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Managerial competencies of 3PL providers

A comparative analysis of Indonesian firms and multinational companies

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Abstract

Purpose – The purpose of this paper is to identify and prioritise competencies of Indonesian third-party logistics (3PL) managers from the perspective of multinational corporations (MNCs) and local firms.
Design/methodology/approach – Underlined by the theory of action and job performance (competency model), the study proposes a framework that consists of management, logistics, business and information and communication technology competency categories, with 15 competencies. Data are collected from five MNCs and five local 3PL firms operating in Indonesia. The analytic hierarchy process method is used to calculate the priority weights and to prioritise the competencies.
Findings – Results indicate that both the local and MNC 3PL providers emphasise logistics as the "most important" competency category. In the "moderately important" competency group, MNCs prioritise competencies in the management competency category while local firms prioritise competencies in the business competency category.
Research limitations/implications – Results obtained in this study focus on 3PL firms in Indonesian businesses, which may not be applicable to other nations and other industries.
Practical implications – 3PL firms, industry peak bodies (e.g. Indonesian Logistics Association) and education providers can benefit from incorporating the findings of this study in developing curricula for higher education and training programmes for certification designed to improve managerial competencies.
Originality/value – By including the perceptions of the MNCs and local 3PL providers, this study advances the literature on 3PL managerial competencies by extending such knowledge to the global environment.

Keywords Indonesia, Analytic hierarchy process, Competency, Logistics industry, Logistics competences, Third-party logistics providers

Paper type Research paper

1. Introduction

Third-party logistics (3PL) refers to an arrangement in which companies outsource their business operations to a specialised service provider that offers customised on-demand transportation, warehousing, distribution and freight-forwarding services. In addition, 3PL providers facilitate the movement of goods through processing documents, monitoring activities and financing transactions. The comprehensive range of services offered by 3PL providers has led to an increase in the number of firms outsourcing their logistics services to 3PL providers (Perçin, 2009). For example, 90 per cent of the Fortune 500 companies in the USA reported having at least one 3PL contract, and the market for logistics providers continues to grow (Berman, 2017). It has been suggested that the global 3PL market will grow to $1.3 trillion by 2024 (from $0.452 trillion in 2018), registering a strong CAGR over the forecast period, 2019–2024 (Mordor Intelligence, 2019). The growth in logistics outsourcing to 3PL providers is principally attributed to the benefits it creates through

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reducing costs, improving performance and increasing the ability of organisations to focus on their core business (Zacharia *et al.*, 2011; Langley, 2017).

The increasing role of 3PL providers in a firm's business requires managers that can link processes, manage crucial relationships and engage in decision making (Langley, 2017). Specifically, skilled employees in the logistics industry can redesign the process and contribute greatly to a firm's success and growth (Ellinger and Ellinger, 2014). However, rapid changes in the business environment have resulted in a shortage of skilled logistics professionals (Langley, 2013; Rahman and Qing, 2014; Sinha *et al.*, 2016). This shortage has arisen from firms' focusing on cost reduction and improving relationships with customers and suppliers rather than on developing employees to achieve supply-chain objectives (Sweeney, 2013; Flöthmann, Hoberg and Gammelgaard, 2018). Therefore, talent management will be the principal driver of a company's success in the future (Hohenstein *et al.*, 2014; Langley, 2017).

The Indonesian logistics industry is facing challenges related to a shortage of skilled labour. The efficiency of Indonesia's logistics industry, as measured through the Logistics Performance Index (LPI), indicates that Indonesia (which has an aggregated rank of 51) can improve the quality of its logistics services (World Bank, 2018). Research finds that governments play an important role in ensuring the quality of logistics services through developing policies (McKinnon *et al.*, 2017). For example, the Indonesian Government's 2012 Blueprint for the Development of a National Logistics System (Cetak Biru Pengembangan Sistem Logistik Nasional) highlights establishing national competency standards for the logistics industry. Regardless of its efficiency issues, the Indonesian logistics industry has been growing by 11.8 per cent on an average for the past 10 years (McKinnon *et al.*, 2017). Given the growth potential, if challenges related to the availability of skilled and competent managers in the logistics industry are addressed promptly, Indonesia could become the largest market for the logistics industry in Asia.

Despite the importance given by practitioners and policymakers globally to talent management in the logistics industry, research has rarely focused on the crucial process of developing talented managers (Ellinger and Ellinger, 2014). Most prior studies on logistics managers' skills and competencies are limited to the context of developed countries such as the USA (e.g. Keolanui and Wood, 1975; Murphy and Poist, 1991a, b, 2006; Gammelgaard and Larson, 2001) and Europe (Larson and Gammelgaard, 2001; Flöthmann, Hoberg and Gammelgaard, 2018). More recently, researchers have begun to investigate the skills and competencies of logistics managers in the context of developing countries such as China (e.g. Rahman and Yang, 2012; Thai and Yeo, 2015). Despite the shift in research focus to developing countries, the research output remains very limited to the largest world economies. The limited research on the skills and competencies of logistics managers in the context of developing countries has highlighted the need for research to identify critical skills for 3PL managers in the context of developing economies (Hohenstein *et al.*, 2014). Therefore, the objective of the study is to identify and prioritise the competencies required by 3PL managers in the context of Indonesia.

This research contributes to the literature in two ways. First, this is the first study to investigate 3PL managerial skills and competencies in the Indonesian context. The identified skills and competencies will assist government and policymakers in Indonesia to develop policies for the future development of human resources in the Indonesian logistics industry. Second, the study provides a comparison of the perspectives of multinational corporations (MNCs) and local 3PL providers operating in the Indonesian business context on the skills and competencies important for 3PL managers. It is crucial to understand the differences between the perspectives of MNCs and local 3PL providers because both the categories of logistics providers have access to different resources.

The remainder of this paper is organised as follows. Section 2 presents a brief discussion of the importance of Indonesian 3PL service providers. Section 3 presents the competency

model of 3PL managers proposed by this study, a description of the research approach and the literature review. Section 4 describes the methodological approach employed in the study. Section 5 presents the results of the analysis. Section 6 presents the discussion. Section 7 concludes the research by providing implications, research limitations and suggestions for future research.

2. Indonesian 3PL services

Despite sluggish global growth in gross domestic product (GDP) and poor consumer demand in 2015 and 2016, the Indonesian logistics industry recorded $46.3bn revenue in 2017 with a compound annual growth rate (CAGR) of 10.1 per cent between 2013 and 2017, which is a record high in comparison with other Asian countries (MarketLine, 2018). Specially, the Indonesian 3PL market is expected to increase at a five-year CAGR of 14.0 per cent (PRNewswire, 2018). The factors driving the growth in Indonesia's logistics industry are reliance on the manufacturing industry, strong private consumption, higher trade growth, lower external-financing costs, depressed oil prices and infrastructure development (Chan *et al.*, 2017).

