

Innovation and Competitive Advantage: Model and Implementation for Global Logistics

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Abstract

This paper examines the impact of external factors on global logistics firms. A research model is presented for implementation in order to maintain competitive advantage. The model identifies key dimensions of drivers of logistics innovation. Process of innovation and the outcomes are also discussed accordingly. This paper employs e-research and a survey of literature as research methodology. Key constructs are defined by their essential characteristics. Proposition development articulates the relationships between key constructs. Managerial implications and solutions are discussed in order to respond to the concern of manager of improving their logistics capacities and performance of firms properly.

Keywords: Innovation, Competitive advantage, Model, Global logistics

1. Introduction

During the past decades, several issues on global logistics were developed. Unnecessary cost, expenses, and penalty also occurs in the process due to lack of the accurate and relevant information in the logistics integration. The transport chain problem has an urgent need for efficient and flexible integration of information and logistics system. Emphasis needs to be placed on the provision of relevant and timely information, throughout the transport procedure, to allow participants to have improved knowledge about what is happening at each stage and control what happens to their goods or cargos. However, logistics is more than an incurred cost, as transportation and distribution can be instrumental in achieving competitive advantage (Reimann, 1989). The performance of the transport carrier may influence the effectiveness of the entire logistics function of a company. It follows the process of selecting an appropriate transport carrier is important to the firm's success (Meixell and Norbis, 2008).

Practically, an effective logistics operation can provide a competitive advantage for a firm and increase a firm's market share (Mentzer et al., 2001). Execution of logistics innovation enhances customer value and logistics

executives believe that it adds value to a firm's output. Much of this value is generated from the ability to reduce costs and provide delivery solutions according to customer needs accurately.

Therefore, the specific research questions are:

- (1) What are the external drivers and logistics innovation that affect logistics firms globally?
- (2) What is the process of implementation of logistics innovation that is essential for firms in order to maintain competitive advantage?
- (3) What is the consequence of innovation on logistics firms after implementation?

2. Research Methodology

In this century, business research has been strongly influenced by two major trends in business: increased globalization and rapid growth of the Internet and other information technologies. These trends will continue, and likely accelerate, as the 21st century progresses. Therefore, the methodology used in this research was based on e-research and a survey of the literature in the field. According to Zikmund, (2003), e-research encapsulates research activities that use a spectrum of advanced information communication technology capabilities and embraces new research methodologies emerging from increasing access to research instruments and facilities, sensor networks and data repositories, software and infrastructure services that enable secure connectivity and interoperability. E-research capabilities serve to advance and augment, rather than replace traditional research methodologies. Improved access to knowledge and information will enable researchers to perform their research more creatively, efficiently and collaboratively across long distances and disseminate their research outcomes with greater effect. To cover all researches and literature related to logistics innovation, competitive advantage in logistics, and issues in logistics. We conducted several comprehensive searches on International Journal of Operations & production Management, Journal of Product Innovation Management, European Journal of Innovation Management, Journal of Operation Management, Journal of Supply Management, Journal of Logistics Information Management, International Journal of Production Economics, International Journal of Physical Distribution & Logistics Management, Journal of Business Logistics, International Journal of Logistics Management, and Transportation Journal. These journals were specifically selected for the review as they represent significant research in logistics.

Figure 1 (Model for Logistics Innovation) presents a research model that defines the nature of problems and issues that this paper is addressing. This research model identifies drivers of logistics strategic innovation, strategic action, integration of logistics innovation, and key performance outcomes. The concept of innovation is valued in most organizations in order to respond to the external pressure from competition, trade regulation, and outsourcing. Firms need to have strategic responses in place in order to facilitate the innovation process. Firms are also experiencing the internationalization of technology competition, globalization of manufacturing and increasingly sophisticated customers need and a greater integration of technologies. These challenges have compelled organizations to develop innovative strategies and processes. It is very important for firms to seek ways of adding value through innovation in order to create a better logistics performance. This model displays the said factors that are driving logistics process globally. To implement the proper logistics innovation in organizations including process rationalization, IT utilization, and communication, it will create the effective logistics function that results in superior operational performance and superior financial performance such as delivery performance, cost reductions, customer satisfaction, operational income, net income, and sales growth. It will finally in turn lead logistics firms to superior competitive advantages.

3. Literature Review and Development of Propositions

3.1 External Pressure

3.1.1 Competitive Intensity

In today's global logistics business, sustaining a competitive position is a paramount concern. Competition within the global logistic industry is intense with many competitors. The ability of a firm to survive depends on how the firm takes advantage of the opportunities in the market place to satisfy its customers. Many companies have demonstrated their capabilities of being sensitive to their customers by trying to understand customers' needs, customers' complaint, and planning long-range marketing programs to meet those needs. According to resource-advantage theory, firms also seek to use their resources gain a competitive advantage in the market, which will ultimately lead to superior financial performance. Resource-advantage theory suggests that a comparative advantage in resources results in a competitive advantage in the marketplace (Hunt and Morgan, 1996). Resources include a firm's assets, processes, information, and knowledge that help a firm improve efficiency and effectiveness (Barney, 1991).

The ultimate goal for firms as directed by the resource-advantage theory is superior financial performance, which can only be attained by achieving a competitive advantage in the marketplace. As proposed by Hunt and Morgan (1996), innovation plays a key role in resource-advantage theory. Firms will innovate to improve their resource position. Firms occupying positions of competitive advantage can maintain such positions by engaging in proactive innovation to ensure that their resources are comparatively better than the resources of competing firms. Firms occupying positions of competitive disadvantage can attempt to surpass advantaged firms by engaging in reactive innovation (Hunt, 2002). To stay ahead in the current global marketplace, logistics firms must constantly look for innovative strategies to improve their competitiveness. Logistics market competition has forced firms to incorporate modern technology into their key offerings to discerning customers who might have or might not have service loyalty. It is important to keep up with customer demand, otherwise the firms risk losing out to competitors with logistics innovation and technology (Bitner et al., 2000). Service innovations are non-technical in nature, although technology might act as the vehicle that activates and enhances the process. Innovation in services is essentially a value-creating activity that drives business performance. It is imperative that firms plan and operate with a new logistics innovation. The factors that contributed to success of firms in the past might no longer be relevant in today's turbulent business. The changing in technology has compelled many firms to think about new method in the pursuit of innovation.

