

Dimensions of Competency among Malaysian Logisticians: An Exploratory Investigation

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Abstract

This study seeks to quantify how logistics practitioners in Malaysia perceive competency. It aims to categorize the dimensions of Malaysian logistician competency. A total of 244 Malaysian logisticians representing top to low level managers were surveyed using a self-administered questionnaire. EFA and CFA were applied to analyze and determine the dimensions. Results show that the dimensions of Malaysian competency are grouped into three factors; namely strategic management skills, business knowledge and effective leadership skills. The measurement model fits the data with the values of $X^2/df = 1.761$; $CFI = .961$; and $RMSEA = .056$. The findings have made a contribution to the literature, by using Malaysian logisticians to identify the dimensions of Malaysian logistician competency. This can assist the development of logistics curricula by Malaysian higher education institutions and also help develop a competent logistics workforce in the future. Implications and limitations of the study are also discussed.

Keywords: Malaysian logistician competency, strategic management skills, business knowledge, effective leadership skills.

Introduction

Studies regarding logistician competency have received considerable attention in the logistics literature (for examples see Thai, Cahoon & Tran, 2011; Borsch, 2011; Wu & Hou, 2010; Stank, Davis & Fugate, 2005). In logistics, such interest might be attributed to the belief that logistician competency is formed from several dimensions, namely a business, logistics and management (BLM) framework (see Murphy & Poist, 2007; 2006; 1991). Previous studies have used the BLM framework to study the competency of logistics managers (see Thai et al., 2011; Esper, Defee & Mentzer, 2010; Razzaque & Sirat, 2001).

Studies about the competency of Malaysian logisticians have not been widely pursued. The closest studies to the problem were conducted by Rozhan and Rohayu (2008) and Razzaque and Sirat (2001). In their study, Rozhan and Rohayu investigated the need for human resource management (HRM) dimensions in the supply chain management (SCM) of suppliers. Suppliers were required to develop specific HRM practices such as multi-skilling, teamwork and effective job rotation.

Meanwhile, Razzaque and Sirat make a comparison between logisticians from Singapore and Malaysia based on the views of top management. Their findings showed that successful logistics executives in complex business environments need to be multi-skilled generalists rather than technically-oriented specialists. Substantial studies, made by logistics researchers from around the world, have studied the relationship between HRM and logistics, in the context of logistician competency (see Thai et al., 2011; Esper et al., 2010; Wu, 2007; Wu & Chou, 2007; Razzaque & Sirat, 2001). However, attempts to explore the dimensions of competency in Malaysian logisticians have been few (see Rozhan & Rohayu, 2008; Razzaque & Sirat, 2001). Due to the small number of studies in this area, it presents an opportunity to explore these dimensions. The current study was designed to fill this gap and to enhance our understanding of how Malaysian logisticians perceive competency. Therefore, the objective of this study was to explore the extent to which logistician competency, as presented in the literature, is being emphasized among Malaysian logisticians.

In an attempt to meet the objective of this study, the specific research question that needs to be addressed was identified as; what are the dimensions of logistician competency for Malaysian logisticians? For this purpose, the paper is structured as follows: a review of the literature related to logistician competency, followed by a description of the research method used in this study. Next, the paper provides the results of the empirical study, before finally, presenting brief discussions, limitations and conclusion identified from the paper.

Literature Review

The origin of the competency-based concept is derived from the research of Harvard's behavioral psychologists, David McClelland in 1973 (McClelland, 1973); and further developed by the management theorist, Richard Boyatzis in his book "The Competent Manager: A Model for Effective Performance" published in 1982 (Boyatzis, 1982). McClelland's competency model focuses on the identification of key human behaviors rather than school-based examination. Boyatzis's model refines the McClelland model by describing competencies as the underlying characteristics of an employee which result in effective and superior performance in a job. These characteristics are traits, motive, skill, person's self-image, body of knowledge and person's social role.

