

LOGISTICAL SUCCESS FACTORS OF PHILIPPINE PHARMACEUTICAL INDUSTRY: A STRATEGIC BUSINESS PROCESS INNOVATION

DAISY H. ESTRADA

Management and Marketing Department, Adamson University, Philippines
Email: daycestrada@yahoo.com/daycestrada@adamson.ph

Abstract: This research focuses on the functional areas making up logistics namely: (1) inventory, (2) order processing, (3) transportation, and (4) warehousing. Assessment on the effectiveness of the above mentioned logistical areas is the basis in the crafting of the Strategic Business Process Innovation (SBPI) for Philippine Pharmaceutical Industry.

SBPI is intended to serve as a key to achieving logistical leadership to master the art of matching operating competency and commitment to customer expectations and requirements, in an exacting cost frame. Such is made possible in the study by identifying logistical success factors in terms of four functional areas. Success factors of the different Philippine pharmaceutical manufacturing companies are identified and fused into one through *A Strategic Business Process Innovation*.

The functional areas' success factors are evaluated in the light of the different sub variables using business performance indicators (BPIs). The study compares and contrasts the status of the four logistical functional areas of Philippine pharmaceutical manufacturing companies and identifies key success factors of each company's logistical capability. Moreover, the researcher assessed the functional areas by having it benchmarked to Supply Chain Operations Reference (SCOR) Standard or model so as to identify if Philippine pharmaceutical industry is at par with the global logistics standard.

Keywords: Supply Chain Management, Logistical Functional Areas, Key Success Factors

I. INTRODUCTION

The Philippines is one of the biggest pharmaceutical markets in the Asian region, next to Indonesia and Thailand. The value of the Philippine pharmaceutical industry has been on the rise in the past years. Manufacturers of these products are also among the top grosser in terms of value of output making the pharmaceutical sector a vibrant industry. Making essential drugs and medicines more affordable especially to the poor and underserved is one of the Millennium Development Goals (MDGs). Population is steadily increasing. Many pharmaceutical product patents are to expire in the next years, thus, generic versions will soon dominate the market. Those are just but some of the reasons why demand for pharmaceutical products will shoot up in the coming years.

In the final report of Medicines Transparency Alliance (MeTA), it emphasized that access to essential medicines is one of the elements of human development index. Access to medicine as a human right is one of the main objectives of healthcare systems. Pharmaceutical supply chain should provide medicines in the right quantity, with the acceptable quality, to the right place and customers, at the right time and with optimum cost to be consistent with health system's objectives.

However, people are denied of their right to access to essential medicines by confluence of factors affecting the availability and affordability of medicines in the market. Nearly two billion people cannot get the medicines they need. This translates to one in three of the world population living in the developing world

without access to basic medicines either because the cost is too exorbitant or the medicines are not readily available in the local health centers or pharmacies.

The need to match demand and supply capability is an issue that needs to be addressed to better serve the growing Philippine market. It is therefore essential to examine the logistics practice of the pharmaceutical industry in the country to better understand the supply chain of drugs and medicines for an effective distribution scheme. Moving pharmaceutical products efficiently and cost-effectively in a geographically challenging market requires an in-depth value judgment on the pharmaceutical companies.

In a general scenario, addressing the need to have pharmaceutical products propagated nationwide is crucial in both the economy and the consumers. As pharma products are considered to be within the range of physiological needs at this point in time, its availability is crucial in maintaining both a robust society and economy.

Value analysis in the light of acceptable logistics standards in terms of the four logistical functional areas in the pharmaceutical industry will prove to be essential to establish a responsive framework that will cater to the need of lowly consumers in the far corners of the archipelago.

It is through this study that a core set of existing information on logistical functional areas about the country's pharmaceutical sector is examined and key information gaps highlighted. The research proponent is the first to make use of Supply Chain Operations Reference Model in assessing the four logistical functional areas in the Philippines. It is intended to

assist Philippine pharmaceutical stakeholder groups in their efforts to create value-added logistical framework. Through this large body of relevant information about logistics, systematic analysis on key information gaps are identified and proposition derived. The key to achieving logistical leadership is to master the art of matching operating competency and commitment to customer expectations and requirements' .

In the final analysis, the research proponent crafts a proposition integrating said functional areas to create capabilities needed to achieve a strategic business process innovation - a framework identifying key success factors of the logistical functional areas which is intended to improve business logistics of the Philippine pharmaceutical industry.

