The Critical Factors Affecting Logistics Activities: An Empirical Study of Garment Industry in Myanmar

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Abstract: This study aims to analyze the critical factors that affect the logistics activities of private garment manufacturing firms inMyanmar.The framework of this study consists of three parts: logistics activities, factors of logistics activities and critical factors relating to those activities. Among them, this study indicates descriptive answers to the question, "what are the critical factors affecting logistics activities of private manufacturing firms in garment industry, Myanmar?" The study conducts a questionnaire survey for the variables of critical factors of logistics activities. The sample consists of 353 managers from 122 private manufacturing firms in garment industry. The empirical results indicate that it is important to focuson critical factors that may affect the improvement of logistics activities. In addition to these critical factors, attention is also drawn to external and situational factors that may influence the activities of manufacturing firms. Suggestions for future research directions are also described.

Key words: Logistics activities, factors of logistics activities, critical factors, CMP garment industry, Thailand

INTRODUCTION

Logistics plays a key role in every business transaction. It is impossible for firms to produce and distribute large amounts of products to the global market without logistics activities. On the other hand, it is difficult to accomplish any business function like marketing, manufacturing or even international commerce in the absence of logistics. Without logistics nothing can be done. Thus, logistics is important as a source of competitive advantage and as critical success factorsfor business enterprises (Bowersox and Closs, 1996; Christopher, 1992).

Garment manufacturing firms rely on global markets as sources of raw materials and as markets for finished goods. Firms from South East Asian countries like Myanmar depend on imported raw materials. Finished goods are exported to global markets. In order to have an effective and efficient flow of materials and information, logistics brings together factors such as the geographical distance, sources and markets. For this reason, it is of particular interest to study the current state of logistics activities, determinants of logistics activities andcritical factors affecting those activities specific to the garment industry. An empirical study will be done on the garment industry. The selection of a research study is justified on multiple grounds.

Myanmar provides an interesting case study to analyze the dynamics of the garment industry in the context of the Myanmar economy. The availability of low-cost labor, the prevalence of Generalized Systems of Preferences (GSP) and free-trade agreementsencourage garment firms to enter the global market,however, Myanmar has encountered challenges to the production and distribution of their products. To overcome these challenges, it is necessary to have an operational strategy which is well managed and follows integrated logistics practices.

The industry has been under growing pressure to enhance competitiveness, to maintain market share, to attract foreign investment and to support local economic development. Myanmar Logistics Performance Index (LPI) is among the lowestof the ASEAN member countries. This means that in order to move their products from the production units to the end consumers, logistics appear to be one of the most critical issues facing garment manufacturing firms in Myanmar. Although, industry has great potential to enter global markets, it still has insufficient experience of supply chain logistics practices. Whether, the benefits generated by the garment industry can be sustained in the long run, depends on the ability of industry to address a number of challenges and constraints. One of the constraints is the supply chain logistics that affects production and distribution. The key

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supply chain logistics issues are: under-developed logistics infrastructure and high logistics costs, the lack of related and dependable networks for transportation like railways, maritime ports, inland water ways and port facilities and insufficiency of softlogistics infrastructure (communication networks, custom clearance procedures and import/export related procedures). These issues cause increasing costs and decreasing trade performance. There are knowledge gaps between managers in the field of logistics and supply chain management. Therefore, it is necessary to conduct research in order to establish the necessary procedures to bridge gaps specific to the garment industry in Myanmar.

Research objective: To analyze the critical factors affecting logistics activities of private manufacturing firms in garment industry, Myanmar.

Theoretical analysis: In this study, logistics activities, the factors of logistics activities and the critical factors affecting those activities are identified in order to support the upgrading of logistics activities of firms. It provides a checklist of variables adapted from previous authors in the field.

Identification of logistics activities: Logistics management is widely accepted in every business organization, whether it is a manufacturing or a service organization, private or public, profit (or) non-profit organization. It is defined as part of the supply chain process that plan, implement and control the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption to meet customer requirements. To satisfy customerrequirements, logistics aims to ensure the availability of the right product with the right quantity and the right condition, to the right place, at the right time for the right customer and at the right cost (Ballou, 1999). Particularly, logistics management is concerned with the efficient flow and storage of goods (raw materials, in process inventory and finished goods) from the point of origin to the point of consumption. It starts with the initial shipment of raw materials and accessories from a supplier, products are then manufactured or processed and finally delivered to the end customer (Bowersox *et al.*, 2002).

Logistics can be viewed as inbound and outbound logistics. Inbound logistics is the movement of materials from suppliers or vendors into production process or storage facilities while outbound logistics is the process related to the movement and storage of products from the end of the production line to the end user. Coyle and coauthors suggested that the manufacturing industry should focus on the activities both inbound logistics and outbound logistics. Inbound logistics systems can vary depending on the plant location in the supply chain, the nature of the product and the market situation in which the product is sold. Inbound logistics includes the activities of procurement or purchasing, inbound transportation, receiving, warehousing, material handling, inventory management and control, packaging and communication and information management. Outbound logistics consists of the finished goods inventory, order processing activitiesunder the areas of order management, outbound transportation, customer services, demand management and the distribution of finished goods.