The Indonesian Government's investments in infrastructure projects such as building 2,500 km of new highway will not only contribute to the growth rate of the logistics industry, but also reduce the nation's spending on logistics from 24 to 19.2 per cent of national GDP by 2019. Reducing logistics spending to 16 per cent of GDP (which is the same as Thailand's spending on logistics) would realise a savings of $80bn per year. While a further decrease in the percentage of GDP spent to approximately 8 per cent, like in many developed nations, means that Indonesia will have a great deal of scope for investment in innovative solutions for reducing logistical burdens and improving its LPI ranking (GBG Indonesia, 2016). Compared with the its Southeast Asian neighbours such as Singapore, Malaysia, Thailand and Vietnam, the efficiency of Indonesian logistics ranked 46 in 2018, indicating significant inefficiencies in the industry (World Bank, 2018). Significant delays in, and the complexity of, customs clearance, the poor quality of infrastructure and the lack of competent logistics service providers have contributed to the Indonesia's poor performance in logistics services. Since 2016, the Indonesian Government has issued many policies related to logistics to address challenges in custom clearance and has invested in infrastructure projects to improve logistics performance. However, such measures are not directly related to skills development, and the challenge related to the lack of competent managers in Indonesian logistics firms remains (McKinnon *et al.*, 2017).

In the Indonesian logistics sector, the gap between the availability of competent human resources and the demand for skilled employees can be minimised through initiatives in education and training (McKinnon *et al.*, 2017). However, to date, little attention has been paid to addressing the need for a skilled workforce that can transform this sector. Research has clearly shown the correlation between an adequate and well-qualified workforce and enhanced logistics performance (Thai, 2012). Therefore, it is important to identify critical competencies and the priority ranking they are given by Indonesian logistics managers to improve the quality of Indonesia's logistics services. In particular, understanding 3PL managerial competencies is crucial because Indonesian firms are increasingly using 3PL providers for logistics services. 3PL providers offer services to firms operating in a range of industries of different sizes and scopes. Indonesia's domestic market share accounts for 40 per cent of the logistics industry, which is predominantly operated by local 3PL providers. The remaining 60 per cent of international freight is operated by many MNCs (e.g. DHL, FedEx, TNT and UPS). Irrespective of the ownership of 3PL firms, firms are emphasising managerial competence as a means of increasing performance in the logistics industry. Thus, the research objective of this study is to identify and prioritise managerial competencies perceived as important by both local and MNC 3PL providers operating in the Indonesian context.

3. Theoretical underpinnings and literature review

Employee competencies play a critical role in improving organisational performance. A job competency is defined as an underlying motive, trait, skill, aspect of one's self-image or social role, or a body of knowledge of a person that is effective for job performance (Boyatzis, 1982). To address various job demands and maintain a firm's competitive advantage, a range of competencies are required by managers (Katz and Kahn, 1978; Boyatzis, 2008; Ryan *et al.*, 2012). The theory of action and job performance (competency model) proposed by Boyatzis (1982) is used to examine different competencies and their role in effective job performance (Ryan *et al.*, 2012). This theory identifies the following three competency categories for effective job performance: individual competencies, job-related competencies and organisation-specific competencies (Boyatzis, 2008). Further, this theory emphasises the importance of operationalising competencies in alignment with the organisation's strategies. Therefore, this theory is considered well suited for research and applied practice (Ryan *et al.*, 2012).

Researchers in the area of competency have used Boyatzis's (1982) theory to identify various competency categories (e.g. Chouhan and Srivastava, 2014; Bharwani and Talib, 2017). Katz and Kahn (1978) identified technical or functional, managerial, human and conceptual as the competency groups. Bharwani and Talib (2017) grouped competencies into the functional aspects of a job and individual personality. In the field of logistics and supply-chain management, researchers have used business, logistics and management (BLM) as the competency categories (Murphy and Poist, 2006; Gibson *et al.*, 1998; Myers *et al.*, 2004). More recently, Rahman and Qing (2014), Flöthmann, Hoberg and Gammelgaard (2018) and Flöthmann, Hoberg and Wieland (2018) have examined the role of managerial competencies related to information and communication technology in meeting job demands. Increased automation and digitisation have helped organisations to build efficient and technologically advanced supply chains (Rahman *et al.*, 2019). In particular, the invention of radio-frequency identification (RFID) tags and integrated systems such as enterprise resource planning (ERP) have provided traceability in supply chains and improved supply-chain performance (Prajogo and Sohal, 2013). Therefore, competencies related to information technology have become crucial for logistics managers (Langley, 2017). Underpinned by Boyatzis's (1982) theory of action and job performance (competency model), this study identifies management, business, logistics and information and communication technology as competency categories. Table I outlines the relevance of Boyatzis's (1982) theory to the logistics competencies used in this study.

3.1 Management competency category

Management skills such as planning and organising play an important role in enabling a successful logistics environment (Murphy and Poist, 1991a). The following list presents an explanation of management skills:

- Leadership: leadership is the ability to organise a group of people to achieve a common goal by influencing them. Formalisation, flexibility and measurement are the three attributes of leadership (Bowersox and Daughtery, 1992; Kotter, 2001; Avolio *et al.*, 2009).
- People management: people management encompasses the tasks of recruitment, management and providing ongoing support and direction for the employees of an organisation (Stroh and Caligiuri, 1998; Cabrera and Cabrera, 2007).
- Teamwork and communication: managers work across functions often as part of teams in which different functional skills are brought together with a common focus (Tarricone and Luca, 2002; Gueldenzoph Snyder, 2009).

Components of competency model	Explanation	Competency-category in this study	Explanation
Individual competencies	Individual competencies are necessary but not sufficient for effective job performance. It is an underlying character of a person	Business	Conceptual skills that are required by the employee to able to visualise, think and plan for the future while performing the job
Job demands	A set of functions or tasks that a person should perform to meet the job requirement	Logistics	Warehouse operations, distribution and transportation, and project management are the specific competencies required by logistician
		Information and communication technology	Attitudes and skills associated with the technology to perform the role
Organisational environment	Organisational culture and climate that influences the job and vice versa	Management	Competencies related to leading an organisation and people. Some examples include people management, change management, and leadership

Table I.
Categories of logistics competency model

- Change management: change management refers to the ability of a manager to transition individuals, teams and organisations to a desired future organisational state through understanding the current state of the organisation and implementing appropriate strategies for change (Gill, 2002; Todnem By, 2005).
- Negotiation: negotiation refers to a bargaining process between two or more parties (each with its own aims, needs and viewpoints) that seeks to reach an agreement to settle matter of mutual concern or resolve a conflict (Stevens and Gist, 1997; Dubey *et al.*, 2018).