Statement of the Problem

The researcher intends to address the following problems:

1. What is the status of the Philippine pharmaceutical industry's logistical functional areas in terms of:
 - 1.1 Inventory,
 - 1.2 Order processing,
 - 1.3 Transportation, and
 - 1.4 Warehousing?
2. What is the performance of the Philippine pharmaceutical industry's logistical functional areas (LFAs) when compared to supply chain operations reference (SCOR) standard in terms of the following Business Performance Indicators (BPI):
 - 2.1 Functional effectiveness,
 - 2.1.1 Cost
 - 2.1.2 Process
 - 2.1.3 Product
 - 2.2 Distribution Quality
 - 2.2.1 Accuracy,
 - 2.2.2 Availability, and
 - 2.2.3 Timeliness?
3. What are the challenges that affect the conduct of the logistical functional areas of the Philippine pharmaceutical industry?
4. What strategic business process innovation can be developed for pharmaceutical industry in the Philippines to attain sustainable market growth?

Significance of the Study

The study can be a learning paradigm that could be valuable and beneficial to the: companies in the pharmaceutical industry that has been witnessing drastic changes such as increasing competition; the decisive factors for growth and sustainability are

faster new drug development and cost containment. Pharmaceutical companies focus to operational inputs that could bail them out from business uncertainties.

The results of this study could provide another tool to pharma companies in the Philippines in improving their distribution practice by means of adopting toll distribution to replace their current distribution scheme. This study could possibly enable pharmaceutical firms to expedite a new and effective logistical business process model, which in turn could be a key growth driver, enabling pharma companies in realizing a higher revenue potential, and increase its capacity for a wide range of value added services.

The learning institutions, particularly those engaged in organizational change or reengineering management could make use of the information to be generated from this study as actual reference on the applications of theories and concepts written on study materials written by foreign authors. With stakes so high, how local firms learn from experience has become a timely topic.

Scope and Delimitations of the Study

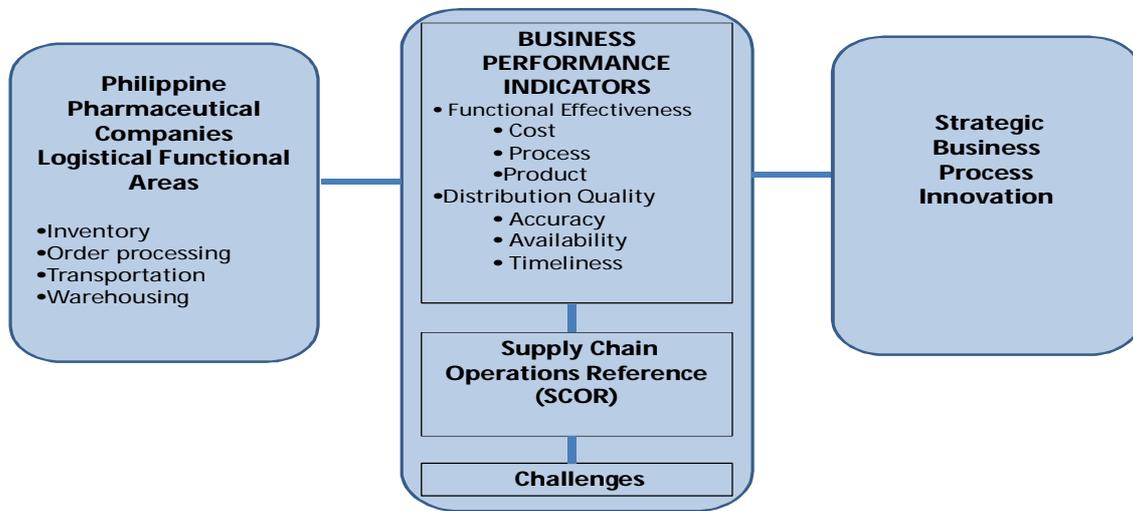
The focus of the study is on the analysis of the four logistical functional areas of the pharmaceutical manufacturing companies in the Philippines. The functional areas' success factors will be evaluated in the light of the business performance indicators. The crafting of the strategic business process innovation in terms of the four functional areas is the end output of the study. Conduct of the study is confined in Metro Manila only as the area is the center of the manufacturing and distribution activities of pharmaceutical companies and further limited in a total of six pharmaceutical firms.

Specifically, respondents come from the Philippine pharmaceutical manufacturing companies. Pharmaceutical companies are selected based on its ability to lodge among the top 20 leading pharmaceutical manufacturing companies in the Philippines in the last four years, in operation for the last 10 years, willing to participate in the survey, and with the most number of pharmaceutical product lines and mixes.