Generally, logistics activities are activities, relating to the procurement, inventory management, production and production scheduling, warehousing, material handling, packaging, transportation and order processing that support their manufacturing system through supply chain. It includes a series of related activities from procurement at the beginning of operations to physical distribution at the end. These logistics activities vary from firm to firm depending on a firm's particular organizational structure, management's different opinions about what constitutes logistics and the importance of individual activities to its operations (Ballou, 1999).

According to Fig. 1, several authors (Ballou, 1999; Stock and Lambert, 2001; Bowersox *et al.*, 2002; Dimitrov, 2005; Islam *et al.*, 2013) identified logistics activities in terms of order processing, procurement, inventory management, packaging, transportation, warehousing, material handling, customer service, demand management, communication and information management, facility network, production/production scheduling, maintenance, reverse logistics and others such as salvage and scrap disposal, waste disposal, recycling, quality control, plant location and make or buy decisions. Among these activities, 13% of researchers stated that inventory management and transportation activities are part of logistics activities while 11% of the studies labelled warehousing as part of logistics operations.

However, given that it is difficult to analyze all logistics activities simultaneously, this study focuses on the inbound logistics activities such as procurement, inventory management, production, packaging and inbound transportation as well as outbound logistics like order processing under order management that seems to have a greater impact on firm performance.
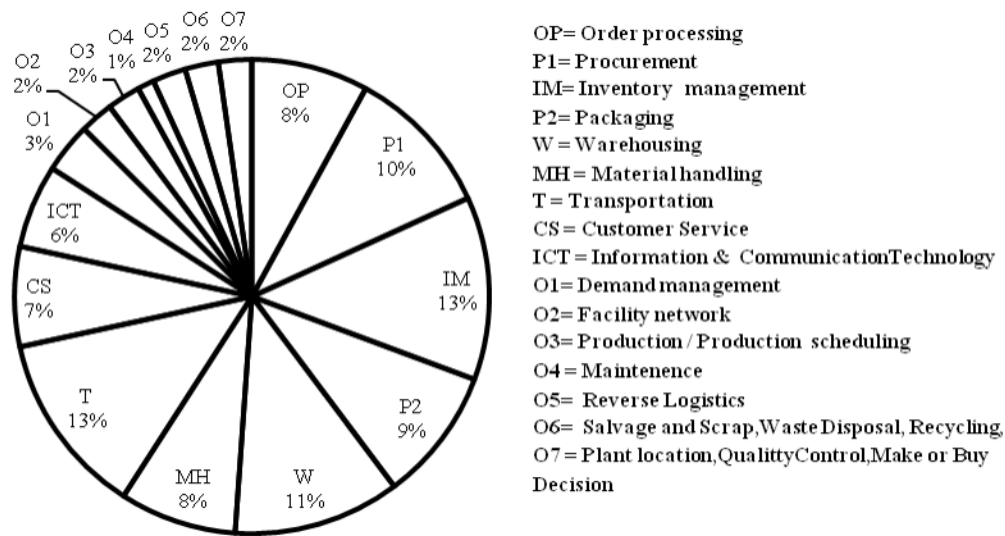
OP= Order processing
P1= Procurement
IM= Inventory management
P2= Packaging
W = Warehousing
MH= Material handling
T = Transportation
CS = Customer Service
ICT = Information & Communication Technology
O1= Demand management
O2= Facility network
O3= Production/Production scheduling
O4 = Maintenence
O5= Reverse Logistics
O6= Salvage and Scrap,Waste Disposal, Recycling,
O7 = Plant location,Qualitty Control,Make or Buy
Decision

Fig. 1: Percentage of logistics activities describe by researchers

Identification of the factors of logistics activities: The factors that affect the logistics activities in each of the six areas, namely order processing, procurement, inventory management, production, packaging and transportation activities are discussed below.

