

**DETERMINANTS OF SUPPLY CHAIN
MANAGER'S SKILLS: THE MEDIATING
EFFECT OF PERSONAL COGNITIVE
ABILITY**

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**DETERMINANTS OF SUPPLY CHAIN
MANAGER'S SKILLS: THE MEDIATING EFFECT
OF PERSONAL COGNITIVE ABILITY**

by

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**PENENTU KEMAHIRAN PENGURUS RANTAIAN BEKALAN: KESAN
PERANTARAAN TERHADAP KEUPAYAAN KOGNITIF PERIBADI**

ABSTRAK

Tujuan kajian ini adalah untuk menjelaskan pengaruh faktor penentu terhadap kemahiran pengurus rantaian bekalan. Faktor penentu terdiri daripada isu alam persekitaran, latihan dan pembangunan, integrasi rantaian bekalan, responsif rantaian bekalan, pengambilan dan perekrutan, dan teknologi maklumat. Manakala, kemahiran pengurus rantaian bekalan terdiri daripada pemahaman terhadap perundangan, etika dan kemahiran mengatur, kemahiran komunikasi, dan kemahiran teknologi. Kajian ini juga menyelidik kemampuan kognitif pengurus rantaian bekalan sebagai faktor pengantara. Penyelidikan ini didasarkan pada penyelidikan kuantitatif yang dilakukan di industri pembuatan global di Indonesia. Data kajian ini dikumpulkan daripada 156 pengurus rantaian bekalan yang bekerja didalam industri tersebut sebagai responden. Data statistik kemudian diproses menggunakan aplikasi Smart PLS versi 3.2.7 dan IBM SPSS versi 22 untuk mendapatkan analisis deskriptif, ketepatan indikator, kesahihan dan kebolehpercayaan dan juga pengujian Hipotesis. Hasil kajian menunjukkan bahawa isu persekitaran dan dimensi kemahiran pengurus rantaian bekalan mempunyai hubungan yang signifikan. Selain itu, latihan dan pembangunan, integrasi rantai bekalan, responsif rantaian bekalan, dan teknologi maklumat mempunyai hubungan yang signifikan dengan kemampuan kognitif pengurus rantaian bekalan. Di samping itu, kemampuan kognitif mempunyai hubungan yang signifikan dengan dimensi kemahiran pengurus rantaian bekalan. Sebagai

pemboleh ubah perantaraan dalam kajian ini, kemampuan kognitif terbukti menjadi pengantara hubungan antara faktor penentu (latihan dan pembangunan; integrasi rantaian bekalan; responsif rantaian bekalan; dan teknologi maklumat) dengan dimensi kemahiran pengurus rantaian bekalan. Keaslian penyelidikan yang diperoleh dalam kajian ini adalah bahawa kemampuan kognitif sebagai pemboleh ubah pengantara menghasilkan hubungan yang signifikan. Ini terbukti apabila kemampuan kognitif menjadi pengantara hubungan antara beberapa faktor penentu (latihan dan pembangunan, integrasi rantaian bekalan, responsif rantaian bekalan, dan teknologi maklumat) dan dimensi kemahiran pengurus rantaian bekalan. Penyelidikan ini telah mempunyai beberapa implikasi terhadap teori iaitu dengan memberikan pandangan baru bahawa teori modal sosial dan sosio-teknikal dapat membantu membina kemahiran pengurus rantaian bekalan. Keupayaan kognitif juga boleh digunapakai sebagai pemboleh ubah pengantara dalam membina kemahiran pengurus rantaian bekalan. Selain itu, implikasi praktikal penyelidikan ini adalah memberi manfaat kepada pengamal, pembuat dasar dan organisasi sektor awam dalam mempertimbangkan pelbagai perkara dalam membina kemahiran pengurus rantaian bekalan.