Gathering of data is through primary and secondary materials. Primary data are generated using a structured questionnaire and interview. Secondary data are obtained using published and unpublished materials from institutions and agencies in both public and private sectors. Supply chain operations standard is used to gauge and assess the operational efficiency and distribution quality of the pharmaceutical manufacturing companies. Benchmarking the results of the survey's LFAs vis-à-vis the SCOR standard is the primary basis for identifying the key success factors in the crafting of the strategic business process innovation in Philippine pharmaceutical industry's logistics practices.

The timeline as to the conduct of the research study is from November 2014 to October 2015.

Conceptual Framework



In the context of supply chain management, logistics exist to move and position products to achieve desired time, place, and possession benefits in terms of effectiveness and efficiency. For a supply chain to realize the maximum strategic benefit from logistics, the full range of functional work ranging from (1) inventory, (2) order processing, (3) transportation, and (4) warehousing must be integrated in the context of a strategic business process innovation. Strategic Business Process Innovation is the integration of all the success factors of the different Philippine pharmaceutical companies wherein the focus of analysis is on the four logistical functional areas namely; inventory, order processing, transportation, and warehousing.

Inventory is the first LFA taken into account which includes variables like control system, cost, inventory accuracy, availability, and product problems. Second LFA is order processing, variables like accuracy rate and cycle time is assessed. Transportation is the third LFA, variables like consistency which consist of product loss, damage rate and delivery accuracy are evaluated. Last is warehousing which covers variables like service operations, network facility, and order turnaround time.

The analysis centered in the critical assessment of the functional areas in the light of the SCOR standard. Critical assessment of the functional areas is depicted using two Business Performance Indicators namely functional effectiveness and distribution quality. Operational effectiveness is gauged using cost, process and product as primary indicators of performance. In distribution quality, timeliness, availability and accuracy are considered metrics. Challenges encountered by the pharmaceutical companies are taken into account and fused into the

critical analyses of the logistical functional areas to create a Strategic Business Process Innovation.

II. METHODOLOGY

The study is both quantitative and qualitative in nature. It is quantitative as it used descriptive and inferential statistics in analyzing primary and secondary data. On the other hand, it is also qualitative as the proponent analyzed and interpreted the results of the secondary data relative to the primary data. In depth-surveys and personal interview with key informants are considered to acquire personal opinions that concretized the information contained in the primary data relative to the LFAs and BPIs of the companies.

The conduct of the research study is in Metro Manila considering that the center of the drug manufacturing activity is within the area. Moreover; majority of the distribution activities are conducted in Metro Manila basing on the sales of pharmaceutical market by region published by the Pharmaceutical and Healthcare Association in the Philippines (PHAP). Majority of the manufacturers are based in Metro Manila, 112 or 39 % are based and operating in the National Capital Region, the rest are operating from regions 1 to 12 including CARR, CARAGA, and ARMM.

Respondents come from the Philippine pharmaceutical manufacturing companies. Pharmaceutical companies are selected based on its ability to lodge among the top 20 leading pharmaceutical manufacturing companies in the Philippines in the last four years, in operation for the last 10 years, willing to participate in the survey, and with the most number of pharmaceutical product lines and mixes.

A target of 36 is taken from the six pharmaceutical companies as respondent personnel. Each firm is represented by six (6) personnel respondents comprise of SCM or logistics manager, supervisor, and staff positions.

In selecting the respondents a non-probability sampling is used purposively using the following criteria:

Pharma companies

1. Included in the Top 20 Pharmaceutical manufacturing companies for 5 years based on latest IMS listing.
2. Minimum of 10 years in business operation
3. Operating in Metro Manila
4. Agreed to participate in the survey and provide information

Individual

1. Minimum of five years service in the company
2. Has been occupying supply chain management or logistics work ranging from managerial, supervisory and staff positions.
3. Respondent individual agreed to participate in the survey and provide information relevant to the study.

Gathering of data is through primary and secondary materials. Primary data are generated using a structured questionnaire and interview. Secondary data are obtained using published and unpublished materials from institutions and agencies in both public and private sectors. Supply chain operations standard is used to gauge and assess the operational efficiency and distribution quality of the pharmaceutical manufacturing companies. Benchmarking the results of the survey's LFAs vis-à-vis the SCOR standard is the primary basis for identifying the key success factors in the crafting of the strategic business process innovation in Philippine pharmaceutical industry's logistics practices.

III. SUMMARY OF FINDINGS

The following are the findings generated from the analyses and interpretations of data:

The study looked into the status of the Philippine pharmaceutical industry in terms of the following logistical functional areas (LFA): inventory, order processing, transportation and warehousing.