Several authors (Johnson *et al.*, 1998; Ballou, 1999; Bowersox *et al.*, 1996,2002; Fonseka, 2002; Prasad and Sounderpandian, 2003; Tirimanne and Ariyawardana, 2008; Celebi *et al.*, 2010; Matopoulos *et al.*, 2009; Yao *et al.*, 2009; Islam and Shazali, 2011; Parvini, 2011; Mwikali and Kavale, 2012; Basaran, 2013) identified the factors relating to order processing, procurement, inventory management, operations/production, packaging and transportation activities in their different views. These factors of logistics activities are process related factors, cost, quality, delivery and time related factors, organizational factors, human factors, product related factors, market related factors, economic factors, asset related factors andservice related factors. The other factors are demand and capacity, research and development,factors of investment in ICT and its application and geographic distance factors, etc. Then, factors affecting the selected logistics activities that are the focus of this study areshown in Fig. 2.
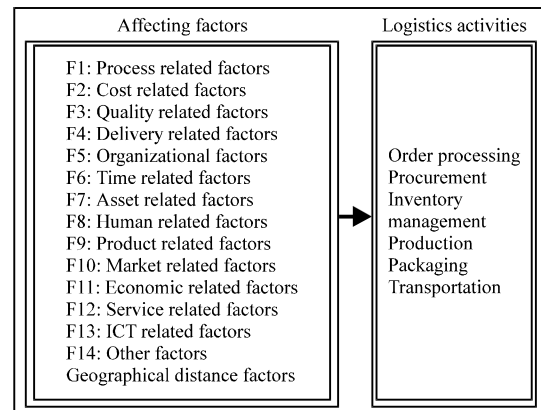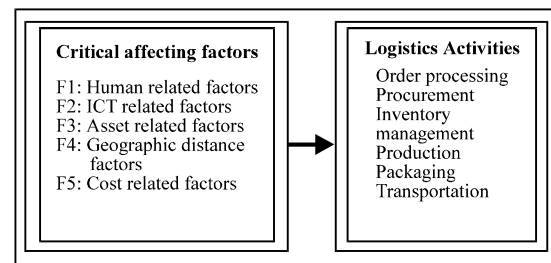
Identification of the critical factors affecting the logistics activities: Among the factors of logistics activities, human related factors, ICT related factors, asset related factors, cost related factors and geographic distance factors, critically influence logistics activities. With respect to the garment industry, these factors are specific to the garment manufacturing firms and the main

Fig. 2: Factors affecting logistics activities

Fig. 3: Critical factors affecting logistics activities

drivers of the Myanmar garment industry as it enters global markets (Haque and Azad, 2004; Rasiah and Myint, 2013). These critical factors of logistics activities are shown in the following Fig. 3.
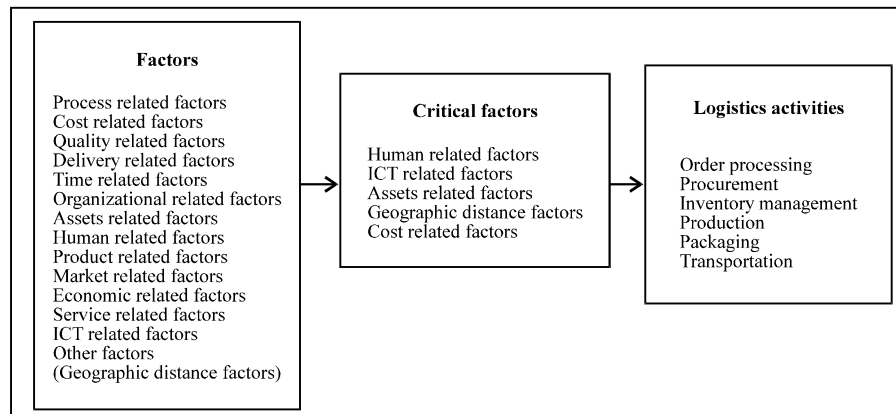
Fig. 4: Research framework

Human related factors are the main drivers of the production and distribution of completed goods because in the garment manufacturing firms, the manufacturing processes are labor intensive. Human resource training and development, human resource's skills, manufacturing competency, experiences and supply chain talents are included in those humanrelated factors. They affect procurement, production, packaging and transportation activities (Johnson *et al.*, 1998; Bowersox *et al.*, 2002; Fonseka, 2002).

ICT related factors are critical to export oriented garment manufacturing firms. Investment in computer hardware, software and ICT infrastructure (communication network, E-Business and EDI system) including human resources with knowledge and skills in ICT applications are essential for garment manufacturers who are competing in the global market. According to the researchers (Fonseka, 2002; Prasad and Sounderpandian, 2003; Endean, 2005; Yao *et al.*, 2009; Matopoulos *et al.*, 2009; Nuruzzaman *et al.*, 2010; Mwikali and Kavale, 2012), ICT related factors affect order processing, procurement and inventory management activities.

Inventory turnover, inventory carrying costs, the availability of raw materials and sources of raw materials are included in asset related factors. These factors are significant for managing the raw material and finished goods inventory. Generally, garment firms require plenty of raw materials (fabrics and accessories), sewing machines and other machinery as well. The management and control of raw materials and the finished goods inventory are the specific responsibilities of the garment factory manager. These assets related factors affect inventory management activities.

Geographic distance is specific to export oriented garment firms. Garment buyers are not only local customers but also buyers from the global market.

Garment manufacturing firms using the Cutting, Making and Packing (CMP) system, import raw materials from the buyers' countries and export the finished goods to those of buyers. Moreover, garment manufacturers, from under developed and developing countries,depend on imported raw materials because of insufficient raw materials which produced in local sources and the lack of supporting industry. Dependence on imported raw materials causes longer production and distribution lead times. For these reasons, geographic distance factors are critical to the garment industry. Distance is associated with channel costs and long lead times. According to the researchers (Celibi *et al.*, 2010), these geographic distance factors influencethe procurement, production and transportation activities.