DETERMINANTS OF SUPPLY CHAIN MANAGER'S SKILLS: THE MEDIATING EFFECT OF PERSONAL COGNITIVE ABILITY

ABSTRACT

The purpose of this study is to explain the influence of determinant factors on supply chain manager's skills. Determinant factors consist of environment issue, training and development, supply chain integration, supply chain responsiveness, hiring and recruiting, and information technology. Whereas, supply chain manager's skills consist of understand law, ethics and regulation skills, communication skills, and technology skill. This study also investigated the cognitive ability of supply chain manager as a mediating factor. This research is based on a quantitative research conducted in global manufacturing industries in Indonesia. The data for this study were collected from 156 supply chain managers as respondents. The statistical data were processed using Smart PLS 3.2.7 and IBM SPSS version 22 to analyze descriptive analysis, goodness of measure such as validity and reliability and also Hypothesis testing. The research findings indicate that environment issues and supply chain manager's skill dimensions have a significant relationship. Besides that, training and development, supply chain integration, supply chain responsiveness, and information technology have a significant relationship with cognitive ability. In addition, cognitive ability has a significant relationship with supply chain manager's skills dimensions. Meanwhile, as a mediating variable in this study, cognitive ability is proven to mediate the relationship between determinant factors (training and development; supply chain integration; supply chain responsiveness; and information technology) and supply chain manager's skill dimensions. The

main novelty obtained in this study is that cognitive ability as a mediating variable produces a significant relationship. It is proven when cognitive ability mediates the relationship between several determinant factors (training and development, supply chain integration, supply chain responsiveness, and information technology) and supply chain manager's skill dimensions. This research has produced several implications including theoretical ones by providing new insights that theories of social capital and socio-technical can help build the skills of supply chain managers. Cognitive ability can also be used as a mediating variable in building supply chain manager skills. Whereas in terms of practical implications, this provides benefits for practitioners, policy makers and public sector organizations in considering various matters in building the skills of supply chain managers.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter starts with an overview of the study, followed by discussion of the background to it, the problem statements, research questions and objectives, together with discussion of the significance of the study. It also defines the terms used and in the final section outlines the organisation of the thesis.

1.2 Background

Globalisation is inevitably affecting our daily lives. Interrelationships and interdependencies between countries have increased steadily as a result of its effect (Kim & Mclean, 2015). It has made the market increasingly competitive, and there are no longer limits for countries to producing and selling their products and services. Globalisation leads to a reduction in the entry barriers for industries, the development of technology, increases the transfer of knowledge and information, and emerging markets become a feasible option for rejuvenating mature products and manufacturers (Hurn, 2013). For example, the hardware and spare parts of the Dell Inspiron 600m laptop come from factories in Philippines, Costa Rica, Malaysia, China, South Korea, Taiwan, Germany, Japan, Mexico, Thailand, Singapore, Indonesia, India and Israel, while the software is designed in America and elsewhere (Werhane, 2007). According to Kim and Mclean (2015), the characteristics of globalisation are marked by the cross-border flow of intangible assets, such as ideas and information, and of tangible assets such as employees, goods and capital.

Globalisation has opened up many new business opportunities; companies are now forced to manage and operate supply chains in an increasingly global, complex and unknown organisational environment in a highly competitive market (Harvey, Fisger, McPhail & Moeller, 2013; Yatskovskaya, Yatskovskaya, Srail, Srail, Kumar & Kumar, 2016). Ernst and Haar (2019) added that the most affected business process by extremely rapid changes in technology and globalization is supply chain management. Globalisation of the supply chain implies that the production of many goods and services is now affected by a variety of infrastructures, climates and cultures (Simangunsong, Simangunsong, Hendry, Hendry, Stevenson & Stevenson, 2016). Global sourcing and cost reduction encourage company to find a variety of suppliers, so supply chain management will become more complex than before (Kattman, 2014, Hohenstein, Feisel & Hartmannet, 2014).

Fujita and Hamaguchi (2016) added that at present companies have applied development from previously having production process done in one factory and it has been fragmented and allocated to several countries. Regardless various nations, countries in Asia have been much considered as alternative production countries intended, which was previously held by China as the primary country intended in Asia, but now due to the increasing production cost in China, Wu, Santoso and Roan (2017) stated that manufacturers from China's factories shifted to cheaper manufacturing in Southeast Asia, such as Vietnam, Thailand, Malaysia and Indonesia. Even Index (2016) predicted that Malaysia, India, Thailand and Vietnam, the "Mighty Five" or MITI-V would become "the new China" due to its low-cost.