Inventory

Majority of the pharmaceutical manufacturing companies or 88.89% are into computerized module of inventory. On the other hand, 4 out of 36 respondent-pharmaceutical companies or 11.11% use a manual inventory system. According to the key officials, such system contributes to their operational efficiency in terms of handling the stocks in order to

satisfy the material requirements of the manufacturing facility. Furthermore, projections and implementations have become more accurate in tracking historical demand patterns for products, monitoring inventory levels for different products, and calculating economic order quantities and the levels of safety stocks each product. Moreover, this system has been useful in managing their operational costs in determining the right balance between costs of carrying inventory and running out of inventory.

Six out of 36 respondent-pharmaceutical companies or 16.67% responded that 76-100% is the average percentage of inventory cost in relation to COGS. Meanwhile 15 out of 36 respondent-pharmaceutical companies or 41.67% stated that 51 – 75% is the average percentage of inventory cost vis-a-vis COGS. Another 15 out of 36 respondent-pharmaceutical companies or 41.67% stated that 26 – 50% is the average percentage of inventory cost vis-a-vis COGS.

It can be deduced that the pharmaceutical industry is experiencing high cost of goods sold brought about by high cost of direct labor, materials, and factory overhead. The pharmaceutical industry has the difficulty of pursuing the low-cost business strategy which is contrary to the survey of Boston Strategies International that over 50% pharmaceutical companies are into cost leadership strategy. Further, the Council of Logistics Management (CLM) 2010 conference identified the management of inventory as the top priority in the next several years, and that 24% as a standard percentage of COGS for inventory or carrying cost.

Anchoring the survey result to what should be the standard rule of thumb for SCOR standard, one can deduced that focus should be given to cost categories like storage space and inventory risk. The ballooning expense in warehouse spaces especially in prime locations and areas should be taken into consideration. Space utilization should be maximized in relation to SKUs. Inventory risk associated with obsolescence, damages, shrinkage and reduction in inventory value caused by inappropriate facilities management, warehouse practices and servicing are all part of daily operations that impact on cost of maintaining inventory.

The result of the survey showing that a greater majority, 22 respondents or 61.10% are into printing 76 and above inventory reports annually jibes with the need of an effective logistics practice. Nine respondent-pharmaceutical companies or 25% generate 51-75 inventory reports. Five respondent-pharmaceutical companies or 13.89% generate 1-25 inventory reports. The result of the survey showing that a greater majority (61.10%) are into printing 76 and above inventory reports annually jibes with the need of an effective logistics practice.

The inventory reports show a snap shot of a company's periodic survey of all goods and materials in stock. On top of all that, inventory management would not be that precise without the generation of

timely reports. The frequency of generating reports is related to effective and efficient inventory management. The information deduced from the reports are crucial data needed by the firms to ensure not just a balance in stocks position but also in the general logistics practice.

Twenty-one respondent-pharmaceutical companies or 58.33% answered that 76 and above inventory reports generated are error-free. Five respondent-pharmaceutical companies or 13.89% produce 51-75 error-free inventory reports. Six (16.67%) and four (11.11%) respondent-pharmaceutical companies generate 26-50 and 1-25 error free inventory reports, respectively.

The result of the survey shows that most generate a high level of reliable inventory data since reports provide value data to optimize inventory to decouple, or provide a buffer between the demand and supply for an item. An error-free inventory is a must to arrive at a sound decision affecting logistical transactions and activities.

An overwhelming number of respondents in both local and multinational pharmaceutical manufacturing companies responded that 76 – 100% of their product lines are ordered, the increase in serving product lines validates there is steady increase in the number of hospitals, both private and government, including the number of medical practitioners, especially medical doctors, over a period of 10 years. All these will account for a need to efficiently distribute pharmaceutical products in the Philippines.

It is important to note that the survey shows that *all the 18 respondents from local companies have indicated in their responses that their companies' product lines are 76-100% immediately available in full while only 14 respondents from multinational companies out of 18 sampled have the same capability as the locals.* The survey's result can be attributed to PMAP's 2010 report wherein it mentioned that fourteen of the top twenty pharmaceutical companies in the world have manufacturing facilities in the Philippines. All the local pharmaceutical firms have established manufacturing plants within the Philippines making their production capability more responsive than MNCs whose production plants are overseas.