Cost related factors include production costs and logistics costs. It is important to reduce costs because low labor costs, lower production and logistics costs are attributes for garment manufacturers who use to attract foreign direct investments from multinational corporationsand to attract customer orders.Cost related factors are, therefore, critical for the selected logistics activities, namely, procurement, inventory management, production, packaging and transportation (Bowersox *et al.*, 2002; Prasad and Sounderpandian, 2003; Moeller, 2009; Parvini, 2011; Mwikali and Kavale, 2012). Then, the research framework for this study can be seen as follows (Fig. 4).

MATERIALS AND METHODS

As an empirical study, the survey field was designed to cover all export oriented private garment manufacturing firms using the Cut, Make and Packing (CMP) system. The target population for this study is managers from the functional departments of private manufacturing firms

located in Yangon industrial zones, listed with Myanmar Garment Manufacturers' Associations (MGMA) for the financial year 2013-2014. A population of 134 garment firms was identified as operating firms and 670 managers from the functional departments of those factories were approached. From the total population of managers, a sample 385 responding managers resulted (Cochran, 1997; Hill, 1998; Bartlett *et al.*, 2001; Kline, 2010).

Using simple random sampling, a group sample was generated based onthe list of managers published in the MGMA annual report for the year 2013-2014. However, the actual survey has been conducted with only 122 firms as 12 firms withdrew from the study. The total number of managers that responded was 353. The private garment firms in this field survey were large size enterprises employing >100 workers, according to Myanmar classification criteria. This study appliesa quantitative approach with complementary qualitative query. A questionnaire survey method is used to test the descriptive statistics. SPSS version 22 is used as statistical software for data analyses. Primary data collectionis conducted with a sample of 353 managers from respective functional departments and in order to gain an in-depth understanding of the situation, face to face interviewsare conducted with 20 functional managers of the surveyed firms.

Fig. 5: Managers working experiencefigure

Fig. 6: Basic qualification

RESULTS

Results from descriptive statistics: Of the many possible factors that could be mentioned, five factors are chosen as these are specific to the garment industry. Human related factorsare considered using the three indicators of the quality of human resources, as described below. Theyare qualifications, experience and knowledge of human resources.In this study, the manager's work experience, basic knowledge and specific knowledge including knowledge of information and communication technology, logistics and supply chain practices and productivity improvement are indicators of human related factors.

According Fig. 5, 65 % of respondents have 10 years or more working experience while 2% of participating managers have not >1 year working experience. Then, 75% of respondents have abachelor degree as basic knowledge, 13% have master degree and 11% have a diploma certificate (Fig. 6). Specific knowledge includes knowledge in computer based applications, communication links with customers, logistics and supply
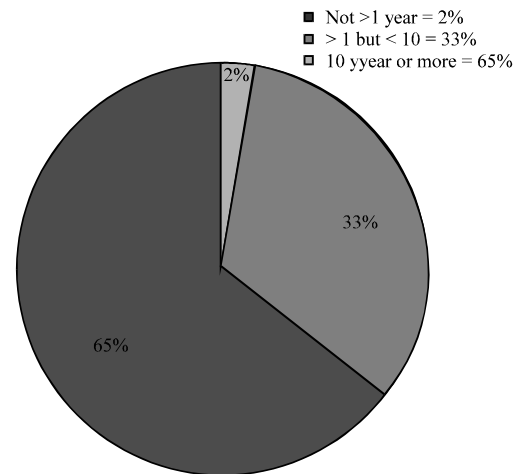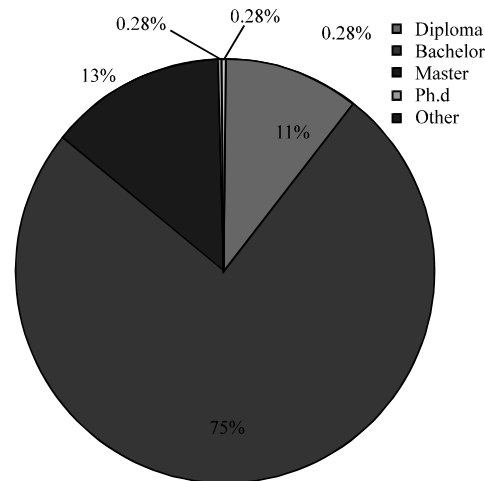
chain practices and productivity improvement. Among them, knowledge in logistics and supply chain practices, approximately 42% feel confident in their abilities while 20% of the respondents suggest that their knowledge of logistics and supply chain management practices is insufficient. Other responses were generally positive with over 50% of respondents in agreement with regard to the specific knowledge that they have (Fig. 7).