3.1.2 Regulatory Requirements

Regulation has been a major barrier for logistics and global trade for decades. The impact of trade regulation on the procedure of custom and documents is exporters and importers always face voluminous paperwork, complex formalities, and many potential delays and errors (Hill, 2005). Likewise, Czinkota (2004) mentioned a firm must deal with numerous forms and documents when exporting and importing to ensure that all goods meet local and foreign laws and regulations. The principle of the trade facilitation rationale is to reduce unnecessary customs scrutiny that impedes the movement of shipments. However, many countries still lack of information communication technology system to facilitate speedy and cost-effective custom processing of importers and exporters. In countries that innovate their custom procedure, this procedure relies on information communication technology system to gather and study the relevant data and intelligence on each shipment. Thus, the custom department is able to expedite clearance to the low-risk shipments. However, all import shipment is subject to a possible random physical inspection. By law, each importer's international trade accounts are subject to random post-clearance audits to determine whether the correct duties were paid and if any trade regulations were breached.

In North America, the impact of innovation and automation and regulatory initiatives affect the information communication technology decisions of customs brokers in terms of three general sets of processes: the preparation of shipment documentation for submission of documents to the Canada Border Services Agency, actual document submission, and processes following a shipment's clearance or release. The importance of the link between information communication technology and document preparation can be related to, for example, the steep increase in fines that importers incur for breaching customs regulations. The punitive fines for underpayment of customs duties (whether resulting from inadvertent or deliberate misclassification of imported products) increase the desirability of customs brokers that have systems to minimize errors. These systems automate processes such as product classification and shipment data entry and without them a broker may be competitively vulnerable (Haughton, 2006). According to Sheppard (1995), the country that has high level of custom innovation would allow importers to use software for self-perform classification without customs broker assistance and attain significant cost savings.

3.1.3 Outsourcing Availability

With the unprecedented increase in logistics outsourcing or third party logistics providers (3PL's) in the past few years, firms' logistics activities have been stretched around the globe. There has been a change in the nature of relationships between third-party logistics providers (3PL's) and firms who use their services (Lieb and Bentz 2005). This has been a significant challenge to the major carrier that owns the ocean vessels worldwide. How will major carriers be able to sustain their competitive edges in this highly competition? There is an increasing recognition that firms may need to build and manage closer, longer-term relationships with customers. These so called "partnerships" are tailored, mutually beneficial business relationships (Lambert, et al., 2004) in which the coordinative forces include not only financial considerations, but also relational considerations (Rese, 2006).

There are many motivational factors that influence outsourcing decisions. In today's highly competitive logistics market, many companies target to increase global market shares and to take advantage of higher production and better resources. To measure the successful of business performance in logistics, we should look at logistics function, execution, and outcome. The improvement of logistics will ensure the smooth flow of materials, products and information throughout the supply chains system. Furthermore, logistics has become more prominent and is recognized as a critical factor in competitive advantage (Bowersox and Closs, 1996; Bowersox and Daugherty, 1995;

Christopher, 1992). The logistics operations process includes the inputting, storing, transporting and distributing of physical goods.

E-logistics is a significant weapon of third party logistics providers to take business away from major logistics carriers. E-logistics refers as the transfer of goods and services using information technology communication system such as electronic data interchange (EDI) and on line communication. This process enables logistics providers to be able to respond to customers' inquiry on 24/7 basis. Major logistics carriers must be aware that customers always look for efficiency, putting emphasis on cost compression and high service level. In recent years, outsourcing is increasingly being regarded as resources that support the completion of logistics processes. It covers the flow of goods from suppliers through manufacturing and distribution chains to the end consumer with fundamental of E-logistics (Gunasekaran and Ngai, 2003).

The above solution leads to the propositions below:

P 1 Greater external pressures lead to greater strategic action

P 2 Greater external pressures also lead to greater logistics innovation

3.2 Strategic Action

3.2.1 Top Management Involvement

Top management is a major determinant of successful logistics innovation. According to Schilling and Hill (1998), top management is a senior executive with substantial expertise and formal and informal influence in a product development project in that organization. It plays a very important and critical role in direct supervision, planning and implementation of certain policy and serves as important support for the entire organization. Top management is responsible for the creation of climate that ascertains the success of the program (Brah and Lim, 2006). Thus, strong leadership quality is a critical component in the implement of logistics innovation. Practically, top management focus on devising processes to create powerful product concepts, and making sure that the concepts are translated into design and processing.

The influence of top management in organization includes product innovation (Koufteros and Marcoulides, 2006); internal coordination, product planning, and concept development (Zhang and Doll, 2001) and reduced ambiguity and uncertainty (Koufteros et al., 2005). According to Clark and Fujimoto (1991), top management possesses both position and seniority along with specific skills and experience developed while working in cross-functional teams. They also have extensive cross-functional communication skills and influence in the team. Top management become the guardian of the concept and not only reacts and responds to the interests of others, but also see that the choices made are consistent and in harmony with the basic concept (Clark and wheelwright, 1992).