The ranking of the product problems is: 1. damages, 2. obsolescence, 3. losses and 4. pilferages. The Six Sigma Approach To Reduce The Product Damages In The Warehouse wherein it has pointed out that the most common complaint of end customers about the defects is the product damages. Damage transpired in the form of dwindled boxes or cartons, labels, inserts, or the product itself. These are typical perfect order failures as to products. Obsolescence due to expiration or near-date shelf life of products comes second simply because product shelf life as to pharmaceutical nowadays is typically within the span of two to five years. Assumption is,

SKUs which are typically misplaced inside a warehouse will remain in a warehouse location until it becomes obsolete. Having an antiquated product that nobody wants is a sure sign that inventory and sales aren't working together. It may sound like a simple concept, but having a logical warehouse layout is paramount to the success of any warehouse solution. Think of a warehouse like an architectural blueprint—an easy-to-navigate system where each section is clearly defined. The retrieval of products within the warehouse should be quick and easy.

Order Processing

It is worthy to emphasize that *the results of the survey shows that 58.3% of the respondents answered that customers are ordering at an average of 301 and above per month.* The result coincides with the claim that pharmaceutical industry is one of the fastest growing industries in the country. Another discussion validates the high volume of customer orders wherein it notes that the value of the Philippine pharmaceutical industry has been on the rise in the past years. Both the local and foreign pharmaceutical companies contribute to this fast growth rate.

As highlighted in the results of the survey for error-free orders, 88.9% or a total of 32 out of 36 respondent pharmaceutical companies, said that they have average 76 – 100% error-free orders in a month. It shows that respondent pharmaceutical manufacturing companies are inclined to process orders with fewer mistakes. A couple of studies have emphasized the importance of processing customer orders at the right quantity and areas of top concerns as to distribution include delay in order processing and inadequate quantity delivered. The inclination and practice to process orders with fewer errors is attributable to the use of a computerized module.

As to lead and cycle time, the survey results show that 88.9% of local pharmaceutical companies while 16.7% of multinational pharmaceutical companies has 1 – 3 days of average lead time. Local pharmaceutical companies have a better capability as to lead time to serve customer orders due to their ability to easily replenish their inventories as their manufacturing plants are within the country. The availability of products shows a direct connection to the company's ability to deliver customer orders and hence affect distribution lead time.

Transportation

As to transportation consistency, *survey result shows that majority pharmaceutical companies in both local and multinational are having an average 25% and below product loss or damage,* Said result can be anchored on the fact that transportation managers have identified consistency as the most important attribute of quality transportation as it is measured by product losses or damages during delivery or transit, and delivery accuracy. Effective transport logistics basically protects products from being lost, damaged, or delivered with errors. Quality logistics' is not only dependent on how fast product delivery can be

achieved but more so on how complete delivery can be attained.

It is glaring that *100% of the respondents said that they average 76 – 100 of orders delivered in a month.* The high number of pharmaceutical products delivered in a month is indeed in direct response to the continuously growing market of the pharmaceutical industry. Hence, improving logistics capability in terms of warehousing and delivery is important.

Thirty four pharmaceutical companies out of 36 or 94.4% of the respondents have concurred that 76 – 100% of error-free orders are delivered; the result can be attributed to SCOR’s conviction that delivery accuracy or reliability is one of the five key strategic attributes in supply chain management. The said fact could have been realized by majority of the pharmaceutical firms’ reason why they have strived to achieve a high level of error-free delivery.

It is important to note that *22 out of 36 respondent pharmaceutical companies or 61.1% of the respondents said that their average transportation cost in relation to the number of order per client is 1 - 5%.* Reasons for such can be attributed to a number of reasons like the companies transportation arrangement, routing and scheduling, and even technology utilized for the delivery of customer orders. The factors hindering logistics development include inefficient logistics information systems, acute transportation bottlenecks, and the lack of logistics management expertise. Aspect of logistics is still viewed as highly cost oriented, and hence the perception to improve delivery accuracy, turnaround time and reduce delivery costs is critical factors.

Transportation routing and scheduling is another factor taken into account. Routing and scheduling can be a way to reduce operating costs, especially if routing is currently in several different ways within the same geographic area. The proper order or sequencing of delivery in a given geographical area

where there are fewer stops (unloading) all relate to an economical routing and scheduling which also accounts to an effective logistics practice.