ICT related factors include ICT applications and access to customer information. In this survey, ICT applications were divided into six categories such as internet applications for logistics and supply chain activities; computer software applications in production processes; applications for preparing payroll accounts and financial statements; applications for stock/inventory control; application for information system links and
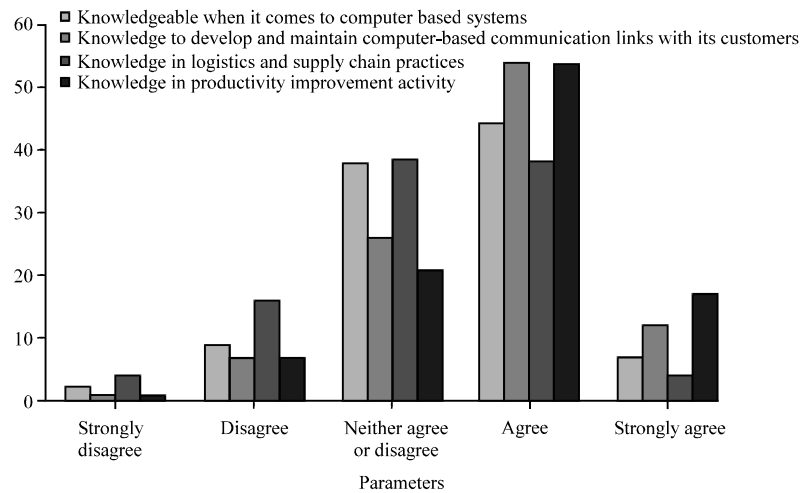
Fig. 7: Perception on specific knowledge

customer files and the application of ICT effecting firm performance by reducing material waste and the percentages of rejected items. The accessibility of real time information includes buyer accessibility to real time information about company sales (export quantities) and production quantities, supplier accessibility to real time information about company sales and production quantities.

Respondent perceptions of ICT applications and the accessibility of information are shown in Fig. 8. Approximately 46% of respondents strongly disagree or disagree regarding ICT applications to reduce material waste and item rejection among the other application areas. The 34 % of managers expressed their views of between strongly agree and agree with the use of computer software in the production process, however in these factories, they are not currently using ICT applications in the production processes.

From these results, it may be implied that ICT applications do not necessarily reduce material waste or rejected items, however as a percentage of the respondents are not currently using ICT applications, this conclusion is open to further research. Some factories need to upgrade the capability of their computer software applications in the production process in order to improve product quality and quantity. As regards stock control, 26% of respondents disagree that it is useful in stock control while 41% agree with its application in this regard. The 100% of respondents garment factories may not use ICT applications in the area of logistics activity (stock control function in material management). They still have problems with ICT applications. However, ICT applications may be valuable in the areas of logistics and supply chain practice; the supply of real time information

for suppliers and customers concerned with the company's production and export quantities. ICT application may be useful in the preparation of payroll accounts and financial statements, as a great deal of verifiable financial information may be made available to the relevant staff members.

ICT applications may be valuable in facilitating communication with customers. ICT applications enable various online services such asmaking information available to potential customers and enabling easier communication with existing customers. In attracting new customers, Internet service pages, blog pages, Facebook and similar online services may be used while facilities such as e-mail, Facebook and similar social networking services may be used to communicate directly with customers. On average, 43% of responding managers agree while, 15% of responding managers strongly agree in their perceptions of the value of ICT applications. ICT applications are well accepted in the five areas of internet applications for logistics and supply chain practices, applications for accessibility of real time information of suppliers, applications for accessibility of real time information on buyers, applications to prepare payroll accounts and financial statements and application for information to access and store customer information. Companies are still indicating problems in areas of ICT application. This is especially in the main areas of garment production such as the production process, stock control and applications for reducing material waste and lowering the number of rejected items (Fig. 8).

Regarding the asset related factors, 59% of respondents from the surveyed factories have an average inventory turnover and 4 % are much better than average (Table 1).
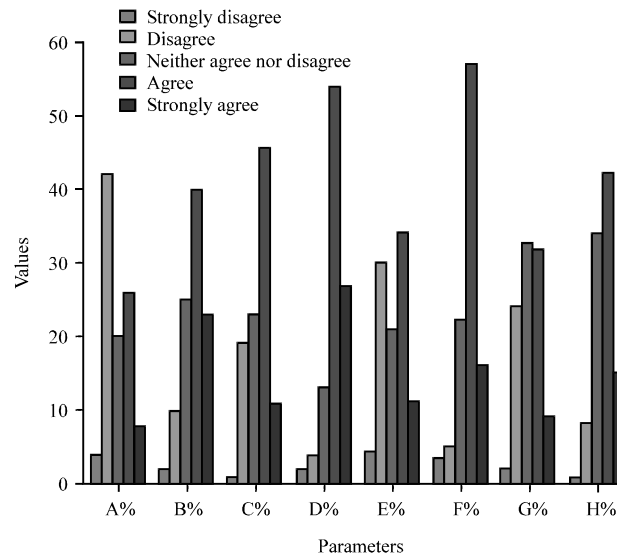
Fig. 8: Perceptions on ICT application; A = Application to reduce material waste and reject items; B = Internet application for logistics and supply chain practices; C = Application for accessibility of real time information with suppliers; D = Application for accessibility of real time information with customers; E = Computer software application for production process; F = Application to prepare payroll account and financial statement; G = Application for stock/inventory control; H = Application for information to access and store customers' information

Table 1: Frequency of perceptions of inventory turnover

Condition of inventory turnover	Frequency	Percentage
Much better than average	12	4
Better than average	132	37
Average	209	59
Total survey factories' respondents	353	100

Regarding lead time in geographic distance factors, respondents from surveyed factoriesanswered generally it takes time from 30-60 days for the importing of raw materials, the productions of goods and delivery of finished goods. According to the following Table 2, lead time for importing raw materials takes 20-29 days.