3.2.2 Clarity of Business Goals

Clear goals and objectives are essential to the success of any business. Top organizations expect to get their people closely aligned to their business goals. These organizations are more successful by getting everyone moving in the clear direction. Clarity of project goals refer to the extent of communication, understanding, and acceptance of a set of project mission and goals that guide development efforts (McDonough III, 2000; Bonner et al., 2002).

According to Marquardt and Reynolds (1996), clear project goals require unambiguous definition, rich communication, and common understanding of business targets among team members. In order to avoid any conflicts and to enhance work integration within the cross-functional team, clarity of project goals need to be established in the early stage of the innovative process. Having clear project goals from the early stage may be critical in improving cycle time, team work, and overall process productivity because it enables members to focus faster and more effectively (Murmah, 1994). According to Eisenhardt and Tabrizi (1995), clarity of project goals for a cross-functional team can ensure that no functional goals and objectives take precedence over the project's need. Lack of clarity of project goals can lead to several problems for the cross functional team, including lack of engagement, difficult in resolving conflict, lack of commitment, and difficulty in reaching closure in a timely fashion (Harrison, 1996).

3.2.3 Resources Allocations

In logistics business, resource allocation is a plan for using available resources to achieve goals for the future. It is the process of allocating resources among the various project or business units. The main objective is to smooth resources requirements by shifting slack jobs beyond periods of peak requirements (Wanstrom et al., 2006). Resource allocation can also refer to distribute limited resources among activities so as to achieve certain objectives (We et al., 2005). According to Bettis (1981), the relation among the lines of business of diversified firms result in higher performance.

Christopher (1998) suggests that all logistics strategies and systems should be developed into three steps as identification of customer service needs, definition of customer service objectives and design of the logistics strategy. This structure can be adapted for the development of a procedure for differentiating between items in order to allocate materials planning resources in change occasions. From a resource-based view, business executives should manage diversified resources so as to achieve a sustainable competitive advantage (Barney, 1991) which should lead to short- and long-term financial gain and productive operations. Resource allocations across business units can be a source of strategic information. A key proposition of this view is that resources that are valuable, rare, and costly to imitate or substitute can be sources of sustainable competitive advantage (Barney, 1991). Among various types of firm resources, innovative knowledge assets, because of their novelty and firm specificity, are often regarded as possessing such strategic characteristics, thus offering the possibility of significant performance advantages (Coff, 1999).

The following proposition was developed from the preceding research:

P 3 Greater strategic action leads to greater logistics innovation

3.3 Logistics Innovation

As the world moves from the industrial economy to the global competitive economy in form of information technology system capability, it is very important for firms to maintain their competitive advantage. In response to this challenge, firms are seeking the proper logistics innovation that will enable them to meet an increasing variety of customer expectations while keeping costs, delays, problems, disruptions, and performance losses at or near zero because it helps firms achieve competitive advantage by enabling rapid and cost-effective responses to specific customer requests. This research bases upon concept of logistics innovation of firms in order to be able to maintain competitive advantage.

3.3.1 What is Logistics Innovation?

Logistics is a channel of the supply chain which adds the value of time and place utility. It is defined as the management of the flow of goods, information, service and other resources between the point of origin and the point of consumption in order to meet the requirements of consumers. According to Lin (2006), logistics involves the integration of information, transportation, inventory, warehouse, material handling, security, and packaging. He also pointed out that it is the supply of service or product to the demander or demanding unit at the right time, with the right quantity, in the right quality, with the right cost and at right place. Innovation can occur within services, processes, or any business system. It does not only emerge from the realms of logistics, supply chain management, computer science, or manufacturing.

According to Roger (1995), innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Logistics innovation refers to any logistics-related service that is seen as new, better, and helpful to a particular focal audience. Logistics innovations can be very basic to very complex and can be applied to internal operations or services with business partners (Flint et al., 2005). According to Eisenhardt and Martin (2000), innovation includes new product and service development. It is characterized as a dynamic capability. The dynamic capabilities framework examines the sources of wealth creation and capture by firms in an environment characterized by rapid technological change (Teece et al., 1997). Practically, an innovation does not need to be totally new to the business society. To customers, new, better or improvement service is innovative. In order to stay ahead in the global competition; firms must consistently look for innovative strategies to improve their competitiveness in logistics. According to Benner and Tushman (2002), exploratory innovations are radical innovations that are designed to meet needs of new markets and require new knowledge or a departure from existing knowledge within a firm. On the other hand, exploitative innovations are innovations that are incremental and designed to meet the needs of existing customers or markets.

3.3.2 Process Rationalization

Better business processes lead to an implementation of best process practices and helps in delivering ability, innovation and specialization. Process rationalization refers to a multidimensional knowledge structure composed of a learning project mission, strategic direction, and trans-functional beliefs that, in turn, guide and direct all organizational strategies and actions, including those embedded in the formal and informal systems, behaviors, competencies, and processes of the firm to promote innovative thinking and facilitate successful development, and execution of innovations (Siquaw et al., 2006).

According to Flint et al., (2005), process rationalization appears to be essential to long-term organizational success. They viewed this process as a repetitively used network of orderly linked activities using information and resources for transforming "object in" into "object out," extending from the point of identification to that of the satisfaction of the customer's needs and organizational mission. Davenport (1992) presents a similar input/output view of processes.

A process rationalization can be viewed as the acceptance of the process definition and organization-wide efforts towards its adoption. Within our context, it means having logistics innovation relevant processes. According to Ouchi (1979), it is important to extend the acceptance of the new project mission by the cross functional team. Once the new project innovation has been aligned with the business strategy, the project mission is then usually articulated in the early stage of the project to provide team members with an identity and overall direction of the project innovation. Likewise, Milson et al. (1996), agree that the mission of new project innovation or development should be provided with clear direction to employees in organization. Crawford (2000), also point out that the project mission provides the team with understanding and appreciation of its fundamental reason for existing. This can help project innovation accepted and commitment among the cross functional team members.