3.2 Logistics competency category

Job performance is affected by the specialised knowledge possessed and exhibited by the employee (Boyatzis, 1982). In particular, logistics executives require knowledge on functions such as transportation, warehousing and project management:

- Warehouse and inventory management: warehouse and inventory management involves the receipt, storage and movement of goods to intermediate storage locations or to a final customer. In logistics, the management of inventory plays an important role because it significantly contributes to the costs (Autry *et al.*, 2005; Sun and Song, 2018).
- Transportation and distribution management: transportation and distribution management is related to the responsibility of managing the flow of goods, information and people from the point of origin to the point of consumption (Wu *et al.*, 2013).
- Project management: the project-management skills of organising and coordinating meetings, conducting training and using decision-making skills are important in the field of supply-chain management (Barnes and Wearne, 1993; McAlister, 2006).

3.3 Business competency category

Business skills are the transferable skills possessed by an individual to perform a job in a managerial role. In the BLM framework (Murphy and Poist, 2006), the competency of

business skills is compatible with the competency of individual skills specified in the competency model of Boyatzis (1982). Traditional business skills such as business analytics and continuous improvement can be taught in the business schools. However, non-traditional business skills such as managing results are typically taught outside business schools (Razzaque and Bin Sirat, 2001; Sun and Song, 2018):

- Analytical: analytical skills refer to the ability to visualise, articulate and solve complex and complicated problems, understand concepts and make decisions based on available information (Cegielski and Jones-Farmer, 2016).
- Managing results: the skills of managing results require managers to plan their work while considering a clear set of objectives, activities, outputs, outcomes and results for every aspect of management (Gueldenzoph Snyder, 2009).
- Continuous improvement: the skill of continuous improvement refers making an ongoing effort to improve the quality of products or services. Logistics providers need to improve their processes continually to enhance capabilities (Rijnders and Boer, 2004; Yang *et al.*, 2016).
- Ethical awareness: ethical awareness describes the commitment of the business to improve the quality of life of employees, their families, the local community and society at large and contribute to sustainable economic development (Bourn, 2018).
- Cultural awareness: cultural awareness refers to the ability to understand and acknowledge key cultural differences in various areas; for example, in communication and cognitive styles, concept of time and punctuality, negotiation strategies and behaviours (Leung *et al.*, 2005; Caprar *et al.*, 2015).

3.4 Information and communication technology competency category

Information and communication technology is considered an important factor in the logistics industry because it allows making real-time decisions based on the data available. Managing information and communication technology requires skills related to technology handling and information management:

- Hardware and software knowledge: hardware and software knowledge refers to the ability to operate hardware and software related to specific business activities that require information-technology skills (e.g. creating and editing files such as documents, spreadsheets, graphics and internet materials) (Cegielski and Jones-Farmer, 2016), as well as to having technical knowledge of digital processes such as electronic data interchange, bar-coding and RFID (Prabhakar *et al.*, 2005).
- Information-handling knowledge: the information-handling skills of planning, controlling, processing, evaluating and reporting activities are crucial to meeting client objectives and enabling firm function in the delivery of goods and services (Singh and Finn, 2003; Derwik and Hellström, 2017).

Figure 1 presents the hierarchical model developed by this study from the competencies identified (see Figure 1).

4. Research methodology

The proposed competency model consists of a structured hierarchy of competency categories and competencies (see Figure 1). To identify the important competencies from the proposed framework, decision makers must assign a subjective priority weights according to their judgement in relation to their knowledge of their firm. Analytic hierarchy process (AHP) is considered a robust tool for decision making when both quantitative and

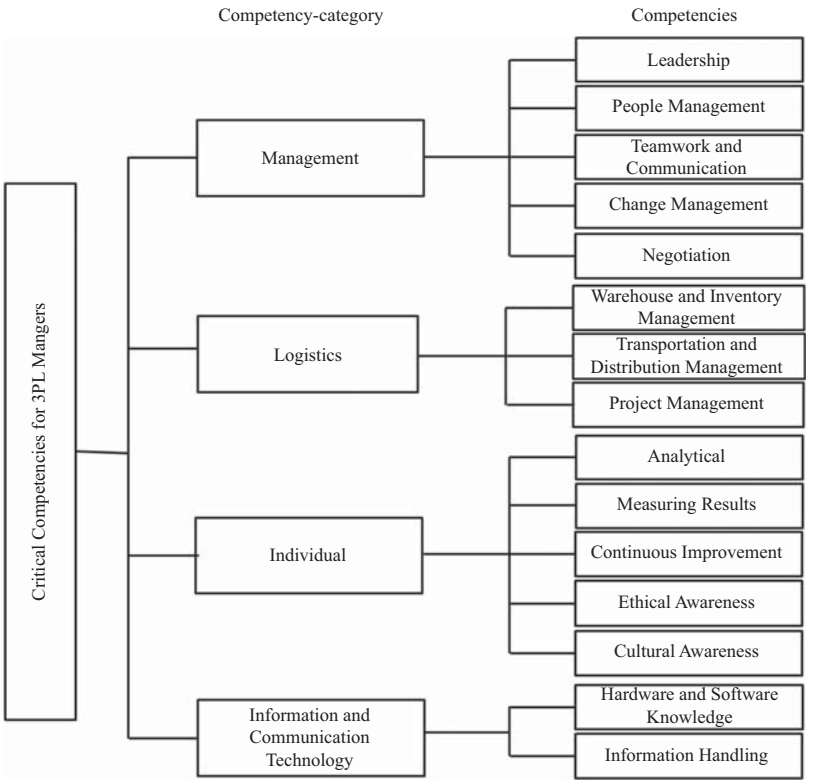

Figure 1.
Determinants of the critical competency for operations managers in 3PL

qualitative criteria are involved (Rahman *et al.*, 2019; Ishizaka and Shiraj, 2018; Yadlapalli *et al.*, 2019). In the context of 3PL, AHP is used to select 3PL vendors (Daim *et al.*, 2012), evaluate the performance of 3PL providers (Perçin, 2009), measure the service quality of 3PL providers (So *et al.*, 2006) and identify the challenges faced by 3PL providers (Efendigil *et al.*, 2008; Rahman *et al.*, 2019). Hence this study adopts AHP and this is further discussed in the following section.

4.1 Analytic hierarchy process: a brief overview

AHP is a multicriteria decision-making approach that helps to break down and organise a complex, unstructured situation into components of a hierarchical structure (Saaty, 1990). A description of the AHP process in the study context is provided below:

- Step 1: AHP structuring (i.e. competency categories, competencies): this step involves identifying key competency categories and competencies required by 3PL managers. In this study, the problem was structured as competency categories and competencies at two hierarchical levels.
- Step 2: Pair-wise comparison of competencies: criteria at each level are compared pair-wise in terms of their importance to the criterion in the next-higher level. Starting at the top of the hierarchy and working down, a number of preference (square) matrices are generated in the process of comparing criteria at a given level (Figure 1). For a set of n criteria in a matrix, $(n^2-n)/2$ judgements are needed, and the remaining judgements are reciprocals ($a_{ji} = 1/a_{ij}$).

- Step 3: Determination of critical competencies and consistency of judgements: in the third and final step of AHP, the preference matrices generated in Step 2 are translated into largest eigenvalue problems, and are solved for unique and normalised vectors of weight to criteria in each level of hierarchy. Expert Choice® software is used to calculate the priority weights of competency categories and competencies.