Production lead time depends on various factors including product style, quantity, buyer order a single order which includes several different styles and the arrangement of machines to cater for different order styles. Easy and difficult order styles may influence lead times according to employee skills. Material availability as fabrics and accessories may come fromdifferent sources or even different countries, there may be delays as they may not arrive at the same time.

The production process cannot begin until the customer has approved the sample product. If there are delays in this process, then production commencement would be delayed. After the customer has confirmed the proposed product, the production process commences. This process may also take time. Communication with the customer is important. When communication is problematic such as when Internet or telephone access is a problem, the factory may outsource to a logistics company such as DHL, DORA or similar, to send the sample product and receive customer confirmation. Labor instability labor absenteeism and turnover may also affect production lead times. Instability may be caused by job hopping and high levels of absenteeism. Unskilled labor may take longer time to produce quality products, especially if the garment style is more complex.

According to Table 3, approximately, 250 functional managers confirmed that, on average, production lead time takes between 30 and 45 days. According to participating managers, mostly lead time is between one and three months, depending upon situational factors, rather than distance factors.

Table 4 shows that delivery lead time mostly takes between 30 and 60 days to Japan, Korea, USA, EU and China. Delivery time to Japan, Korea, China and the EU mainly takes between 20 and 29 days because of the lack of a deep sea port in Myanmar. Mostly garment factories use Singapore as a transit port for it saves time and money. The lack of a deep sea port that could be used as a transit port is one of the barriers for import processes in order to receive raw materials in good time and it is a barrier for the distribution of finished goods.

Table 2: Average lead time for importing raw material

Lead time	Countries				Other				Total (Frequency)
	Japan	Korea	USA	EU	ASEAN	China	Average	Total	
1-9 days	6	-	-	-	6	13	-	19	25
10-19 days	28	31	3	1	20	47	24	91	154
20-29 days	38	43	-	-	4	57	28	89	170
30-60 days	19	22	1	6	1	22	52	75	123

Table 3: Frequency of Production Lead Time

Lead time	Countries				Other			Total (Frequency)
	Japan	Korea	USA	EU	China	Average	Total	
1-9 days	2	9	-	-	3	-	3	14
10-19 days	21	13	5	6	6	31	37	82
20-29 days	12	11	3	7	8	25	33	66
30-90 days	50	42	6	20	8	124	132	250

Table 4: Delivery lead time

Lead time	Countries				Other			Total (Frequency)
	Japan	Korea	USA	EU	China	Average	Total	
1-9 days	8	10	-	-	-	8	8	26
10-19 days	30	28	-	3	12	26	38	99
20-29 days	45	27	1	4	10	45	55	132
30-90 days	31	27	14	51	11	49	60	183

Table 5: Causes of long lead times seen in the respondents firms

Kind of causes	Frequency of respondents' perceptions				
	Least important	Un-important	Important	Very important	Most important
Mostly depend on imported raw materials	3	6	31	62	251
Inefficient port management	9	40	201	62	21
Geographic distance factors	8	47	86	125	87
Communication with suppliers	22	228	49	43	11
Communication with buyers	24	22	52	40	15
Lack of backward linkages	20	78	141	74	42
Poor Infrastructure	8	30	87	109	119

According to the respondents' perceptions (Table 5), causes of long lead times depend on imported raw materials, poor infrastructure and geographic distance factors. The 251 managers consider dependency on imported raw materials as a fundamental cause of long lead times.

Regarding cost related factors (Fig. 9), 47% of respondents said that total costs were higher than the average cost level in the areas of production, service links (transportation and communication) and other transaction processes (fuel and labor costs).

According to the above Fig. 9, factory's owners and managers stated that costshave increased year on year. During the fiscal years from 2010-2013, out of the 122 factories, 47% of factory managers perceived their total coststo be higher than average, 37% experienced the highest costs of the respondents while only 16% of the respondents stated that they had average costs. The factories that reported high costs claimed that their abnormal costs were due, in part, to unstable labor and transaction costs.
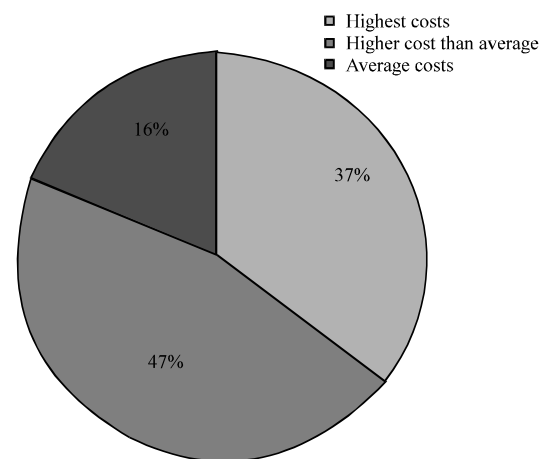