3.3.3 Information Technology Utilization

Information technology (IT) has long been recognized for its potential role in contributing to sustained competitive advantage for logistics firms (Barney, 1991; Feeny & Ives, 1990; Swierczek & Shrestha, 2003; Vargas, Hernandez, & Bruque, 2003). Information technology is sweeping through logistics innovation. To be able to compete, logistics firms must keep pace with the information change. There is no doubt that the proper implementation of information communication technology system (ICTS) can be a significant source of competitive advantage to firms. It is beneficial to the logistics industry since its dependence on information for efficient operations. Logistics information communication technology system include but not limit to hardware, software, and network design required to facilitate processing and exchange. ICTS also includes related components in the supply chain, such as satellite transmissions, Web-based ordering, electronic data interchange, bar-coding, systems for order entry, order processing, vehicle routing and scheduling, inventory replenishments, automated storage, and retrieval systems (Closs and Xu, 2000). According to Langley, logistic firms that adopt and creatively deploy proper technology, through the collective use of mind and knowledge, are able to implement innovative methods and gain superior competitive advantage (Langley et al. 1988). He argued the application of ICT as an effective means to enhance the strategic significance and operational effectiveness of firms. Information technology is advancing faster than technologies for physical processing. Kerr (1989) has addressed how logistics ICT can contribute to the overall strategy of the firm, and that this might involve various activities outside the traditional logistical task. Stock (1990) has shown how logistics firms can effectively use technology and gain competitive advantage through automated systems, stock picking and bar-coding. Additionally, Closs et al. (1997) have offered an empirical of evidences that firms innovating through the development of IT capabilities can positively influence overall logistics competency. According to LaLonde and Auker (1973), they argued that the use of technology can enable logistics firms to transform themselves from being an enabler of operational and material-handling functions to being an enabler of decision-making and activity-planning functions within the supply chain. This progressive transformation of firms from transportation services to logistical solutions requires innovation beyond traditional business capabilities. Innovation thus transcends the mere use of technology. Rather, technology makes creative use of the knowledge and relationship networks.

We have seen the steam engine, containerization, electronic data interchange (EDI), cross-docking, radio frequency identification (RFID), and many other innovations in the field of logistics. However, the use of radio frequency identification (RFID) continues to see increased attention in logistics operations since it allows customers and shippers to virtually retrieve data about products throughout the shipping process. RFID tags carry tracking devices that uniquely identify each individual item, allowing a client and/or the 3 Party logistics providers to identify the exact location of any product and the time of delivery for every shipment. The use of wireless networks in the warehouse is a technological upgrade that can have excellent results when implemented correctly. In the warehouse, the productivity improvements from wireless networks come from substituting technology for potentially error-prone human activities, such as order processing, inventory control or picking. The data sent from hand-held wireless scanners or RFID tags that update stock information in real time, thus eliminating the need for costly and timely manual inventory counting. As technologies advance, the 3 Party logistics providers have remained abreast of the ever-improving ways to manage supply chain operations through high-tech systems (Cain, 2010).

3.3.4 Communication

In the past decade, logistics firms have been faced with increasingly competitive pressure and increasingly discerning customers. These firms have been forced to restructure both internal and external relationships to respond flexibly, innovatively, and rapidly to shifting and splintering market demand. The rapidly change and uncertain environment forces firms to face the major challenge, that is, how to break the touch situation and capture their competitive advantage. The works of Parsons (1983) and Porter and Millar (1985) pointed out the importance of information communication technology (ICT) in the determination of firms' competitive advantages. According to Bowersox and Closs (1996), there is an evidence of the impact of information communication technology on firms' performance since it contributes to decrease costs and improve the service level. This recognition has created a major increase in

importance of the value chain. The value chain concept was initially described by Porter (1985) and is inherently linked to the idea of relationship networks or network communication. Network communication refers to characterizes those information technologies and/or practices that facilitate logistics-related communication and information exchange between supply chain partners along with systems that enable firms to obtain information directly from customers to facilitate operations including 24/7 customers' inquiry. This logistics information communication technology system includes hardware, software, and network design required to facilitate processing and exchange data. This system enables one firm to share information with another firm and customer. The integration of information across supply chains is a requirement for future success (Copacino, 1998; Fox, 1996). Consequently, the logistics service will flow faster and cheaper which is the key to becoming more competitive and many believe the most effective way to achieve both responsiveness and cost reduction is to use technology to share information with both suppliers and customers (Stein, 1998; Murphy and Daley, 1996). This network communication is a valuable tool; one vital to firm success and the effective utilization of logistic technology information can give a firm a competitive advantage (Pant and Hsu, 1999; Service and Maddux, 1999).

3.4 Operational Performance

To become an industry leader logistics, firms must have highly effective and often innovative internal operational systems. Logistics innovation is a key of firms leverage point for increasing operational performance. The indicators for successful operational performance are delivery performance, cost reduction, and customer satisfaction.

3.4.1 Delivery Performance

The important of calculation speeds and data storage capacity have increased significantly in logistics industry. A major consequence of this is technology, by accelerating the data preparation and transmission times, has increased the reaction speed to market needs. Delivery speed refers to ability to reduce the time between order taking and customer delivery to as close to zero as possible. Logistics firms must be able to respond to the needs and wants of customers as demanded. Delivery reliability is another important function for the firms to perform to exactly meet quoted or anticipated delivery dates and quantities. Logistics innovation will enable firms to be able to distribute accordingly. The research of Lai et al., (2008), confirmed there was a great positive impact on logistics firms that use information technology for innovation. Likewise, research of Morash et al., (1996) tested and proved that logistic firms with oriented capabilities or innovation will be able to effectively provide widespread and intensive distribution coverage and target selective exclusive distribution outlets, and minimize total cost of operation.

