Retail & Distribution Management*, Vol. 30, No.4: pp. 169-178.
- Urbaczewski, A., Jessup, L. M. & Wheeler, B. (2002), "Electronic commerce research: A taxonomy and synthesis." *Journal of Organizational Computing and Electronic Commerce*, Vol. 12, No.4: pp. 263-305.
- Veronica, M. (2012), "Small medium enterprises: on utilizing business-to-business e-commerce to go global." *International Conference on Small and Medium Enterprises Development with a Theme (ICSMED 2012) Procedia Economics and Finance 4 (2012)*, No. 13- 22.
- World Bank (2014), *Logistics Performance Index: Connecting to Compete*, World Bank: Washington, DC
- Xing, Y., Grant, D. B., McKinnon, A. C. & Fernie, J. (2010), "Physical distribution service quality in online retailing." *International Journal of Physical Distribution & Logistics Management*, Vol. 40, No.5: pp. 415-432.