AHP also provides a direct measure of the consistency of the judgements elicited by managers referred to as the consistency ratio (CR). The CR refers to the degree to which decision makers adhere to the rank order specified and measures the extent to which an established preference is maintained. A CR$\leqslant$0.1 is recommended as acceptable (Saaty and Vargas, 2012). If the CR $>$ 0.1, it is suggested that managers must reevaluate their judgements.

4.2 Case study

The method of critical case sampling is a type of purposive sampling used to identify cases that are "particularly information rich" in relation to the questions under consideration (Yin, 2003). This study distributed questionnaires to 10 local and 10 MNC high-profile 3PL companies that had been operating in Indonesia for more than 15 years. The contact details of these firms were obtained from the databases of Asosiasi Logistik Indonesia and Supply Chain Indonesia. Five multinational 3PL providers and five local 3PL providers agreed to participate in this study. The head offices of these firms are located in Jakarta, Bekasi and Tangerang areas. After consent was obtained, one of the authors made appointments to meet the respondents at a time and place most convenient for them for interviews. For confidentiality reasons, the MNCs that participated in this study are referred to as MNC1, MNC2, MNC3, MNC4 and MNC5 and the local firms are referred to as LOC1, LOC2, LOC3, LOC4 and LOC5. An overview of the MNCs and local 3PL providers is presented in the following sections.

The information presented in Table II shows that all the MNCs apart from MNC4 are from industrialised Organisation for Economic Co-operation and Development (OECD) nations and are known for sophisticated logistics service provision. MNC4's headquarter is located in Kuwait, which has the world's sixth-largest oil reserve. As a result, MNC4 specialises in transportation of large-scale, logistically complex products such as oil, gas and chemicals.

MNC	Country of origin	Revenue ($) (million)	Employee (Indonesia)	Specialized services	Respondent position	Years of experience
MNC1	Germany	50	1,500	Automotive	Director	25
MNC2	USA	35	1,250	FMCG, minerals	Senior Manager	15
MNC3	Switzerland	30	1,000	FMCG, oil and gas	National Manager	16
MNC4	Kuwait	17	500	Oil and gas, chemical	Head of Operations	23
MNC5	Japan	25	1,100	Automotive	National Manager	20
Local	Ownership	Revenue ($) (million)	Employee (Indonesia)	Specialized services	Respondent position	Years of experience
LOC1	Government	25	5,000	Documents, small parcel	Head of Operations	16
LOC2	Public listed	70	1,000	FMCG	Senior Manager	15
LOC3	Private	27	750	Pharma	Country Head	21
LOC4	Private	50	1,498	FMCG, Chemical	Director	20
LOC5	Private	28	1,000	FMCG, oil and gas	National Manager	25

Table II. Summary of the participating firms and profile of the interviewees

Being headquartered in the countries of the world's largest automotive producers Germany (MNC1) and Japan (MNC5), MNC1 and MNC5 specialise in offering services to the automotive industry. MNC2 and MNC3 offer end-to-end supply-chain solutions for the fast-moving consumer goods (FMCG) industry. The variety of the services provided by the MNC sample firms offers this study scenarios and perspectives, which provides rich information to this study. All the respondents are in a senior position in the firm and have experience of over 15 years, with an average of 20 years. This demonstrates that the respondents have extensive experience and knowledge in the field to provide opinions on the competency requirement in 3PL operations in Indonesia. The demographic details of the MNC firms and the respondents from these firms are presented in Table II.

All the local 3PL firms that participated in this study are large, with over 750 employees and a revenue of over $25m each (see Table II) and have been operating for an average of 50 years. Given that it is government owned, LOC1 is always the first firm in Indonesia's logistics industry to implement logistics policies introduced by the government. LOC1 offers services for small-parcel deliveries and LOC5 offers services for delivery of oil and gas products. Since its establishment, LOC3 has always offered end-to-end logistics services to the pharmaceutical industry. LOC2 and LOC4 provide services in multiple industries. The respondents from the local firms are in a senior position with an average of 19 years of experience. The variation of the services offered by the local 3PL providers and the variation in managerial experience demonstrates the respondents' ability to provide rich information to this study.

4.3 Data collection

A three-part questionnaire was used for interviews and data collection. Part 1 contained general questions about the firm and the respondents' background; Part 2 contained 15 open-ended questions designed to capture respondents' opinions on the importance of the 15 competencies from the proposed competency model (Figure 1). Part 3 contained pair-wise comparison questions between 15 competencies to determine the level of importance and priority of the individual competencies.

As the basic procedure of AHP, the respondent must compare a pair of competencies in level of importance with respect to their category in a hierarchical manner. Referring to their importance in terms of a particular measure, respondents must make a judgement on a scale of 1–9. A score of 1 represents indifference between the two competencies, while a score of 9 represents overwhelming priority of one competency over another. When scoring is conducted for a pair, a reciprocal value is automatically assigned to the reverse comparison within the matrix (Saaty and Vargas, 2012).

5. Results and analysis

From the interview, priority weights and CR values for each respondent's judgements were calculated using of Expert Choice® software. Weights of each competency category identify the degree of importance of the competency category in effective job performance. Similarly, the weights of each competency were calculated. The results are summarised in Tables III and IV. The CR values presented in Tables III and IV of each respondent category are within the acceptable limit (i.e. $\leqslant 0.1$), demonstrating the respondents' opinions are consistent.

5.1 Identification of important competencies

The results of the combined judgement of all the MNC respondents indicate that the logistics competency category (weight = 0.481) is more important than the management (weight = 0.238), business (weight = 0.211) and information and communication technology competency categories (weight = 0.070). The importance of logistics competency category is seen across all the MNCs, except in MNC1. In the case of