3.4.2 Cost Reduction

In logistics market, firms compete over time by expending resources with the purpose of reducing their costs. In many instance, they take the form of innovative products that deliver what customer need more cheaply (Lambert, 1993). Therefore, product or service innovation can have the same ultimate effect as direct cost reduction. The strategic of logistics had developed from the cost minimization of one company to the value added maximization of the production net-works and further to a more adaptable and flexible direction. This flexibility can be focused to achieve a variety of operating attributes such as the ability to respond to special service requests, or it can be focused by the range of innovative services offered to target customers (Bowersox and Daugherty, 1995). According to Clark (1989), cost reduction measures the success level of the development team to reduce product cost. A low product cost signifies efficiency in the innovative process of the product, in handling uncertainty, and in efficient problem solving by the cross functional team members.

3.4.3 Customer Satisfaction

Quality is something indicates the effective service of firms to retain their customers. The quality of service draws and maintains customers. It focuses on delivery dependability, responsiveness, order flexibility and delivery flexibility. Productivity reflects how effectively material and labor resources are used to provide service. According to Tersine and Hummingbird (1995), they addressed time-based competition as the ability to reduce lead times relative to introducing new products to market, manufacturing an existing product, and delivering the product to the customer. Reduction of cycle times assumes close collaboration with suppliers that can ease the cost of the innovation process.

The above evidence leads to the following proposition:

P 4 Greater logistics innovation leads to greater operational performance

3.5 Financial Performance

3.5.1 Operational Income

According to the research of Jean et al., (2010), better logistics capabilities lead to higher operational income. Likewise, Morash et al., (1996), confirms that successful logistics firms recognize that consistently providing superior

value to customers is critical to long-term success and operational income. Practically, the shareholders view of the business is part of the performance measurement driver and is an external driver of innovation. Shareholders always look for high returns of their investments in the firms. That is why financial performance has led firms to minimize their costs and maximize their profits. Operational income are an internal performance measurement driver as the organizations focus on reducing costs and finding ways such as using technology to reduce costs in innovative ways (Gunasekaran and Ngai, 2003). Superior logistics capability for competitive advantage is a major concern for many firms. Logistics capability can make major contributions toward the achievement of better performance and sustained competitive advantage that lead to operational income. According to Choi et al., (2008), the ability to minimize the total cost of distribution has correlation with the increasing of operational income of logistics firms. To stay ahead in the business, firms must have successful financial performances and find innovative ways to become the best in the industry. According to Hauknes, (1999), service firms innovate because they want to improve their operational income. He point out that firms reduce cost in line with better quality products and services as empirically proven in the changes in nature and structure of competition in the service sector.

3.5.2 Net Income

In business, netincome would be the number arrived at after certain things occur, like paying variable cost, paying employees, and purchasing any needed supplies. The netincome may also be considered the company's profit, or what the company gets to keep after all accounts are settled. Richey et al. (2005) examined financial and managerial resources as antecedents to reverse logistics innovation. These resources, combined with the technological resources, were argued to be crucial resources in the development of logistics innovation. Their findings indicated that there was a significant relationship between the deployment of managerial resources and the development of logistics capabilities. In further research of the relationship between financial resources and logistics innovation, many scholars agreed that there was positive relationship between financial performance and innovation (Acs and Audretsch, 1987; Chankdy et al., 2003; Cohen and Levin, 1989). Many researchers have suggested that IT as a tool of logistics innovations has the largest effect on a firm's ability to deliver customer value that lead to better operational income (Johnson et al., 2003; Lee & Bose, 2002). Firms that use aligned IT capabilities to improve their strategic flexibility should be better able to respond to and anticipate environmental changes, thereby improving the firm's ability to offer competitive products and services that customers want; when and where they want them. Two commonly used indicators of financial performance include sales revenue, associated with top line performance, and net income (net income = sales revenue minus expenses) associated with bottom line performance. Improved near term customer value (i.e., market offerings that better satisfy customer needs through the provision of desired benefits relative to costs) will translate into longer-term firm financial performance (Collins & Porras, 1994). Hatch and Zweig (2001) argue that strategic flexibility is the key to growth for entrepreneurial firms. Using strategic flexibility to better meet customer needs, thereby offering improved customer value, may allow the firm to develop a competitive advantage that ultimately results in improved net income.

3.5.3 Sales Growth

Sales growth is the increase in sales over a specific period, used in measuring the performance of a new firm or new product. A firm's logistics capability has been perceived as one way to exceed customers' expectations and enhance financial performance and sales growth (Hayes and Pisano 1994). Furthermore, financial performance can be classified as part of firm's performance (Venkatraman and Ramanujam, 1986). The financial performance approach examines indicators such as sales growth, profit margin, return on investment, return on sales, return on equity, and earnings per share. According to the study of Lu and Yang, (2006), they found that successful logistics firms in Taiwan recognize that consistently providing better logistics value to customers is critical to long-term sales growth operational income. Soosay et al. (2004) studied the relationship of innovation and financial driver in logistics firms and revealed that to become an industry leader firms must have highly effective and often innovative internal operational systems. Three firms interviewed rated financial driver and sales growth as one of the most important factors. The managers interviewed stated that they either wanted to lower operating costs or gain higher sales growth in the long run, as a result of innovating. In the research of Mentzer et al., (2004), he points out that supply management interface capabilities are operational capabilities that include total cost minimization and efficient logistics processes. Total cost minimization is at the core of supply-management interface capabilities, and is the ability to minimize total system costs so that cross-functional cost tradeoffs are explicitly considered supply-management interface capabilities are also a firm's ability to find proactive, timely, and creative logistics solutions to situation emergency or customer-specific problems, as well as the ability to simplify and standardize key logistics activities in various supply chain flows. This process led to the better sales growth for logistics firms. Likewise, Lambert (1993) referred logistics as a function that was minimizing total distribution costs and logistics cost or maximizing profits, while achieving desired levels of service performance and sales growth.