Besides becoming place in production of manufacturing from other countries, many companies which were initially local, have changed their business strategy by selling their products abroad, such as Indomie, Polytron, Hoka Hoka Bento, J-Co,

Olympic furniture, Buccheri, Terry Palmer, and many more. Indonesia as one of the developing countries, in fact, had 46,7 % industry's share of 2018 GDP, almost equal to China at 46,5% and still beaten compared to Vietnam at 54,2 for the category of developing country (World bank, 2020). This data shows that Indonesia is able to compete with other developing countries in Asia, which have been involved with the global market earlier

Unfortunately, the growth of supply chain management in Indonesia itself is still experiencing some challenges. Indonesia itself started to integrate activities related to manufacturing since the incident of monetary crisis in 1997-1998 and The Indonesian Logistics Association revealed that close collaboration among members of the supply chain was not widely recognized by industries based in Indonesia in 1997 and even up to 2007 which was several years after the economic crisis. However, after that period, supply chain collaboration began to be recognized and continued to grow rapidly (Yunus & Tadisina, 2016). It is no wonder that infrastructure supporting supply chain in Indonesia is stagnating as stated by Lomas (2017) that Indonesia can become a country to be considered by companies which shifted from China due to cheaper wages, but the lack of infrastructure is still the major obstacle compared to Vietnam which is far more welcome toward foreign investors. Infrastructure mentioned is limited warehouse management, lack of transportation (Kok, 2015). From the wage aspect, until now Indonesia has not been able to provide a competitive wage which can increase producers' competitiveness at international scale (TPSA Project, 2018). Also limitation in supply chain talents with sufficient skills (Chan, Zagloel, Pujawan, Rianto, Rahman, Gekara & Sebastian, 2017).

Lack in supply chain talents with sufficient skills was also mentioned by Lawi (2017) who stated that according to Setijadi, Chairman of Supply Chain Indonesia in

facing the challenges of global talent with good skills, Indonesia has very limited, especially in the aspect of logistic. Globalization creates tougher competition since companies in Indonesia must compete, not only with national companies but also other companies operating in Indonesia or competing in the international market itself. Therefore, it is highly crucial for companies to be able to provide reliable human resources to remain competitive

Besides that, Bambang PS Brodjonegoro, Menteri Perencanaan Pembangunan Nasional/the Minister of National Development Planning (Nababan, 2017) stated that Indonesia's challenges in responding to global competition especially in manufacturing is that it has to improve infrastructure and improve human resources with global scale supply chain skill. Also according to SCM World Future of Supply Chain Survey 2016 conducted by O'Marah and Chen (2016), Indonesia in 2016 needed four supply chain jobs and within the next three years 29 supply chain jobs are needed. This shows that there is a clear gap and that there is a lack of available human resources, while there is quite a high demand of supply chain talents.

In fact, the importance of talents in supply chain is not only a phenomenon occurring in Indonesia, but globally. Wagner and Kemmerling (2014) stated that the problem of supply chain talent lately has become the interest of experts, and become one of the things to be considered by companies to succeed in competing in the global era. Ellinger and Ellinger (2014) also argued that there is a need for companies to be able to identify the supply chain skills needed for them to develop.

Globalization causes rapid changes in terms of market and increase in the role of supply chain management in the company's strategic plan, thus needing supply chain talents who can supply chain holistically in terms of process related to collaborative

management of supply chain partners, know the business model, have an active role in statistical analysis and global fact decision making, apply advanced cost management, also understand electronic business systems (Ellinger and Ellinger, 2014), and the person who has a role in conducting all is a supply chain manager, one that understands the global context.

In changes planned by companies, such as adapting to globalisation, the role of leaders at executive and managerial levels is critical to success, because they can articulate and solve environmental change in line with organisational culture, structure and strategy. The complexity of global business today requires leaders who can effectively work in ambiguous and dynamic environments, and can lead and motivate people from different cultures (Caligiuri & Tarique, 2014). The needs of manager who is able to work effectively in the international world and deal with different cultures are becoming more complex. This is because the ability to work in multicultural environment is the main factor in competing globally (Hurn, 2014). Therefore, only skilled supply chain managers are needed by the industry to be able to compete globally

However, to be successful in carrying out their duties, managers must be able to respond to the global challenges of the differences in cultural values, business practices and ways of communicating (Chong, 2013). In order to develop global manager's skills and competencies, human resource departments needs to understand the knowledge, skills and attitudes needed by a managers in a global company. Previous studies have found that leading in the global context requires higher skills than managers at local level (Herd, Alagaraja & Cumberland, 2016; Kim & Mclean, 2015; Joshi & Lazarova, 2005; Steven & Rosenbusch, 2013; Agrawal & Rook, 2014; Alban-Metcalf and Alimo-Metcalf, 2013).