Fig. 9: Scale of perceptions of total costs

Results from in-depth interview: This study also conducts in-depth interviews with functional managers from garment manufacturing factories in the respective industrial zones. The interviews wereconducted with

randomly selected managers from the different departments. According to the results, one of the most important factors affecting the activities of factories is that of the government and its policies. These laws and policies affect the import of raw materials, the export of completed products and also management-labor relations. Consequently, it may affect the flow of physical, information, financial and knowledge of firm performance.

Participant managers argued that the government plays an important role in helping to guide the manufacturing sector by providing the necessary policy and legal frameworks, in establishing logistics infrastructure and in enhancing financial support. Some managers suggest that labor laws should be specific to the manufacturing industry. For example, when orders are urgently needed, managers cannot simply allow employees to take leave without good reason. According to the synchronized production line system, if one person is absent, the next step in the process will stop unless a substitute employee is available to continue the process. In reality, there are few extra employees to substitute in the case of absenteeism. Therefore, it may negatively affect production lead times and productivity. In addition, managers suggest that government should provide financial investment support for private garment firms in terms of short term and long term loans. Establishing factories in cities around the country may reduce mobile labor, help to reduce crowding and the possibility of strike action.

DISCUSSION

This study aims to identify critical factors that affect logistics activities experienced by private garment manufacturing firms. Because of the confidential nature of such financial data, the data available for this study is based on the perceptions of participating managers. Based on managers' perceived assessment of the situation,the results on inventory turnovers are an average perception rate, while cost related factors are approximate. The 50% of managers perceived that total costs are higher than average. Because manufacturers have to utilize outsourcing logistics services, it costs more than it would normally for activities than if they perform them themselves.

The data suggests that long production lead times are more due to situational factors such as the product as ordered, the availability of imported raw materials, labor instability, etc., rather than geographic distance. To reduce production lead times, manufacturers should focus on situational factors other than geographic distance.

Celebi *et al.* (2009) and Hausman and coauthors indicate that importing raw materials from distant sources affects production and delivery lead times. The effect does not directly influence production lead time but has an indirect influence through procurement lead times. Procurement lead times affect the production lead time and consequently, production lead time affects the delivery lead time. Basaran concludes that distance factors have a less significant effect on procurement activity and as a result, it may have less effect on the production lead time. It may, therefore be implied that the findingsof this study, in the case of production lead time, support the findings of previous researchers, suggesting that situational factors are more important than geographic distance factors in the development of long production lead times.

The results show that the causes of long lead times, including procurement lead time, production lead time and delivery lead time, in general, depend on the dependence on imported raw materials, poor Infrastructure and geographic distance factors (Table 5). According to this table, respondents perceived geographical factors to have the third greatest impact on production lead times. The results from in-depth interviews with the respondents suggest that industry needs to implement a more dependable logistics infrastructure and to acquire necessary raw materials from sources closer at hand, such as local sources within Myanmar.

In summary, this study shows that independent variables such as external factors like governmental requirements and situational factors need to be considered in the question of what are the critical factors affecting logistics activities of the private manufacturing firms in the Myanmar garment industry. These external and situational factors along with the five critical factors of logistic activities provide guidelines to manufacturers of what they need to emphasize in the production and distribution of goods in the global market. If they are aware of these logistics concepts and critical factors affecting logistics activities, they can accomplish better performance benefits than before. This study may provide necessary information to the Myanmar garment industry to enable it to improve its performance in the global market and, maybe to enter the market for fashion garments and accessories.

CONCLUSION

In considering the value of this study, a few points need to be noted: First, this study concerns private garment manufacturing firms. Second, the results reported

here come from the local areas of ten sub-industrial zones in the Yangon Industrial Zone, Myanmar. The results may differ from firms located in different areas that are operating under different cultural, environmental and political conditions. Despite these limitations, this study provides some valuable insights from theoretical and practical perspectives. It indicates that logistics activities, factors of logistics activities and critical factors affecting those of logistics activities, are important elements for business performance, especially logistics performance.

This study indicates the importance of human related factors including managerial specific knowledge which helps to fill knowledge gaps existing between managers in the field of logistics and supply chain management. These managerial knowledge gaps also affect the logistics activities and logistics performances including reduced costs and reduced lead times. There is a disparity between the knowledge that managers perceive themselves to have and their attendance of relevant courses. Approximately 42% of managers consider their knowledge of logistics to be adequate, while only 6% of managers have attended relevant training courses.