It is clear that many researchers agreed on cost, operational income, net income, and sales growth as crucial factors in any logistics firms. Firms innovate to improve cost efficiency. To manage and maintain a reasonable margin with the operations of the firm, firms must have proper innovative systems. This will provide a sound and productive outcome of practice. This also will enable the firms to be able to reap the financial benefits in the process, reducing costs and red tapes. This innovative process will in turn provide a good return on investment for the shareholders.

The following propositions were developed from the preceding research:

P 5 Greater logistics innovation leads to greater financial performance

P6 Greater operational performance also leads to greater financial performance

4. Limitation of the Study and Future Research

Quantitative methods and qualitative methods are recommended for future research. In this connection, product development as dependent variable should be measured accordingly. Therefore, future research should be involved in collecting large scale data for empirical validation. It should be noted that this research has tackled and investigated the issues on third party logistics and trade regulations involved major carriers and customers for the first time in the global logistics field. This should be a challenge for replication in the future.

5. Implication and Conclusion

This paper responds to the concern of manager of improving their logistics process and performance of firms. The propositions revealed that proper implementations of logistics innovation benefited firms in term of delivery performance, cost reduction, customer satisfaction, operational income, net income, and sales growth. The results of this study should be a contribution for logistics firms in seeking innovation for competitive advantage. Additionally, the usage of information technology will create a powerful network communication between logistics firms and customers. Customers will be able to check status of import/export cargo via internet and system provided. Information on charges, consignments, related regulations etc. will be available on line for customers for verification purpose. These procedures will lead to a sustained competitive advantage for firms in the logistics industry accordingly. Lastly managers need to listen to customers' inquiries and suggestions in order to be able to create customer value. It is imperative for logistics firms to maintain customer value and service quality in this process.

References

- Acs, Z.J. & Audretsch, D.B. (1987). Innovation, Market Structure and Firm Size. *Review of Economics and Statistics*. 69(4), 567-574.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*. 17 (1), 99-120.
- Bitner, M.J., Brown, S.W. & Meuter, M.L. (2000). Technology Infusion in Service Encounters. *Journal of the Academy of Marketing Science*. 28 (1), 138-49.
- Bowersox, D.J. & Closs, D.J. (1996). Logistics management-the integrated supply chain process. New York: McGraw-Hill, (Chapter 1).
- Bowersox, D.J. & Daugherty, P.J. (1995). Logistics Paradigms: the Impact of Information Technology. *Journal of Business Logistics*. 16(1), 65-80.
- Cain, Ron. (2010). High Technology in Logistics. *Material Handling Management*. 65(4), 31-33.
- Chankdy, R.K., Prabhu, J.C. & Antia, K.D. (2003). What Will the Future Bring? Dominance, Technology Expectations, and Radical Innovation. *Journal of Marketing*. 67 (3), 1-18.
- Cohen, W.M. & Levin, R.C. (1989). *Handbook of industrial organization*. Amsterdam: Elsevier, 1059-1107.
- Copacino, W.C. (1998). The IT-Enabled Supply Chain: Key to Future Success. *Logistics Management Distribution Report*. 37 (4), 36-37.
- Christopher, M. (1998), Logistics and supply chain management: strategies for reducing costs and improving services. London: Financial Times/Pitman Publishing, (Chapter 2).
- Closs, D.J., Goldsby, T.J. & Clinton, S.R. (1997). Information Technology Influences on World-Class Logistics Capability. *International Journal of Physical Distribution & Logistics Management*. 27 (1), 4-17.
- Closs, D.J. & Xu, K. (2000). Logistics Information Technology Practice in Benchmarking Study versus World-Class Logistics Firms. *International Journal of Physical Distribution & Logistics Management*. 30 (10), 869-886.
- Czinkota, M. (2004). *International business*. New York: Dryden Press, (Chapter 16).