According to Prajogo and Sohal (2013), the skills and competencies of supply chain professionals are critical. This is because the existing changes in the business environment and emerging global markets mean that companies need to prepare supply chain professionals who possess different skills and competences to be able to successfully manage supply chain in global context (Hohenstein et al., 2014).

Ellinger and Ellinger (2014) stated that in general there is a lack of talented supply chain managers with business-related skills that can manage increasingly complex and strategically important supply chain processes, especially in the global context. The lack of supply chain manager skill according to Sweeney (2013) is mostly due to the fact that companies tend to push more on cost efficiency and increase relationship with customers and suppliers instead of developing people to reach the target of SCM. Therefore, the study to explore aspects is needed to be increased for a supply chain manager's skill to develop.

At the moment the challenges that must be faced by supply chain manager is increasing. This is related to two unique characteristics from their job namely globalization and cross-functional nature (Villena, Gomez-Mejia and Revilia, 2018). Lu and Shang (2017) added that a supply chain manager is often faced with management of a complex supply chain, whose scope is worldwide. Supply chain managers are required to be able to handle things that are full of uncertainties related to the rapid changes in markets and technology. At the same time, they must also be able to quickly utilize the information obtained to make policies that support success and strengthen competitiveness (Gutierrez-Gutierrez, Barrales-Molina, and Kaynak, 2018). And yet according to Setijadi (2019), although the development of supply chain managers is quite significant in Indonesia, it is still not supported by reliable skills to be able to compete globally

1.3 Problem Statement

The Minister of Foreign Affairs of Indonesia Retno Marsuadi stated that the world's economic growth at present is at its lowest point, in 2019 the growth was approximately 3,2% and it is estimated that in 2020, it will become 3,5% (swa.co.id, 2019). This will no doubt give impact on manufacturing sector. In 2016 it was predicted that economic growth globally would experience a stagnation in the next two years (Index, 2016), and this will give impact on manufacturing growth and competition globally. The main factor which has strong impact on the success of manufacturing to compete globally (manufacturing competitiveness) is talent. They claimed that talent is the most critical driver of global manufacturing competitiveness. So, when related to the statement of the foreign minister in 2019 that the world's economy is at its lowest, and the primary factor in global manufacturing competitiveness is talent, it means that even until the year 2019 talent was still the main focus globally in manufacturing in terms of determining factor in economic growth. Indonesia will no doubt be impacted also by this.

Business strategy in manufacturing industry which is extremely relied on to be able to compete globally is supply chain. Therefore, this strategy is one which will become the main focus for companies to be improved and always focused upon. Setijadi the head of Supply Chain Indonesia claimed that at present Indonesia's logistic development in the world is in the 44th rank, and this is still below neighboring countries in south east Asia namely Thailand (32), Vietnam (33) and Malaysia (36) (Setijadi, 2019). Also this is, according to him, because Indonesia still lacks human resources who are competent and professionals who have specific skills which can be

relied on for the management of supply chain. One who can compete globally, especially understands the concept and implementation of supply chain management in an end-to-end way.

Besides that, according to Head of Industrial Human Resource Development Board of the Ministry of Industry, Eko S.A. Cahyanto, Indonesia has to provide abundant human resources with skills on industry so that it is able to support 4.0 industry; one of which is still very limited namely human resources with good supply chain skill. Indonesia compared to the neighboring country, Thailand, is still falling much behind in the supply of automotive manufacturing, whereas Indonesia has quite a significant market growth and has a great potential for growth (Widianto, 2019).

Indonesia, as an Asian country with a large middle class society, is experiencing an increased level of purchasing power. This requires the country to improve its regional supply chains in the future. According to Stubbs (2015), the biggest challenge for Indonesian logistics providers is in adopting e-commerce delivery services, which require a change in mindset. Providers of logistics, as one of the supply chain management strategies, should be considered by the Indonesian government in addressing such a change in mindset.