Warehousing

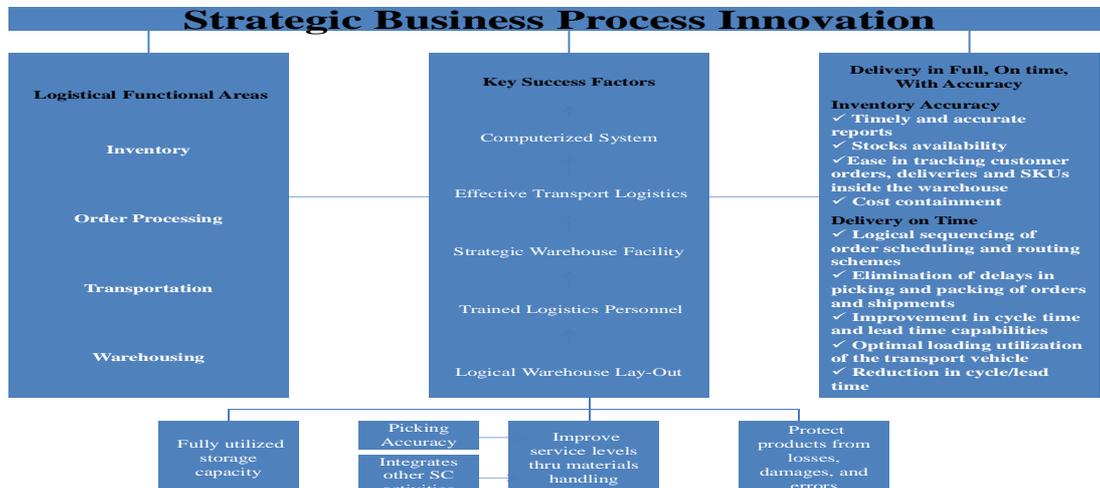
Survey revealed that *an overwhelming majority of the respondents in both local and multinational pharmaceutical firms have an average of 76 – 100% accuracy rate for their warehouse operations.* Such result would concur to the studies and literature reviews that emphasized the need for the minimization of warehouse problems like losses and damages as it helps companies keep lost sales to a minimum. On top of that, financial waste through damaged product is a major concern in distribution system design that need to be consistently addressed.

The survey shows that *21 out of 36 individual pharmaceutical respondents have four or more warehouses, the rest have three and two warehouses.* These warehouses are tantamount to distribution facilities or centers. In a geographically challenging market like the Philippines, strategic locations and number of warehouse service facility is a must for a timely and accurate serving of customer orders.

It is worthy to note that all the 18 local and 16 multinational pharmaceutical companies responded that as per agreed lead time, 76 – 100% of orders are delivered on time. Order fulfillment based on set days or days specified by the customers and complied by the firm at the rate of 76 – 100% is an indication of a good logistics practice.

The very high capability to deliver orders on time can be attributed to manufacturing plants located within the country which provided them with capability to match supply and demand in the market. Second consideration would be the distribution arrangement entered by the majority of the pharmaceutical companies. Lastly, the technology or module used in terms of tracking down customer order’s progress also matters.

IV. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS
Strategic Business Process Innovation Model



The adoption of a strategic business process innovation that highlights key success factors in the logistics practices of top pharmaceutical companies is a must. It is recommended that a more sustainable supply chain implements optimization measures in terms of benchmarking current operations to best practices in the four logistical functional areas.

Improvement should be further enhanced by utilizing the following strategies:

1. The use of a modernized infrastructure in terms of a computerized system like SAP to improve flexibility for a dynamic logistics practices, as well as reduce costs.

The utilization of a software that brings about a timely and accurate reports, improvement in stocks availability and inventory positioning, enhancement in the logical sequencing of product scheduling and routing scheme hence avoiding transport bottlenecks, ease in tracking customer orders, deliveries, and SKUs inside the warehouse including the reduction of cycle or lead time.

Proper inventory management can be made possible by utilizing an inventory control system that supports the activities that are part of inventory management such as tracking historical demand patterns for products, monitoring inventory levels for different products, and calculating economic order quantities and the levels of safety stocks that should be held for each product. These systems are used to find the right balance for a company between cost of carrying inventory and the cost of running out of inventory and losing sales because of that.

On top of all that, inventory management would not be that precise without the generation of timely reports. Timely inventory reports make certain the proportional goal of demand-driven inventory management. The primary optimal outcome is to have the same number of days' worth of inventory on hand across all products so that the time of run out of all products would be avoided.

The pervasive use of technology in logistics is another consideration to lower transportation costs. The use of navigation systems can help drivers to find the shortest route to all addressees and to give traffic jams a berth. Global Positioning System (GPS) devices installed on transport vehicles can make delivery capabilities robust and flexible enough to cope with the restrictions imposed by the scarce traffic routes capacities. A loss in time, productivity and reliability produced by overstrained traffic routes that impact on cost can be reduced by technology.