- Flint, Daniel J., Larsson, E. & Mentzer, J.T. (2005). Logistics Innovation: A Customer Value-Oriented Social Process. *Journal of Business Logistics*. 26 (1), 113-147.
- Fox, M.L. (1996). Integration for the Future. *Manufacturing Systems*. 14 (10), 98-104.
- Gunasekaran, A. & Ngai, E. (2003). The Successful Management of a Small Logistics Company. *International Journal of Physical Distribution & Logistics Management*. 33 (9), 825-842.
- Hill, C. (2005). *International business*. New York: McGraw-Hill, (Chapter 15).
- Haughton, M. (2001). Information Technology Projects by International Logistics Services Providers: The Case of Canada's Small Customs Brokers. *Canadian Journal of Administrative Sciences*. 23 (1), 17-33.
- Kerr, A. (1989). Information Technology-Creating Strategic Opportunities for Logistics. *International Journal of Physical Distribution & Logistics Management*, 19 (5).
- Lai, K.H., Ngai, E.W.T. & Cheng, T.C.E. (2008). A Coordination-Theoretic Investigation of the Impact of Electronic Integration of Logistics Performance. *Science Direct*. 45(2), 10-20.
- LaLonde, B.J. & Auker, K. (1973). A Survey of Computer Applications and Practices in Transportation and Distribution. *International Journal of Physical Distribution*. 3(5), 292-301.
- Lambert, D. M. (1993). Developing a Customer Focused Logistic Strategy. *International Journal Physical Distribution & Logistics Management*. 22 (6), 12-19.
- Lambert, Douglas M., Knemeyer, A. & Gardner, J. (2004). Supply Chain Partnerships: Model Validation and Implementation. *Journal of Business Logistics*. 25 (2), 21-42.
- Langley, C.J., Carlisle, D.P. & Cail, R.E. (1988). Microcomputers as a Logistics Information Strategy. *International Journal of Physical Distribution & Logistics Management*. 18 (6), 11-17.
- Lin C. Y. (2006). Influencing Factors on the Innovation in Logistics Technologies for Logistics Service Providers in Taiwan. *Journal of American Academy of Business*. 9 (2), 257-264.
- Lu, C. & Yang, C. (2006). Evaluating Key Logistics Capabilities for International Distribution Center Operations in Taiwan. *Transportation Journal*. 1(12), 10-27.
- Meixell, M. J., & Norbis, M. (2008). A Review of the Transportation Mode Choice and Carrier Selection Literature. *The International Journal of Logistics Management*. 19 (2), 183-211.
- Mentzer, J.T., DeWitt, W. & Min, S. (2001). Defining Supply Chain Management. *Journal of Business Logistics*. 22 (2), 1-25.
- Mentzer, John T., Min, S. & Bobbitt, L.M. (2004). Toward a Unified Theory of Logistics. *International Journal of Physical Distribution and Logistics Management*. 34(8), 606-627.
- Morash, E.A., Droge, C.L.M. & Vickery, S.K. (1996). Boundary-Spanning Interfaces Between Logistics, Production, Marketing and New Product Development. *International Journal of Physical Distribution & Logistics Management*. 26 (8), 43-62.
- Murphy, P.R., & Daley, J.M. (1996). International Freight Forwarder Perspectives on Electronic Data Interchange and Information Management Issues. *Journal of Business Logistics*. 17 (1), 63-84.
- Pant, S. & Hsu, C. (1999). An Integrated Framework for Strategic Information Systems Planning and Development. *Information Resources Management Journal*. 12 (1), 15-25.
- Parsons, G. (1983). Information Technology: A New Competitive Weapon. *Sloan Management Review*. 25 (1), 3-14.
- Porter, M. & Millar, V. (1985). How Information Gives You Competitive Advantage. *Harvard Business Review*. 63 (4), 149-160.
- Rese, M. (2006). Successful and Sustainable Business Partnerships: How to Select the Right Partners. *Industrial Marketing Management*. 35(1), 72-82.
- Reimann, B. (1989). Sustaining the Competitive Advantage. *Planning Review*. 17 (1), 30-9.
- Service, R.W. & Maddux, H.S. (1999). Building Competitive Advantage through Information Systems: the Organizational Information Quotient. *Journal of Information Science*. 25 (1), 15-65.
- Soosay, C.A. & Hyland P.W. (2004). Driving Innovation in Logistics: Case Studies in Distribution Centers. *Creativity & Innovation Management*. 13 (1), 41-51.
- Stock, James., Speh, T. & Shear, H. (2002). Many Happy (Product) Returns. *Harvard Business Review*. 80 (7), 16-17.

- Sheppard, M. D. (1995). Virtual Customs, *CA Magazine*, 128 (10), 29-31.
- Stein, T. (1998). Information Sharing Boosts It's Value. *Informationweek*. 14 (7), 193-200.
- Swierczek, F. W. & Shrestha, P. K. (2003). Information Technology and Productivity: A Comparison of Japanese and Asia-Pacific Banks. *Journal of High Technology Management Research*. 14(2), 269–288.
- Teece, D. J. (1996). Firm organization, Industrial Structure, and Technological Innovation. *Journal of Economic Behavior and Organization*. 31(2), 193-224.
- Tersine, R.J. & Hummingbird, E.A. (1995). Lead-Time Reduction: the Search for Competitive Advantage. *International Journal of Operations & Production Management*. 15 (2), 8-18.
- Vargas, A., Hernandez, M. J. & Bruque, S. (2003). Determinants of Information Technology Competitive Value: Evidence from a Western European Industry. *Journal of High Technology Management Research*. 14(2), 245–268.
- Zikmund, W. (2003). *Business research methods*. Mason, Ohio: Thomson-Southwestern Press (Chapter 5).

Table 1. Research on Logistics Innovation

Author (year)	Title	Research Questions	Research Methods	Findings
Chapman and Soosay, 2003.	Innovation in Logistic Services and the New Business Model	Do firms look for innovative strategies to improve their competitiveness?	Literature Review	Service innovation results when a firm is able to focus its entire energies to produce an outcome that surpasses customers' expectation of superior value
Soosayand Hyland, 2004.	Driving Innovation in Logistics: Case Studies in DistributionCenter	Which drivers are present in distribution centers that would enable incremental innovation and build capabilities to engender and innovative culture?	Case-Study	It is found that all the distribution centers embarked on innovative strategies. Each firm had its own drivers or needs to improve.
Flint et al. (2005)	Logistics Innovation: A Customer Value-Oriented Social process	How do managers within organizations that provide logistics services, either as their core product or in support of products, approach the issues associated with creating logistics innovations?	Qualitative (Interviews)	The innovations generated significant revenue and increased the profit for firms
Lin, C. Y. (2006)	Influencing Factors on the Innovation in Logistics Technologies for Logistics Service providers in Taiwan	The more the explicitness of technology, the more likely that the logistics service provider will adopt innovation in logistics technology.	Mail Survey	Higher explicitness of technology can help the transfer of technological knowledge within the organization and can raise the adoption of technological innovation
Flint et al. (2008)	Exploring Processes for Customer Value Insights, Supply Chain Learning and Innovation: An International Study	The greater the extent of innovation management, the better will be perceived innovation performance	Mail Survey	Firms need to expand understanding of innovation in order to development new product and change logistics process
Scott J. Grawe, 2009	Logistics Innovation: A Literature-Based Conceptual Framework	Is there any relationship between knowledge resources and logistics innovation?	Literature Review	Knowledge resources are positively related to logistics innovation

Table 1 is the summary of the research in logistics innovation.