Study conducted by Chan et al. (2014) found that Indonesia experiences lack of adequate and high-quality skills especially related to global supply chain networks. There are 3 main gaps on the lack of supply chain and logistic skill of human resources in Indonesia, namely training system, curriculum and standard and body of knowledge. The three gaps are generated from preliminary studies conducted on government, industry and education sectors in Indonesia, especially in the two major cities of Surabaya and Jakarta. From the three gaps, it narrows down to one conclusion that to face challenges and be able to compete globally, the supply chain professionals still

have to increase their skills on what aspects or factors that can improve their skills so that their ability is increased (Chan et al., 2014).

Chan et al. (2014) also found lack of supply chain managers with sufficient skills, in fact for this position, it can result in vacant position for up to 3 years. The precise need for manager level becomes worse with the competition among companies, either start ups or multinational companies which conduct hunting for skilled professionals. The limited resources is due to lack of company's role in upgrading skill of available supply chain operators, and lack of graduates of supply chain who are quite capable to directly be ready to be employed, even could be directly hired at the manager level due to lack of skills and body knowledge especially at the global level (Chan et al., 2014).

Hoheintin et al. (2014) estimated that developing countries will face a major change in the next ten years when approximately 50 percent of their senior-level managers retire, there will be a significant shortage in skilled talent. Therefore, efforts are needed to be made so that skilled supply chain managers can be prepared as required by companies. Trivellas et al. (2019) also stated that one of the efforts to improve skills and competencies in the logistics and supply chain management environment is through increasing the standard of knowledge that supply chain managers must possess.

McKinnon et al. (2017) stated that Indonesia is one of the countries that still require intensive training to prepare skilled and competent supply chain managers on a global scale, especially supply chain managers who are capable of adapting to cultural differences. Dubey and Sekaran (2018) suggested that developing countries are expected to conduct a systematic training in building logistics and supply chain manager skills. Another study conducted by Ajayi et al. (2016) also stated that training

is something crucial to be done by the human resources department of a company wanting to improve the capabilities and competencies of a manager.

Ekosusilo (2020) also added that intensive government cooperation through the education sector is needed in order to improve the implementation of supply chains in Indonesia. The government in this case should form a curriculum that can later be directly applied at work by prospective supply chain professionals when they graduate. In addition, Sangka et al. (2018) also stressed that educational institutions need to make curriculum adjustments to support the effectiveness of the development of supply chain manager skills that are still considered limited in Indonesia.

However, it certainly is not an easy process to prepare skilled supply chain managers since companies are required to be able to identify the skills needed to succeed in the global world. Chong (2013) argued that to be successful in carrying out their duties, managers must be able to respond to the global challenges of the differences in cultural values, business practices and ways of communicating. Previous studies have found that leading in the global context requires higher skills and competencies than managers at local level (Herd, Alagaraja & Cumberland, 2016; Kim & Mclean, 2015; Agrawal & Rook, 2014). An ideal supply chain manager in a global context is someone who possesses the mix of skills, competencies and abilities which needs to be employed in a worldwide marketplace; if this is the case, they will enhance their competitive edge in facing globalisation trends, technological innovations and market changes (AlMazrouei & Zacca, 2015; Loufrani-Fedida & Missonier, 2014; Taneja, ewell & Odom, 2015).

Changes in business environment have resulted in a substantially significant impact toward the development of supply chain management. As stated by Jermittiparsert and Pithuk (2019) that market instability and unpredictability require

companies to be able to run their supply chain processes efficiently but remain sharp in capturing opportunities that arise. And no doubt it will give impact to the company in implementing policy of decision making related to supply chain. Thus, automatically it will give impact on development of ability of a supply chain manager. Besides having to always develop the business competence of individuals, they also have to improve the capability in integrated supply chain (Yunus, 2018). A number of studies have been conducted to find out the direction and trend of supply chain management as well as the challenges to be faced by a supply chain manager in the global context, in which the challenges must be understood and mastered by a supply chain manager, thus it can help in supporting the skills mastered to increase company competitiveness in the global era.