	MNC1		MNC2		MNC3		MNC4		MNC5		Combined MNC	
	Local	Global	Local	Global	Local	Global	Local	Global	Local	Global	Local	Global
Competency												
CR value with respect to goal	0.089		0.061		0.099		0.099		0.058		0.021	
Management	0.289		0.257		0.199		0.145		0.191		0.238	
Logistics	0.117		0.530		0.479		0.682		0.647		0.481	
Business	0.537		0.146		0.238		0.121		0.103		0.211	
Information and communication technology	0.058		0.066		0.084		0.051		0.059		0.070	
Management												
CR value with respect to management	0.091		0.099		0.094		0.093		0.078		0.029	
Leadership	0.322	0.093	0.378	0.097	0.198	0.039	0.176	0.026	0.321	0.061	0.310	0.074
People management	0.380	0.110	0.157	0.040	0.198	0.039	0.165	0.024	0.071	0.014	0.196	0.047
Teamwork and communication	0.065	0.019	0.327	0.084	0.470	0.093	0.540	0.079	0.175	0.033	0.289	0.069
Change management	0.163	0.047	0.087	0.022	0.095	0.019	0.075	0.011	0.112	0.021	0.119	0.028
Negotiation	0.070	0.020	0.052	0.013	0.044	0.009	0.044	0.006	0.321	0.061	0.086	0.020
Logistics												
CR value with respect to Logistics	0.061		0.000		0.062		0.027		0.000		0.001	
Transportation and distribution management	0.649	0.076	0.439	0.227	0.649	0.311	0.156	0.107	0.429	0.277	0.490	0.237
Warehouse and inventory management	0.279	0.033	0.419	0.227	0.072	0.034	0.185	0.126	0.429	0.277	0.277	0.133
Project management	0.072	0.008	0.143	0.076	0.279	0.134	0.659	0.449	0.143	0.092	0.230	0.111
Business												
CR value with respect to business	0.089		0.080		0.095		0.097		0.067		0.027	
Analytical	0.165	0.088	0.282	0.041	0.237	0.057	0.146	0.018	0.163	0.017	0.206	0.043
Managing results	0.208	0.111	0.443	0.065	0.553	0.132	0.349	0.042	0.310	0.032	0.382	0.081
Continuous improvement	0.488	0.262	0.145	0.021	0.106	0.025	0.351	0.043	0.369	0.038	0.270	0.057
Ethical awareness	0.057	0.030	0.079	0.012	0.055	0.013	0.060	0.007	0.061	0.006	0.067	0.014
Cultural awareness	0.083	0.045	0.050	0.007	0.049	0.012	0.094	0.011	0.097	0.010	0.076	0.016
Information and communication technology												
CR value with respect to technology	0.000		0.000		0.000		0.000		0.000		0.000	
Hardware and software knowledge	0.750	0.043	0.500	0.033	0.125	0.010	0.167	0.009	0.500	0.029	0.380	0.027
Information handling knowledge	0.250	0.014	0.500	0.033	0.875	0.073	0.833	0.043	0.500	0.029	0.620	0.043

Table III.
Local and global weights and consistency index of judgments for MNCs individually and combined

Table IV.
Local and global weights and consistency index of judgments for local providers individually and combined judgments

	LOC1		LOC2		LOC3		LOC4		LOC5		Combined local	
	Local	Global	Local	Global	Local	Global	Local	Global	Local	Global	Local	Global
Competency												
CR value with respect to goal	0.089		0.066		0.059		0.089		0.068		0.025	
Management	0.289		0.140		0.177		0.112		0.151		0.191	
Logistics	0.427		0.157		0.575		0.612		0.687		0.527	
Business	0.225		0.637		0.194		0.216		0.117		0.225	
Information and communication technology	0.057		0.066		0.054		0.050		0.044		0.057	
Management												
CR value with respect to Management	0.061		0.077		0.089		0.081		0.081		0.025	
Leadership	0.347	0.085	0.321	0.045	0.210	0.036	0.162	0.018	0.172	0.024	0.270	0.052
People management	0.348	0.085	0.180	0.025	0.079	0.014	0.254	0.028	0.274	0.038	0.244	0.047
Teamwork and communication	0.072	0.021	0.047	0.007	0.210	0.036	0.422	0.051	0.432	0.063	0.206	0.039
Change management	0.145	0.042	0.082	0.011	0.058	0.010	0.104	0.012	0.063	0.009	0.116	0.022
Negotiation	0.089	0.021	0.369	0.072	0.442	0.074	0.059	0.007	0.059	0.009	0.164	0.031
Logistics												
CR value with respect to logistics	0.061		0.027		0.062		0.036		0.036		0.012	
Transportation and distribution management	0.649	0.312	0.405	0.047	0.072	0.044	0.637	0.414	0.637	0.437	0.460	0.242
Warehouse and inventory management	0.279	0.127	0.481	0.076	0.279	0.165	0.258	0.132	0.258	0.178	0.367	0.193
Project management	0.072	0.038	0.114	0.013	0.649	0.377	0.105	0.071	0.105	0.073	0.173	0.091
Business												
CR value with respect to Business	0.089		0.092		0.080		0.100		0.100		0.013	
Analytical	0.165	0.037	0.199	0.139	0.211	0.041	0.231	0.045	0.231	0.029	0.239	0.054
Managing results	0.208	0.047	0.192	0.128	0.121	0.023	0.538	0.128	0.538	0.066	0.299	0.067
Continuous improvement	0.488	0.105	0.473	0.294	0.542	0.102	0.118	0.023	0.118	0.015	0.322	0.072
Ethical awareness	0.057	0.013	0.074	0.040	0.077	0.015	0.042	0.008	0.042	0.005	0.064	0.014
Cultural awareness	0.083	0.019	0.062	0.033	0.049	0.010	0.072	0.014	0.072	0.009	0.075	0.017
Information and communication technology												
CR value with respect to Technology	0.000		0.000		0.000		0.000		0.000		0.000	
Hardware and software knowledge	0.500	0.029	0.750	0.054	0.500	0.027	0.167	0.008	0.167	0.007	0.396	0.023
Information handling knowledge	0.500	0.029	0.250	0.015	0.500	0.027	0.833	0.042	0.833	0.037	0.604	0.034

MNC1, priority is given to the business competency category (weight = 0.537). The management competency category is the second "most important" category in all the MNCs, except in MNC3 (see Table III).

The "most important" competencies of each competency category are as follows: leadership (weight = 0.310) in the management competency category; transport and distribution management (weight = 0.490) in the logistics competency category; managing results (weight = 0.382) in the business competency category; and information-handling knowledge (weight = 0.620) in the information and communication technology competency category. In most cases, the respondents' opinions are consistent with the combined judgement. Some exceptions such as MNC4 emphasising the competency of project management (weight = 0.659) in the logistics competency category. In the competency category of information and communication technology, the opinion of each respondent varied widely (see Table III).

For the global values of the competencies, the respondents' opinions are quite consistent. For example, transportation and distribution management is considered the "most important" competency for MNC2 (weight = 0.227), MNC3 (weight = 0.311) and MNC5 (weight = 0.277). However, for MNC4, project management (weight = 0.449) in the logistics competency category is critical, and for MNC1, continuous improvement (weight = 0.262) in the business competency category is the "most important" (see Table III).

The combined judgement of the local 3PL providers indicates that the logistics competency category (weight = 0.527) is more important than the business (weight = 0.225), management (weight = 0.191) and information and communication technology (weight = 0.057) competency categories. All the respondents from the local 3PL providers opinions are consistent when the local priority weights are compared. For example, most of the local 3PL providers emphasised the logistics competency category, except LOC2 (weight = 0.157) (see Table IV).

The "most important" competencies of each competency category are as follows: all respondents combined rated leadership (weight = 0.270) in the management competency category, transportation and distribution management (weight = 0.460) in the logistics competency category, continuous improvement (weight = 0.322) in the business competency category and information-handling knowledge (weight = 0.604) in the information and communication technology competency category. At the individual firm level, there several deviations from these competency priorities. For example, for LOC3, transportation and distribution management (weight = 0.072) is not the "most important" competency in the logistics competency category, rather LOC3 rates project management (weight = 0.649) as the "most important" competency in this category (see Table IV).