Regarding the limitations of this study, this study emphasizes the five critical factors that affect the selected logistics activities which are specific to the garment industry in Myanmar. It focuses on a field survey of garment manufacturing factories using Cutting, Making and Packing (CMP) system. The results are limited in application and may not necessarily apply to other export oriented manufacturing firms. It is necessary to analyze, not only descriptive statistics using SPSS software but also to use more advanced statistical methods and software. Finally, further research in the area of logistics management practices are necessary, especially studies that include external factors and situational factors affecting logistics activities.

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REFERENCES

Basaran, B., 2013. Effects of operational and structural conditions on inventory management in large manufacturing enterprises. J. Sch. Bus. Administration Istanbul Univ., 42: 41-60.

Ballou, R.H., 1999. Business Logistics Management: Planning, Organizing and Controlling the Supply Chain. 4th Edn., Prentice Hall, New Jersey, USA., ISBN: 9780137956593, Pages: 681.

Banomyong, R., 2010. Logistics Challenges in Cambodia, Lao PDR, Myanmar and Vietnam. In: In: A Study on Upgrading Industrial Structure of CLMV Countries. Banomyong, R. and M. Ishida (Eds.). ERIA Publication, Jakarta, Indonesia, pp: 392-420.

Bartlett, J.E., J.W. Kotrlik and C.C. Higgins, 2001. Selecting an appropriate sample size for conducting survey research. Inf. Technol. Learn. Perform. J., 19: 43-50.

Bowersox, D., D. Closs amd M.B. Cooper, 2002. Supply Chain Logistics Management. 1st Edn., McGraw-Hill/Irwin, New York, ISBN: 978-0072351002, Pages: 678.

Bowersox, D.J. and D.J. Closs, 1996. Logistical Management: The Integrated Supply Chain Process. McGraw-Hill, New York.

Celebi, D., D. Bayraktar and L. Bingol, 2010. Analytical network process for logistics management: A case study in a small electronic appliances manufacturer. Comput. Ind. Eng., 58: 432-441.

Christopher, M., 1992. Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services. 2nd Edn. Pitman Publishers, Financial Times, London.

Cochran, W.G., 1977. Sampling Techniques. 3rd Edn., Willey Eastern Ltd., New Delhi, India, ISBN: 0852261217, Pages: 428.

Dimitrov, P., 2005. Logistics in Bulgarian manufacturing companies. Int. J. Prod. Eco., 93: 207-215.

Fonseka, A.T., 2002. Garment industry of Sri Lanka: Competing a quota-free era. Sri Lankan J. Manage., 7: 1-22.

Haque, A. and R. Azad, 2010. Is Bangladeshi RMG sector fit in the global apparel business? Analyses the supply chain management. South East Asian J. Manage., 4: 53-72.

Hill, R., 1998. What sample size is enough in internet survey research. Interpersonal Comput. Technol. Electron. J., 6: 1-12.

Islam, D.M.Z., J.F. Meier, P.T. Aditjandra, T.H. Zunder and G. Pace, 2013. Logistics and supply chain management. Res. Transp. Eco., 41: 3-16.

Islam, S. and S.T.S. Shazali, 2011. Determinants of manufacturing productivity: Pilot study on labor-intensive industries. Int. J. Prod. Perform. Manage., 60: 567-582.

Johnson, P.F., M.R. Leenders and H.E. Fearon, 1998. The influence of organizational factors on purchasing activities. Int. J. Purchasing Mater. Manage., 34: 10-19.

Kline, R.B., 2010. Principles and Practice of Structural Equation Modeling. 3rd Edn., The Guilford Press, New York, USA., ISBN-13: 9781606238769, Pages: 427.

Matopoulos, A., M. Vlachopoulou and V. Manthou, 2009. Understanding the factors affecting e-business adoption and impact on logistics processes. J. Manuf. Technol. Manage., 20: 853-865.

Moeller, K., 2009. Intangible and financial performance: Causes and effects. J. Intellect. Capital, 10: 224-245.

Mwikali, R. and S. Kavale, 2012. Factors affecting the selection of optimal suppliers in procurement management. Int. J. Hum. Soc. Sci., 2: 189-193.

Parvini, M., 2011. Packaging and Material Handling. Elsevier Inc., New York, USA., Pages: 155.

Prasad, S. and J. Sounderpandian, 2003. Factors influencing global supply chain efficiensy: Implications for information systems. Supply Chain Manage. Int. J., 8: 241-250.

Rasiah, R. and M.M. Myint, 2013. Ownership, technological capabilities and exports of garment firms in Myanmar. Technol. Econ. Dev. Economy, 19: S22-S42.

Stock, J. and D. Lambert, 2001. Strategic Logistics Management. 4th Edn., McGraw-Hill Companies, New York, USA., ISBN-13:9780256136876, Pages: 872.

Tirimanne, D.N. and A. Ariyawardana, 2008. Use of organizational design features in purchasing: The case of garment manufacturing firms in Sri Lanka. J. Manage. Res., 8: 162-167.

Yao, Y., M. Dresner and J.W. Palmer, 2009. Impact of boundary-spanning information technology and position in chain on firm performance. J. Supply Chain Manage., 45: 3-16.