The development of competencies, in the 21st century, for managers requires effective program design and teaching methods for learning (Boyatzis, Stubbs & Taylor, 2002). They further explained that competencies need to be effective and they can be explored through two dimensions; firstly, competencies as behavioral manifestations of talent, and secondly, competencies in a holistic theory of personality. In relation to logistician competency, logisticians' knowledge and skills are perceived as important factors for logistics firms to stay competitive in the 21st century (Chapman, Soosay & Kandampully, 2002; La Londe & Powers, 1993). Furthermore, Crook, Giunipero, Reus, Handfield and Williams (2008) focused on two types of knowledge and skills for logisticians: these were termed 'broad skills and knowledge' (communication, computer, understanding end customer, and project management) and 'specialized supply chain skills and knowledge' (supplier relationship management and coordination, material management, metrics, and market knowledge). In terms of the relationships among the skills, knowledge and competency, Gammelgaard and Larson (2001), separated them into general, context-independent knowledge, experience-based and context-dependent knowledge.

Longitudinal studies regarding the need for logisticians' competency, based on the Business-Logistics-Management (BLM) Model, have been conducted by various researchers (Thai et al., 2011; Murphy & Poist, 2007; 2006; 1998; 1994; 1991; Razzaque & Sirat, 2001). The model, however, was limited to the skills required by logistics managers within the scope of business, logistics and management functions. The model was proposed by Richard F. Poist in 1984 with the justification that modern logistics executives must possess a combination of business, logistics, and management skills (Poist, 1984). According to Poist, modern logistics executives required the BLM skills in order to manage logistics activities.

However, the BLM Model has limitations. First, the target population in the longitudinal studies from 1991 to 2007 was mainly focused on top management in logistics firms (see Thai et al., 2011; Murphy & Poist, 2007; 1998; 1994; 1991). The majority of items in the BLM components section are perceptions from the top logistics management samples. Therefore, it was still lacking in terms of its ability to capture the perception of other managerial levels, such as middle and low. As supported by Katz (2009), every manager requires conceptual, human and technical skills, but the level of each skill differs depending on their managerial level.

Second, previous findings were only based on exploratory studies: the studies used the methods of ranking mean score (Murphy & Poist, 2007; 2006; 1998; 1991) and comparing mean score (Murphy & Poist, 1994). Another study that applied the BLM Model demonstrated combinations of ranking mean score and exploratory factor analysis (Razzaque & Sirat, 2001). Thai et al. (2011) combined both descriptive (mean and standard deviation) methods and ranking of mean scores in their studies.

In related literature, Esper et al. (2010) and Mangan and Christopher (2005) have studied difference perspectives on logistician competency. Esper et al. emphasized that in order for supply chain and logistics organizations to have a competitive advantage, they need to hire employees with key SCM skills, implement leadership styles, create a learning working environment and create cross-functional teams. Mangan and Christopher explored the challenges for management development in order to bridge the gap between current capabilities (managerial skills and competencies for logistics and SCM managers) and those required for future success. This could be achieved by providing a range of courses and qualifications, ranging from vocational qualifications and executive educational programs to undergraduate and postgraduate degree level qualifications.

Methodology

This study aims to examine the research question: what are the dimensions of logistician competency for Malaysian logisticians. The research method used was to survey Malaysian logisticians to obtain their perceptions of the importance of area of competency, in their current position. A total of 244 Malaysian logistician participated in the study. A questionnaire was developed based on Way's (2002) work. Respondents were requested to rate the 17 (modified) competencies in terms of their importance to their jobs as logisticians using a five-point Likert scale (1 = extremely unimportant; 5 = extremely important). Table 1 lists the 17 competencies, modified from Way's work. The survey was mailed to 900 Malaysian logistics firms based on a list obtained from the Malaysia Logistics Directory (www.msialogistics.com). Of these, 244 questionnaires were returned. This is a response rate of 27.1 percent. Table 2 summarizes respondents' working experience, position, firm category and firm size.