The global values of competencies demonstrate that transportation and distribution management (weight = 0.312, 0.414, 0.437 for LOC1, LOC4 and LOC5, respectively), continuous improvement (weight = 0.294 for LOC2) and project management (weight = 0.377 for LOC3) are important competencies (see Table IV). Among all the local logistics providers, ethical awareness (weight = 0.014) and cultural awareness (weight = 0.017) are the lowest ranked competencies.

5.2 Classification of competencies based on importance

Based on the priority weights, competencies are classified into "most important", "least important" and "moderately important" groups. The "most important" competencies are those whose priority weights fell in the range greater than "median + 1 standard deviation". Competencies whose weights fell between "median and less" are considered the "least important" competencies. The competencies whose weight fell between the ranges "greater than median but less than equal to median + 1 standard deviation" are considered "moderately important" competencies. Given that the distribution of the priority weights is skewed towards

the right, it is appropriate to use the median instead of the mean. For the MNCs, 3 out of 15 competencies fell into the "most important" group, four competencies fell into the "moderately important" competency group, and 8 competencies fell into the "least important" competency group. The local firms followed a similar trend, with two competencies falling into the "most important" competency group, five competencies falling into the "moderately important" competency group, and eight competencies falling into the "least important" competency group. For the MNCs and local logistics firms, transportation and distribution management and warehouse and inventory management were found to be the "most important" (see Tables V and VI). In addition, project management is ranked the highest "most important" competency for MNCs. The "moderately important" competencies for the MNC and local 3PL providers are managing results, leadership and continuous improvement. In addition, teamwork and communication for MNCs and project management and analytical for local 3PL providers are considered "moderately important" competencies. The remaining eight competencies fell into the "least important" group.

5.3 Sensitivity analysis

Sensitivity analysis is a method for determining the stability of priority rankings (Saaty and Vargas, 2012). Given that the results for the 3PL firms vary, sensitivity analysis must be

Competencies	Initial classification	Initial ranking	Changes of weight for "management" from 0.238 to 0.272	Changes of weight for "logistics" from 0.481 to 0.477	Changes of weight for "business" from 0.211 to 0.223
Transportation and distribution management	Most important	1	1	1	1
Warehouse and inventory management		2	3	2	2
Project management		3	5	3	4
Managing results	Moderately important	4	6	6	3
Leadership		5	2	4	5
Teamwork and communication		6	4	5	6
Continuous improvement		7	9	8	7
People management	Least important	8	7	7	9
Analytical		9	11	9	8
Information handling knowledge		10	12	11	No change
Change management		11	8	10	No change
Hardware and software knowledge		12	13	13	No change
Negotiation		13	10	12	No change
Cultural awareness		14	No change	No change	No change
Ethical awareness		15	No change	No change	No change

Table V.
Summary of the sensitivity analysis of MNC

Competencies	Global weights	Initial ranking	Changes of weight for "management" from 0.191 to 0.202	Changes of weight for "logistics" from 0.527 to 0.518	Changes of weight for "business" from 0.225 to 0.236
Transportation and distribution management	Most important	1	1	1	1
Warehouse and inventory management		2	2	2	2
Project management	Moderately important	3	3	5	6
Continuous improvement		4	4	3	3
Managing results		5	7	4	4
Analytical		6	8	No change	5
Leadership		7	5	No change	No change
People management	Least important	8	6	No change	No change
Teamwork and communication		9	9	10	No change
Information handling knowledge		10	12	11	14
Negotiation		11	No change	12	10
Hardware and software knowledge		12	13	9	No change
Change management		13	10	No change	No change
Cultural awareness		14	No change	No change	11
Ethical awareness		15	No change	No change	No change

Table VI. Summary of the sensitivity analysis of local 3PL providers

conducted to check the volatility and stability of the determinants in the proposed model. Through increasing or decreasing the weights of the criteria, the changes in the priority ranking can be observed. Given that the competencies ranked "most important" and "moderately important" are from the logistics, business and management competency categories, the weights of these categories are changed to determine the reflected changes in the priority ranking of the competencies. This sensitivity reflects the relative importance of the criterion for future development, policy-making processes or business improvements. Tables V and VI demonstrate how the final weights of the 15 competencies vary with the changes in the weights of the competency category for both the MNC and the local 3PL providers. First, when the weight of the management competency category for MNCs is increased from 0.238 to 0.272, there are changes in the "most important" competency group. Warehouse and inventory management and project management from the logistics competency category shifted from being the second and third "most important" competencies to being the third and fifth "most important" competencies. Leadership and teamwork and communication from the management competency category became the second and fourth "most important" competencies. For the local firms, when the weight of the management competency category was changed from 0.191 to 0.202, the "most important" competencies remained the same. The changes in the weights of the logistics competency category did not affect the priority ranking of the "most important"

competencies for either the local and the MNC 3PLs. However, under the same weight change (i.e. from 0.191 to 0.202 in the management competency category), the priority ranking of the "moderately important" competencies changes, and there are minimal changes in the priority ranking of the "least important" competencies. When the weights of the business competency category are changed, there are no changes in the priority rankings of the "most important" competency group for the local 3PL providers. However, the competency of project management in the logistics competency category changed from being ranked third in the "most important" competency group for the MNCs to being ranked fourth. For the MNC and local 3PL providers, there are changes in the priority rankings of the competencies in the "moderately important" and "least important" competency groups. Overall, in most cases, the small changes in the weights of the competency categories have no effect on the "most important" priority rankings.

6. Discussion

The results indicate that 3PL managers consider logistics an important competency category. The perspectives of the MNC and local 3PL providers demonstrate that they consider transportation and distribution, and warehousing and inventory management the "most important" competencies. While both types of 3PL providers agree on what are the "most important" competencies, their priorities are slightly different for the "moderately important" and "least important" competency groups. For MNCs, managing results (business competency category) combined with leadership (management competency category) are among the five "most important" competencies. While from the local firm's perspective, continuous improvement and managing results (business competency category) are among the five "most important" competencies. The following section discusses the similarities and differences in the priorities of logistics managers' competencies from the perspectives of the MNC and local 3PL providers.

6.1 Logistics competency category

The three competencies of the logistics competency category (warehousing and inventory management, transportation and distribution management, and project management) are the three "most important" competencies for the MNC and local 3PL providers. The importance given to the logistics competency category was highlighted during the interviews.

The LOC2 manager stated the following:

> Our managers with skills in managing trucks, warehouses, container depot, and ports helped us to ensure the timely delivery of customers' cargo.

Similarly, the MNC3 manager stated the following:

> With thousands of islands to be logistically connected, operating in Indonesia presents a big challenge. So, we focused on having managers with high level of transportation and distribution management competency.