In today's high-speed business environment, the turnaround time on products is of utmost importance. With the increasing demand for impeccable customer service, today's warehouses are pressured to raise their goals for inventory accuracy, timely delivery service, perfect order fulfillment, flexible value-added services, and responsiveness to special customer request. One of the most proactive ways of doing so is the use of warehouse management system

(WMS) that is designed to speed up order turnaround time.

WMS brings about a comprehensive solution where warehouse personnel can perform supply chain tasks in real-time within the warehouse. By communicating all instructions on handheld devices (RFID gun scanners) and mobile computers, your workers spend less time decoding orders from management. The solution intends to deliver efficiency, expedites movement of stock, minimizes shelf life loses, and promotes on-time inventory.

On-demand availability of information on inventory levels, storage bins, and other resources enables better coordination and reduces flow times. Managers can also oversee the timely delivery of inventory replenishments, reduce order turnaround time, and focus on increasing customer satisfaction.

2. Logical warehouse space lay out is a must as it covers optimal utilization of storage space, decrease inventory risks in terms of obsolescence, damages, and other product problems including elimination of delays in picking and packing of orders and deliveries or shipments and cost containment.

It may sound like a simple concept, but having a logical warehouse layout is paramount to the success of any warehouse solution. Think of a warehouse like an architectural blueprint—an easy-to-navigate system where each section is clearly defined. The retrieval of products within the warehouse should be quick and easy, hence delays and errors in product shipment can be avoided.

A typical example of logical sequencing is place higher moving products near picking lanes that are close to shipping areas, place bulk areas in a location to facilitate bin replenishment, and determine logical area by establishing a naming convention for bins so warehouse staff can find things quickly and easily, thus creating a logical sequence to bring people to where they need to be. Name the bins and layout the warehouse in such a way that when someone looks at a bin tag, they will know how to find the bin. Bin locations provides precision in picking orders while at the same time reducing the number of footsteps required to pick the key items that tend to show up on a majority of orders.

Any underperformance in order picking can lead to unsatisfactory service and high operational cost for the warehouse, and consequently for the whole supply chain. In order to operate efficiently, the order-picking process needs to be robustly designed and optimally controlled.

Another is by not mixing multiple SKUs in a single bin location. Mixing multiple SKUs in the same bin location reduces picking productivity. Having a discrete pick location for every SKU is rule a must to foster efficient warehouse service level.

The ballooning expense in warehouse spaces especially in prime locations and areas should be taken into consideration. The logical warehouse space

lay out brings about optimal space usage. Space utilization should be maximized in relation to SKUs. Inventory risk associated with obsolescence, damages, shrinkage and reduction in inventory value caused by inappropriate facilities management, warehouse practices and servicing are all part of daily operations that impact on cost of maintaining inventory.

3. Effective transport logistics that enhances delivery accuracy and reliability as it protects products from being lost, damaged or delivered with errors. It also permits optimal loading capacity of the transport vehicle which in turn improves average sending volume by destination and truck filling rate to lower down costs.

Most damages to the products take place during the handling operation, at the time of loading and unloading, at the starting trans-shipment, or destination points. The logistician's job is to pinpoint the areas, operations, skills and facilities to improve warehouse service level operations that affect product conditions. Remedial measures need to be taken into account to avoid future product damages.

Proper materials handling is a means of ensuring safe delivery of stocks in usable form to the customers. Physical distribution includes a wide array of activities such as warehouse storage, transportation and delivery. It is in these areas proper materials handling should be observed. This will include the type of equipment used for handling packages and their capability and condition play a vital role in controlling product damages. The reasons for product damages during loading and unloading are height of loading platforms, method of handling and vehicle condition. The extent of package damage may be less if proper loading height is provided. This will reduce the height of fall when packages dropped, reducing in reduced impact and minimum damages. The physical condition of the loading area of the vehicle wherein the cargo is held during vehicle movement contributes a lot in minimizing the damage to the cargo.

The method of handling can also be improved by properly training and educating the loaders, including a well designed materials handling system with all the safety factors incorporated in it will definitely solve the problem of product problems, if the precautions are not taken during the loading and unloading operations.

Effective transport logistics can also be seen if firms should make an effort in upgrading their logistical systems and be more pervasive in using technology to manage logistics. The factors hindering logistics development include inefficient logistics information systems, acute transportation bottlenecks, and the lack of logistics management expertise.

In upgrading logistical systems to lower CTS or cost to distribute or transport, factors such as delivery frequency, average sending volume by destination

and trucks filling rate should be given focus. Delivery frequency for routinely planned replenishment deliveries is a must.