Table 1: 17 Items for Determining Competency Modified from Way's (2002) Measurements

Item	Description
COMP1	Logistics skills (logistics functions)
COMP2	Global management knowledge
COMP3	Organizational awareness (including understanding the business, organizational issues, plans, culture and cross cultural issues)
COMP4	Understanding the logistics industry (including suppliers, product/service substitutes, buyers and potential entrants)
COMP5	General knowledge of finance, sales, marketing, customer service, corporate law, and information systems
COMP6	Pro-activity (prevention of problem situations)
COMP7	Sensitivity and consciousness about one's logistics professional image and that of the logistics function
COMP8	Leading and mobilizing others with a vision of the direction for the logistics function
COMP9	Communicating the logistics division/department/unit's role, services, and capabilities to the rest of the organization
COMP10	Group management skills (e.g., team building skills)
COMP11	Integrity (involves being open and candid, maintaining confidentiality, and being fair and ethical)
COMP12	Ability to approach problems with clear perception of organizational and political reality
COMP13	Ability to work effectively with others in the organization outside of logistics
COMP14	Communication process skills (including effective use of written material, oral presentations, verbal interchange, and nonverbal cues, using appropriate channels)
COMP15	Negotiation skills (including recognizing confrontational situations and persuading others)
COMP16	Strategic focus (involving maintaining an awareness of the forces affecting the logistics functions and organization as a whole)
COMP17	A value-added perspective (involving perceiving opportunities for logistics to deliver services and programs that add value; providing ingenuity, innovation, and creativity)

An exploratory factor analysis (EFA) was conducted in order to group the 17 items related to logistician competency into common underlying factors. Principal component analysis, varimax rotation, the latent root criterion of 1.0 for factor inclusion, communalities of .5 and a factor loading of .5 were used to include items in a factor (Hair, Black, Babin & Anderson, 2010).

Next, a confirmatory factor analysis (CFA) was conducted for obtaining a valid measurement model for logistician competency. All CFA procedures in conjunction with verifying the posited relationships of the observed indicators to the latent constructs were based on the procedures of Hair et al., using the maximum likelihood fitting process. In addition to that, a confirmatory measurement model should be evaluated and re-specified (Anderson & Gerbing, 1988). To evaluate the measurement model's goodness of fit, indexes such as comparative fit index (CFI), root mean square error of approximation (RMSEA), and the adjusted chi-square test ($X^2/\text{degrees of freedom}$) were applied.

Results

Table 2 shows the respondents' demographical information. Overall, respondents had an average of 11.4 years of working experience. The majority of respondents were middle managers (54.9 percent). Regarding firm category, 30.7 percent and 69.3 percent reported multinational and local logistics firms respectively. A large portion of the respondents worked in a firm with a size of 500 and above (36.5 percent).

Table 2: Respondent Profile (n = 244)

Characteristics	Frequency	Percentage
Position		
Top Manager	43	17.6
Middle Manager	134	54.9
Low Level Manager	67	27.5
Firm Category		
Multinational	75	30.7
Local	169	69.3
Firm Size		
1-10	21	8.6
11-50	32	13.1
51-100	20	8.2
101-300	46	18.9
301-500	36	14.8
500 and above	89	36.5
Mean working experience		11.4 years

The EFA showed that five items were unstable across the different sample groups, indicating low value of communality (less than .5) and thus they were removed. A three-factor structure accounted for 53.1 percent of the cumulative variance and retained 12 of the original 17 items. The results of the EFA indicated that the 12 items were grouped in three dimensions: Factor 1 = 5 items; Factor 2 = 4 items; and Factor 3 = 3 items. Table 3 shows that items COMP13, COMP14, COMP15, COMP16 and COMP17 were loaded on Factor 1. Overall, the Factor 1 items seemed to reflect the clear message of Malaysian logisticians' concern with the skills of strategic management. Thus, Factor 1 was labeled 'strategic management'. The Cronbach alpha score for Factor 1 is .82.