Indonesia is the world's largest archipelago, with 6,000 inhabited islands spanning more than 5,000 km. The island of Java, which has 60 per cent of the population of Indonesia, is the centre of manufacturing, while the nations resources are widely spread over all the other islands, which have 40 per cent of the population. Indonesia's geography and the distribution of industry and resources pose a major challenge for providing efficient and low-cost logistics (Herliana and Parsons, 2011). Competent managers are crucial for designing and implementing efficient transportation services in a geographically challenging location.

The importance given to these competencies can be attributed to the cost component of transportation and warehousing functions to the total logistics costs. Transportation costs are the biggest contributor to logistics costs in Indonesia (12.04 per cent of GDP), and warehousing costs are the second biggest cost in logistics in Indonesia (9.47 per cent of GDP) (World Bank, 2013). Recently, the percentage of transportation and warehousing costs spent by 3PL firms globally have increased by 55 and 39 per cent, respectively (Langley, 2017). Increased global trade in greater geographical distances and increases in fuel prices are the principal reasons for the increases in transportation costs. Given that transportation costs will be a major concern in the future, it is crucial for managers to develop competencies to manage transportation and distribution processes. Such managers are particularly important in the Indonesian context because the logistics industry of Indonesia is trying to find ways to reduce the nation's spending on transportation (Chan *et al.*, 2017). The demand to reduce transportation costs is emphasised by the MNC2 manager:

> Our organisation provides a broad range of services in response to increasing globalisation and increasingly demanding customers. It is important for us to reduce the transportation costs in the supply chain and to maintain the existing customers.

Warehousing and inventory management services have gained a great deal of attention because of the increase in customer demand for a range of services from 3PL providers (Sinha *et al.*, 2016; Rahman and Qing, 2014). Compared with the MNCs, local 3PL managers assigned a greater weight to warehousing and inventory management skill because the local 3PL providers offer services specialised in inventory management. For example, the LOC4 manager stressed the services his firm offers in warehousing, and the need for competent managers:

> We help customers to manage their inventory, and do replenishment and order fulfilment based on their customer requests. In addition, we also provide value-added activities such as PDI [pre-delivery inspection] for CBU [completely built up], kitting and assembly, etc. These value-adding activities require managers to develop a new set of competencies.

Despite the importance given to project management among all the competencies, it is considered the "least important" competency in the logistics competency category. However, the higher priority rating given by the MNCs to project management (compared with local firms) is because of the global presence of their operations, and the need this creates for the ability to handle complex projects. Project-management skills such as initiation, planning, execution, delivering and risk management are crucial for minimising costs and providing efficient logistics services (Sinha *et al.*, 2016). These skills are particularly important in projects that require special planning and execution such as MNC4's requirement for leading large oil, gas and chemical projects.

6.2 Business competency category

The results demonstrate that the priority given to the business competency category varies between the MNC and local 3PL providers. The local 3PL providers rated a higher number of business competencies as "moderately important" than did the MNCs. However, for both types of 3PL providers, continuous improvement and managing results are the two competencies that are "moderately important". Specifically, MNC1 and LOC2 emphasised the importance of continuous improvement and managing results competencies for the managers. The manager of MNC1 stated the following:

> By using the DMAIC [define, measure, analyse, improve and control] approach, our organisation implemented continuous improvement in the processes that promote lean implementation.

The manager of LOC2 highlighted the following:

> We believe in accuracy in delivery and timelines as the key to our organisation's success. We realised that managing this performance will give us a competitive advantage and service excellence in this industry.

Managing results and continuous improvement are the two most important aspects of the quality-management process. The skills required to manage both competencies are considered "soft skills" that an individual should develop irrespective of the job (Ooi *et al.*, 2009). These results are consistent with Prajogo and Sohal's (2013) findings in the Australian context.

The competencies of cultural awareness and ethical awareness in the business category were rated the "least important" by both the MNC and local 3PL providers, meaning these competencies are considered to have less global and less local value.

The MNC4 manager highlighted the following:

> We prefer to focus on those critical areas that need the most improvement than on the community and environment, as this is not a significant issue and has no cost implications.

However, areas of reverse logistics and environmental issues such as closed-loop remanufacturing, life-cycle analysis and product take-back policies have become imperatives about which future logistics and supply-chain managers should be trained (Rahman and Qing, 2014). In addition, there is a greater demand on logistics managers to have the skills required for the implementation of social-responsibility aspects related to community and employee wellbeing. The low priority given to cultural awareness and ethical awareness by the MNC and local 3PL providers is explained by the Indonesian attitude of "take it for granted" and the lack of regulations guiding social responsibility in business.

Cultural awareness is considered a complex phenomenon. With the increase in global trade and appreciation of cultural diversity, global awareness is crucial for any competent manager (Gammelgaard and Larson, 2001). This is particularly true for MNCs attempting to understand and manage a multicultural workforce in Indonesia because Indonesia represents a challenging environment and ranks high on the power–distance index and low on individualism (McKinnon *et al.*, 2017).

6.3 Management competency category

The results demonstrate that the MNC and local 3PL providers rate all the competencies of the management category as either "moderately important" or "least important". However, the weights associated with the MNCs are greater than those of the local 3PL providers. For the MNCs, the competency of leadership, with emphasis on self-management and motivating employees to achieve a common goal, was among the highest five competencies. Leadership style is dynamic and is not transferable from one organisation to another. Therefore, organisations train managers to adopt a leadership style that is appropriate for the organisation (Dubey *et al.*, 2018). Leadership plays a particularly important role for MNC operators in Indonesia because they are increasingly adopting new business technological applications. The interviews with the managers demonstrated that they include leadership training in employee-training sessions.

The MNC2 manager stated the following:

> Our organisation recognises leadership as one of the critical determinants of business success, which is reflected in our organisation's training programme.

The MNC1 manager stated the following:

> We have created a systematic leadership workshop to build future talented employees who are expected to continue to offer innovative solutions that customers expect.

For the local 3PL providers, leadership is also a top-priority management competency, but with a different importance. Along with leadership, the management competencies that a manager should have are people management and teamwork and communication. People management includes recruitment and ongoing support received by the employees of an organisation. This is particularly important for 3PL providers because they manage people inside and outside the organisation. In the interviews, the MNC1 manager highlighted the importance of people management:

> Managers have to organise people inside and outside the division to coordinate, manage and control the resources and other activities that collectively enhance a company's vision and goal. The effective management of people will build trust and create a positive working environment.

In relation to teamwork, organisations are increasingly experiencing the need to work in multicultural teams. The priority given to teamwork is consistent with Rahman and Qing's (2014) findings that team orientation is a highly rated competency among Chinese 3PL firms.

For the MNC 3PL providers, negotiation with shippers might be challenging because there are cultural differences between the organisation and shippers. The priority given to negotiation is expressed by the MNC5 manager:

> [Our] company believes that negotiation is vital to business success, and therefore we must be able to negotiate with non-English speaking clients in the course of daily activities.

Despite there being fewer cultural differences between the local 3PL providers and shippers, negotiation plays an important role in attracting new and retaining existing shipping clients.