Table 2. Key Variables, Definition, and Literature Base

Variables	Definition	Literature Base
External Pressures	The extent of perceived impact of the environmental drivers in terms of competitive intensity, regulatory requirements and logistical outsourcing availability	Hunt (2002), Mentzer et al., (1999), Stalk et al., (1992), Lynch et al., (2000), Brewer and Hensher (2001), Mentzer et al., (2004), Hill (2005), Czinkota (2004), Haughton, (2006), Lieb and Bentz (2005), Lambert, et al., (2004) Rese (2006).
Strategic Action	The firm’s long-term and organization-wide responses in terms of top management involvement, clarity of business goals and effective resource allocations	Schilling and Hill (1998), Brah and Lim (2006), Koufteros and Marcoulides (2006), Zhang and Doll (2001), Mello and Stank (2005). McDonough (2000), Bonner et al., (2002), Englund and Graham (1999), Bonner et al., (2002), Wanstrom et al., (2006), Christopher (1998), Gopalakrishnan (2000).
Logistics Innovation	The extent of logistical response practices in terms of process rationalization, IT utilization, and communication	Swierczek and Shrestha, (2003), Vargas and Bruque, (2003), Closs and Xu, (2000), Stock (1990), Cain (2010), Bowersox and Closs (1996), Porter (1985), Copacino, (1998), Fox (1996), Pant and Hsu, (1999), Lai et al., (2005), Shin et al., (2000), Chapman (2003), Lin (2006), Dawe, 1994), Bowersox and Daugherty (1995), Murphy and Daley (1996).
Operational Performance	The extent of logistical process outcomes in terms of cost reductions, delivery performance and customer satisfactions	Tersine and Hummingbird (1995), Dornier et al. (1998), Jayaram et al., (2000), Sauvage (1997), Daugherty et al., (1998), Innis and La Londe (1994), Mentzer et al., (2001), Stank et al., (1999). Daugherty and Ellinger (1998), Lai et al., (2008), Christopher (1998), Kumar (2001).
Financial Performance	The extent of financial performance indicators in terms of operational income, net income and sales growth.	Jean et al., (2010), Morash et al., (1996), Gunasekaran and Ngai, (2003), Choi et al., (2008), Hauknes, (1999), Richey et al. (2005), Chankdy et al., (2003), Johnson et al., (2003), Lee & Bose, (2002), Hatch and Zweig (2001), Lu and Yang, (2006), Soosay et al. (2004), Mentzer et al., (2004).

Table 2 is the key variables, definition, and literature base in this research.

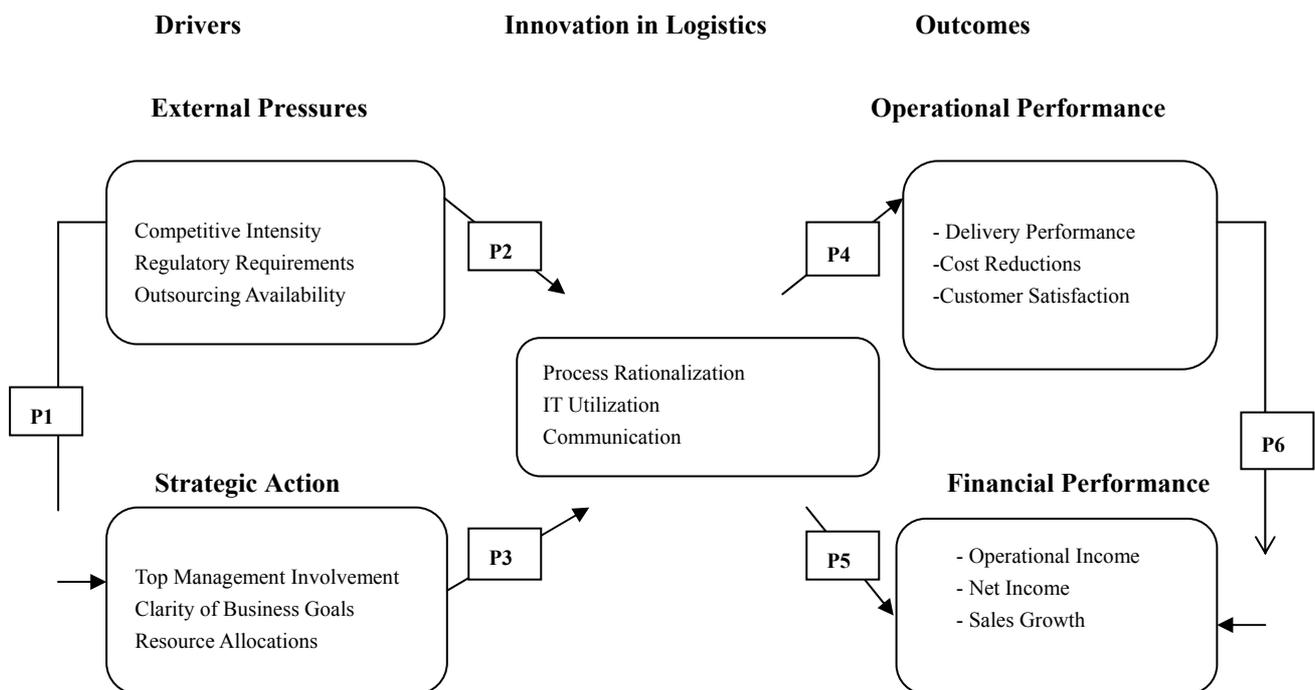


Figure 1. Research Model for Logistics Innovation