Table 4 shows that items COMP2, COMP3, COMP4 and COMP5 were loaded on Factor 2. These items seem to reflect the requirement of business knowledge for Malaysian logisticians. As a result of that Factor 2 was labeled 'business knowledge'. The Cronbach alpha score for Factor 2 is .73.

The following items were loaded on Factor 3: COMP7, COMP8, COMP9 (see Table 5). The three items that were loaded on Factor 3 reflect need for Malaysian logisticians to acquire skills in effective leadership, thus Factor 3 was labeled 'effective leadership'. The Cronbach alpha score for this Factor is .78.

Table 3: Factor 1 – Reflection on Strategic Management Skills

	Scale item	Load
COMP13	Ability to work effectively with others in the organization outside of logistics	.530
COMP14	Communication process skills (including effective use of written material, oral presentations, verbal interchange, and nonverbal cues, using appropriate channels)	.533
COMP15	Negotiation skills (including recognizing confrontational situations and persuading others)	.689
COMP16	Strategic focus (involving maintaining an awareness of the forces affecting the logistics functions and organization as a whole)	.579
COMP17	A value-added perspective (involving perceiving opportunities for logistics to deliver services and programs that add value; providing ingenuity, innovation, and creativity)	.617

Table 4: Factor 2 – Reflection on Business Knowledge

	Scale item	Load
COMP2	Global management knowledge	.557
COMP3	Organizational awareness (including understanding the business, organizational issues, plans, culture and cross cultural issues)	.616
COMP4	Understanding the logistics industry (including suppliers, product/service substitutes, buyers and potential entrants)	.573
COMP5	General knowledge of finance, sales, marketing, customer service, corporate law, and information systems	.493

Table 5: Factor 3 – Reflection on Effective Leadership Skills

	Scale item	Load
COMP7	Sensitivity and consciousness about one's logistics professional image and that of the logistics function	.744
COMP8	Leading and mobilizing others with a vision of the direction for the logistics function	.761
COMP9	Communicating the logistics division/department/unit's role, services, and capabilities to the rest of the organization	.598

Table 6: Factor Loading Structure Matrix

Item	Factor		
	1	2	3
COMP2		.648	
COMP3		.739	
COMP4		.703	
COMP5		.658	
COMP7			.813
COMP8			.832
COMP9			.637
COMP13	.666		
COMP14	.666		
COMP15	.796		
COMP16	.673		
COMP17	.729		

The measurement model for the three dimensions and 12 items yielded a good fit to the data (CFI = .961, RMSEA = .056, $\chi^2/\text{degrees of freedom} = 1.761$, $p = .001$) (Figure 1). Correlations between the dimensions were high and positively correlated, with Factor 1 – Factor 2 ($r=.73$, $p=.001$), Factor 2 – Factor 3 ($r=.70$, $p=.001$), and Factor 1 – Factor 3 ($r=.69$, $p=.001$).