6.4 Information and communication technology competency category

Organisations outsourcing information-technology services to 3PL providers increased from 17 per cent in 2016 to 27 per cent in 2017 (Langley, 2017). With the increase in the technological services offered by logistics firms, there is a greater demand for logistics managers that have skills in information and communication technology. The LOC5 manager highlights the importance of information technology in driving the firm's leading position in the industry:

> We constantly invest in technology and systems such as warehouse management, enterprise resource planning, radio-frequency identification, transport management and global-positioning tracking systems. Investment in the latest technology and unparalleled local-market knowledge has helped us to gain the market share.

Despite the importance of skills in information and communication technology, the 3PL providers operating in Indonesia rated this as the "least important" competency category. Rapid changes in technology, ability to redesign existing processes, lack of incentives and lack of management buy-in are the major factors causing manager reluctance to develop skills required for implementation of technological innovation (Langley, 2013). The low priority given by the 3PL providers to information and communication technology has resulted in decreased shipper satisfaction from 65 per cent in 2016 to 56 per cent in 2017 (Langley, 2017).

In this study, there is no difference in the priority rating given to skills in information and communication technology between the MNC and local 3PL providers. However, previous research suggests that the importance given to information and communication technology should differ between MNC and local 3PL providers (Rahman *et al.*, 2019). MNCs are foreign-owned companies with well-developed information-technology capabilities that are highly reliable and capable of supporting different groups of clients. Thus, it is expected that MNC managers should prioritise technological skills to ensure the efficient use of implemented technological systems.

In this study, information-handling knowledge received a higher priority rating than hardware and software knowledge. To reduce lead times and improve efficiency in supply

chains, shippers demand real-time operating data, which requires managers to have the ability to process the information (Langley, 2017). In particular, for a firm operating in the oil and gas, minerals or chemical industries, information management is crucial for the successful implementation of projects. Thus, MNC3, MNC4, LOC4 and LOC5 emphasise the importance of information-handling knowledge.

7. Conclusions and implications

This study investigated and prioritised the competencies of 3PL managers in the Indonesian context. Based on the extensive literature review, a conceptual framework with four competency categories and 15 competencies was proposed. A case design in the Indonesian logistics industry with five MNC and five local 3PL providers was adopted. The AHP methodology was employed to calculate weights of competencies and to prioritise these competencies into the "most important", "moderately important" and "least important" competency groups. The results indicate that the logistics competency category is by far the "most important" competency category. Within this competency category, the competencies of transportation and distribution management and warehouse and inventory management were identified as the "most important". Most of the "moderately important" competencies for the MNCs were in the management competency category. However, the local 3PL providers rated the managerial competencies and business competencies as "moderately important". The "least important" competencies from the information and communication technology competency category are perceived to play a major role in the future. This is the first study to identify the critical competencies required by logistics managers in Indonesian context.

7.1 Implications

The findings of this study have several managerial implications. First, the results can assist government and policymakers to develop policies that will assist the future development of human resources in the Indonesian logistics industry. The Indonesian Government's 2012 Blueprint for the Development of a National Logistics System (Cetak Biru Pengembangan Sistem Logistik Nasional) identified a huge gap in skills supply and demand in Indonesia. To minimise this gap and improve logistics performance, effective training that meets the needs of the country's logistics system is required. The findings of this research can be incorporated into the current education and training programmes of the Indonesian Government's National Logistics System and Educational Policy.

Second, the skills perceived as critical in this study can be integrated into certification programme offered by the Indonesian Logistics Association (Asosiasi Logistik Indonesia). The Indonesian Logistics Association believes that the competitiveness of human resources lies in the competencies, skills and attitudes of the workforce. Official recognition of these competencies through certification is advantageous for companies because it enables them to identify experts more readily (Budiman, 2016).

Third, this study assists 3PL firms to compare and benchmark their managerial competencies with perceived competencies and provide in-house training to minimise the gap. In-house training is crucial; 76.2 per cent of firms use on-the-job functional training as the most popular training method for developing competencies (Gibson *et al.*, 2013). This study also assists managers to allocate limited resources (time and money) directly to the prioritised competencies that have a major effect.

Fourth, the results of this study can assist in designing new logistics education programmes and in redesigning existing logistics education programmes. Indonesian universities offering courses in logistics are very limited. As a result, graduate employees involved in operations often lack logistics skills but can use high-end information-technology systems. However, this study identifies that logistics skills are crucial for Indonesian logistics managers.

Thus, the findings of this study assist in aligning educational curricula with industry needs and preparing job-ready graduates and competent professionals.

The study findings have several theoretical contributions. The existing literature has focused on examining the importance of competencies for various supply-chain employee groups such as senior logistics managers (Murphy and Poist, 1991a); entry-level logistics personnel (Murphy and Poist, 2006); supply-chain managers (Gammelgaard and Larson, 2001; Derwik and Hellström, 2017); humanitarian logisticians (Kovács *et al.*, 2012); and supply-chain planners and analysts (Flöthmann, Hoberg and Wieland, 2018). This study is the first to identify and prioritise the managerial competencies required by 3PL providers from the perspectives of MNCs and local firms. By investigating the competencies required by MNC and local 3PL managers, this study's findings address the need identified by Hohenstein *et al.* (2014) for research on the skills required by logistics managers in a globalised environment.

Given the dynamic nature of supply-chain jobs, managers must continually update their skills and competencies, for example, the information-technology skills required by the managers. Existing research principally emphasises business, managerial and logistics skills, and does not consider the need for the information-technology competency required for supply-chain jobs. To address this gap, this study introduces information and communication technology skills as a competency category. Competency researchers have examined Boyatzis's (1982) theory of action and job performance (competency model) in various management disciplines. In the field of logistics, this study is the first to use the theory of action and job performance (competency model) and firm performance as the theoretical foundations for developing a competency model for 3PL managers.

7.2 Limitations and future research

Despite the significance of the results, this study has some limitations. The major limitation is the application of the findings. The results were obtained by focusing on the Indonesian context, and therefore may not be applicable to other national contexts. In future, more work is needed to understand the importance of the competencies in the context of other leading developing countries such as India and Vietnam. This study offered a comparative analysis of managerial competencies across MNCs and Indonesian 3PL service providers. However, competencies required by a 3PL manager depend on the level of his or her managerial position. Therefore, future researchers should analyse competencies required by Indonesian 3PL managers at different levels of managerial position. Despite the ability of the case study methodology adopted in this study in providing in-depth understanding of managerial competencies, there may have a limitation on generalisability of the findings. Future research could also conduct a large-scale quantitative survey that could generalise the findings reported in this research. Given the nature of the research problem, this study employed AHP as the method for analysis. As a method, AHP is theoretically sound and widely accepted for prioritising alternatives based on difficult-to-quantify and qualitative criteria. However, while evaluating the importance of different competencies, AHP does not consider the relationships among the competencies being used. In many situations, relationships among competencies may exist and thus, an evaluation based on the potential relationships may provide a more realistic assessment of the situation. Future research may consider this issue by employing either the analytic network process or other suitable methodology.

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