The shipment size or volume and the degree of vehicle utilization turn into a target variable where transportation costs can be reduced. If trucks came with a see-through tarp, we would be surprised to see how much air actually gets transported on our roads. Moreover; economies of scale result when a company is able to keep vehicle movements in the source and destination areas to a minimum due to a higher customer density and thus a high daily order and delivery volume. Hence, optimal loading utilization through consolidation of deliveries in sizable quantities to a predestined location through effective routing and scheduling of deliveries should be the primary goal of logisticians.

On the other hand, the pervasive use of technology in logistics is another consideration to lower transportation costs. The use of navigation systems can help drivers to find the shortest route to all addressee and to give traffic jams a berth. Global Positioning System (GPS) devices installed on transport vehicles can make delivery capabilities robust and flexible enough to cope with the restrictions imposed by the scarce traffic routes capacities. Finding the best path that a vehicle should follow through a network of roads or routes minimizes time, distance and cost, and improve customer service. One can clearly deduced that effective vehicle and delivery routing and scheduling reduces transport cost.

A loss in time, productivity and reliability produced by overstrained traffic routes that impact on cost can be reduced by technology. Another technological intervention much needed by logistics to minimize costs is the use of a computerized module to monitor order-entry. An efficient order-entry and processing system can reduce the time a company requires to fill an order. This time saving can be used to reduce delivery lead time and permit more opportunity to consolidate orders, thus reducing transportation cost.

4. Strategic locations of warehouse facility to reduce cycle and lead time to respond to customer demands. This should be coupled by integrating other supply chain activities in the warehouse aside from the usual storing and grading of SKUs.

Warehouse distribution centers are usually strategically located to areas covering a number of distribution transactions. The number and locations of these service facility network impact on a company's real-time logistics practice. The design of the distribution system is a strategic issue for almost every company. The problem of locating facilities and allocating customers covers the core topics of distribution system design.

In a geographically challenging market like the Philippines, strategic locations and number of warehouse service facility is a must for a timely and

accurate serving of customer orders. The geographical and environmental factors in the Philippines can bring about major disruptive events threatening supply chain network. The number of warehouse network facility is a necessary condition to ensure sustainable value creation in terms of customer order requirements. Decision makers must select sites that will not simply perform well according to the current system state, but that will continue to be profitable for the facility's lifetime, even as environmental factors change, populations shift, and market trends evolve.

5. Properly trained logistics personnel as training is one of the chief methods of maintaining and improving intellectual capital, so the quality of an organization's training affects its value.

The role of people as a primary mover in logistics practice is never underestimated by the pharmaceutical-respondents in the research survey. Their tasks have a direct impact to the accuracy on logistics transactions. TQM principles at present also highlighted that the services provided by human resources should be right the first time. Manual touch points in logistics would include: appropriate inspection, packing, and delivery of goods. Right matching of materials with documents in order processing, use of technology quickly and skillfully, accuracy of time record as to order serving and delivery. All these would account for a dynamic workforce that mastered the art and science of logistical functional areas.

Skills should be translated into ability to demonstrate a comprehensive know-how of SCM logistics and integration with other disciplines through management of business relationships by analyzing and measuring the performance of SCM data to evaluate operating performance. Logistical know-how includes an understanding of the importance and value of deploying business practices that are sustainable, when considering the interplay of

competing human, technology, financial and time resources.

Analysis and problem-solving skills are also within the domains of logistical knowledge manifested in the ability to apply appropriate numerical skills and techniques to understand, interpret and solve problems and undertake business analysis used in the context of logistics depicted in improving lead time and service levels to better the provision of service and product to consumers.

Technology literacy is also a must since the use of a computerized system is indispensable in the conduct of logistics activities in the pharmaceutical industry. Skills development is translated in the ability to apply technology effectively at a personal and professional level and exhibits the ability to use application software commonly used in the management context. Social interactions skills depicted by exhibiting the ability to manage relationships in diverse context, intra and inter-organizational, and to communicate effectively through different media and styles, including the ability to listen and disseminate logistics learning and information.

In the final note, the inclination for change management is also considered important. The skills to identify the change, its impact on the organization, alliances, systems and employees to drive the change and manage implementation of the change appropriate to all stakeholders. One should be able to evaluate and assess global and local operations, through site visits, benchmarking and economic and scientific evaluation, to determine appropriate best practice implementation techniques in specific circumstances.

Build a more efficient, effective and highly motivated team, which enhances the company's competitive position while improving employee morale. Training opportunities that ensure adequate human resources for expansion into new programs like the implementation of a strategic business process innovation.