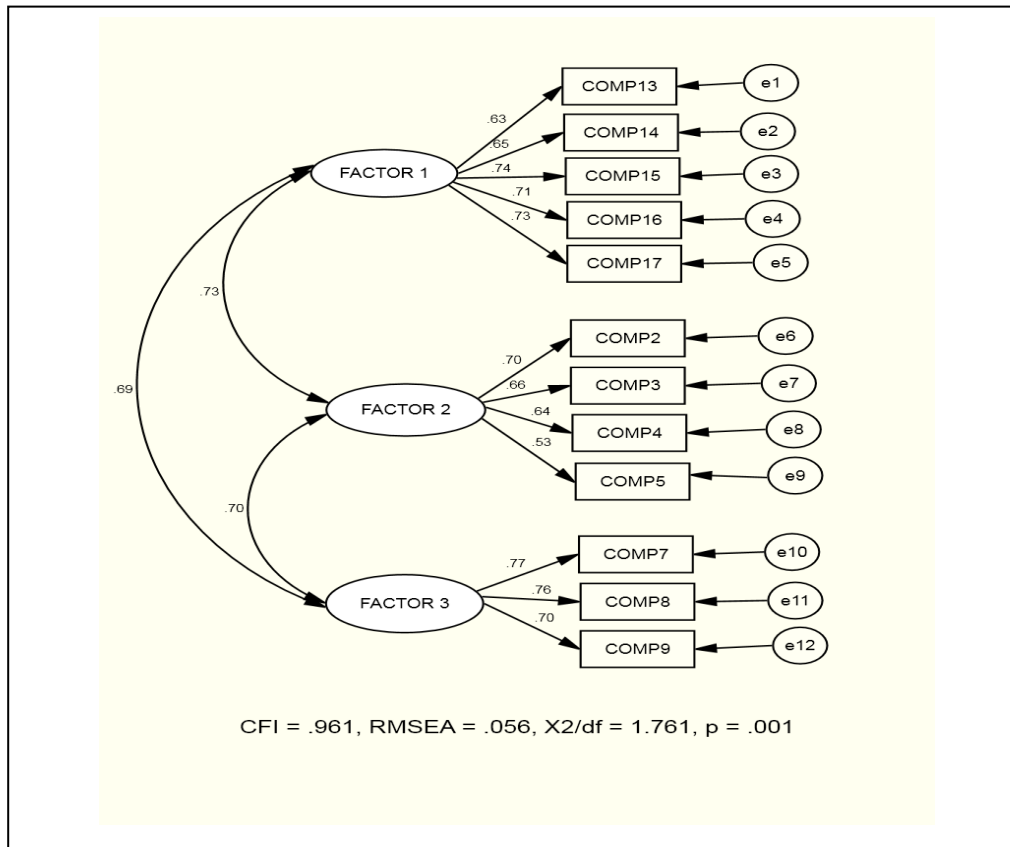


Figure 1: Measurement Model for Three Dimensions of Malaysian Logistician Competency Identified in the CFA

Discussion and Conclusion

Several key contributions and implications can be drawn from this study, both from theoretical and practical perspectives. The five items in Factor 1 relate to strategic management skills (SMS). Having skills in strategic management is vital for managers (Huber & Power, 1985). In logistics, effective strategic management plays an important role in determining successful logistics and supply chain management activities (Sandberg, 2007). Hence, for successful SMS implementation, Malaysian logisticians must feel that value is central to SMS implementation by logistics firms. To have successful SMS implementations, these logisticians need to focus on several factors such as effective teamwork, communication, negotiation and management skills, and value-added perspective.

From an effective teamwork perspective, Keller and Ozment (2009) provided a comprehensive review of the core literature pertaining to frontline logistics personnel and their managers. They believe that one of the factor for creating success in business logistics depends on logistics managers creating enthusiasm among team members by educating employees about the business, and that managers must demonstrate a commitment to make ideas into a reality by granting employees responsibility and authority. Further analyses by Sandberg and Abrahamsson (2010) demonstrated that cross functional teamwork is seen as one of the most important ingredients for top supply chain managers to execute effective strategy.

Thai et al., Yazdanparast, Manuj and Swartz (2010), and Wu (2007) provide papers about communication, negotiation and management skills in relation to logisticians’ SMS. These skills were found to be the area that educational and training institutions should aim to further develop, to enable the local logistics workforce to perform their job successfully. From a related paper, to succeed in an uncertain environment, logistics managers must acquire skills in communication which lead to effective management skills.

From the value added perspective and its relationship with SMS, logistics firms need to focus more on the value adding services in their transportation and warehousing activities, since these two items were largely ignored in terms of lead-time performance (Hong, Chin & Liu, 2007). The four items that grouped in Factor 2 reflect knowledge about business. Malaysian logisticians have seen the importance of understanding business logistics (Thai et al., 2011; Kumar, 2008). Global knowledge and skills are necessary for logisticians to be able to meet global challenges in a globalised market (Thai et al., 2011; Murphy & Poist, 2006). They must be a talented logistician who not only has a depth of logistics knowledge and capabilities but also knowledge and capabilities about non-logistics items; such as, finance, sales, marketing, customer service, and information systems, etc (Thai et al., 2011, Busse & Wallenburg, 2011; Wu, 2007; Razzaque & Sirat, 2001).

The results also show that Malaysian logisticians need to acquire knowledge about organizational awareness and understanding of the logistics industry. This finding supports results from previous studies (see Thai et al., 2011; Grawe, 2009; Keller & Ozment, 2009). In their study, Keller and Ozment showed it was necessary for logistics managers to incorporate awareness of diversity in their logistics business. This would provide a better understanding of how to elevate logisticians' professionalism.

The items forming Factor 3 are related to the competency of Malaysian logisticians' effective leadership skills (ELS). A previous study suggested a maturing of the logistics discipline: in the sense that a more specialized set of management skills are needed for logisticians (Murphy & Poist, 2007). Pohlen's examination of higher education institutions and professional bodies, Pohlen (2011), identifies the need for higher education institutions and professional bodies to provide effective logistics and transportation modules for graduates to be able to demonstrate their leadership knowledge and skills in practical situations.

Malaysian logistics managers are expected to demonstrate vision as part of their ELS. For example, creating a closed-loop supply chain orientation may be facilitated when the supply chain leader demonstrates visionary leadership and a strong command of communication skills as their transformational leadership styles (Defee, Esper & Mollenkopf, 2009). Defee et al. believed that by developing a specific supply chain leadership style the transformation to such an orientation would be enhanced.

The importance of ensuring successful communication internally and externally in logistics firms has been the main concern in many logistics papers (see Wu, 2007; Sauvage, 2003; La Londe & Powers, 1993). In logistics operations, critical relationship success factors include buyers and suppliers responses (Whipple & Frankel, 2000). In addition to that, Daugherty (2011) proposed future studies on the collaboration between parties involved in logistics and supply chain management activities. She added that such collaborations offer the potential to make groundbreaking contributions and generate new knowledge for logistician competency.

The findings in this study have implication for higher education institutions (HEIs) and the logistics industry. HEIs which offer logistics programs should consider developing modules and courses in their programs which are able to demonstrate learning outcomes covering knowledge and skills in strategic management, business, and effective leadership. These learning outcomes must be able to be learnt and applied by logistics graduates so that they can achieve competency.

As for employers, this study can be used as a general guideline for the recruitment and development of logisticians. For example, during the recruitment process, employer may test potential candidates regarding their knowledge and skills pertaining to strategic management skills, business knowledge, and leadership skills for determining level of competency. In the case of future development, this study can provide employers with a check-list to conduct an audit for measuring their employees' competency.

There are limitations of the study that need to be addressed. One is that the context of this study is limited to the perspective of those who have managerial positions in logistics firms (top, middle and low level managers), which limits the ability of these findings to generate generalized recommendations. Perhaps in a future survey the population may include logisticians who do not posed any managerial positions. This may demonstrate different results. A second limitation is how well the respondents may have understood and perceived the concept of "logistician competency". Their perceptions were influenced by demographical factors such as working experience, managerial position, firm category and firm size. Future research that examines "logistician competency" with a large sample size may provide more general findings that the current work.

A third limitation is that this study is cross-sectional in nature. The use of a cross-sectional research design would be best for a future follow-up of respondents as this could provide more reliable results.

In conclusion, the presented EFA and CFA results about Malaysian logistician competency indicate dimensions within strategic management skills, business knowledge, and effective leadership skills. These dimensions provide salient inputs for Malaysian HEIs and also logistics managers for tapping competency in logistics programs, recruitment and development functions. The study thus corroborates the view that determining the dimensions of competency is going to be a major area of study in the Malaysian logistics industry in the future.

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