Prajogo and Sohal (2013) found that among several challenges in the future which must be mastered the most by a supply chain professional is environment; globalization; supply chain integration; training and development; information technology and supply chain responsiveness. A similar result was also given by Harvey et al. (2013), who stated that environmental issues; globalization; supply chain integration; training and development are factors that must be mastered.

Meanwhile Hoheisntein et al. (2014) stated that besides aspects related to supply chain management, a supply chain manager must also master factors related to human resource management. They include training and development; information technology; knowledge, skills and ability; HRM impact on performance; education and training; compensation; global mindset and experience.

It has been well known that cognitive ability (intelligence) may influence work performance of an individual (Schmidt & Hunter, 2004). Someone with a good

cognitive ability will tend to work well and able to last longer when working (Rindermann, Becker & Coyle, 2016). Good work performance ability is the expectation of a company toward a manager as it will increase the performance of the company. Ng and Fieldman (2010) with their Human capital theory found that to reach a person's career success, especially in relation to employee career employment, a person with good cognitive ability will even support individual ability having good education and training and will be able to have good work performance. Besides that cognitive ability is also actually able to influence skills of an individual, such as from a study conducted by Burgoyne et al. (2016). Moreover there is an extremely close relationship between skill and performance (Grugulis and Stoyanova, 2010).

Based on the issue and problem mentioned above, this study seeks to address the gap and aims to contribute the existing body of knowledge in supply chain manager's skills research. The present study attempts to find out determinants of supply chain manager's skills with cognitive ability as a mediator variable in manufacturing industry in Indonesia.

1.4 Preliminary Study

Even though studies about determinant factors that needs to be mastered by a supply chain manager has been conducted, they were mostly conducted outside of Indonesia, while study about it still limited and especially in Indonesia also still limited. Therefore, a preliminary study was conducted to obtain some key information about the actual situations and issues faced by supply chain managers or owners of companies in manufacturing industry in Indonesia. Preliminary study was conducted on four companies working globally in local companies growing their businesses internationally and multinational companies located in Indonesia. Respondents

interviewed have a role as supply chain manager, and global supply chain manager from each company. Even though there were only 4 respondents interviewed, the response from each respondent was quite consistent and similar. The finding of the preliminary study revealed the following key information from the perspective of supply chain managers. Supply chain manager of *Bridgestone* manufacturing explained the importance of supply chain manager's skills in the global context.

“As a supply chain manager, having skills such as hard skill (technical) and soft skill is extremely necessary. Especially in dealing with partners from outside of the skill organization of a supply chain manager; it is extremely obvious. If he seems unskilled, he might lose customers or market. Especially involving other countries, the skills of a supply chain manager is highly needed especially in communicating, in conducting good cooperation.”(Bridgestone Supply Chain Manager).

The skill of a supply chain manager in communicating is highly necessary either in the scope of inter organization or between organizations. Especially global context communication skill is the main skill needed because in the global environment, global diversity is extremely significantly felt, thus the ability to adapt in different cultures is highly important.

“The skill of a global supply chain manager is extremely necessary especially softskill such as the ability of communication, teamwork, the ability to always keep up with technology. As a global supply chain manager's work scope is extremely extensive involving many countries, the ability to adapt to various different cultures is highly needed.”(Global Supply Chain Manager Syngenta)

Having to always follow development in technology is a must for a supply chain manager. This will help them in developing information which will be useful for companies besides making it easier in business processes with supply partner inter-organizations. Skills in understanding the law and regulations are also needed, especially related to export and import of goods which will become their responsibility.

“As a company is having just expanding business to other countries, it is obligated to always keep up with the available technology, also not less important is being able to handle and understand regulations and the law in Indonesia as well as countries of clients well.”(Supply Chain Manager of Sansan Garment)

A similar answer was also obtained by a supply chain manager from Syamil Printing Company. In which the skill of a supply chain manager especially in relation to companies from other countries is highly needed besides understanding the law, regulations, also having a good ethic. Due to different cultures, a supply chain manager is expected to be able to perform with good attitude.

“In dealing with partner companies, we are always expected to understand the law and regulations applied in Indonesia, also countries of intention, as they are not willing to teach us. And more importantly we have to have a good attitude, as the global companies are extremely sensitive to SARA (ethnicity, religion, race, and inter-group relations), thus if our attitude is not favorable, it is easy for them not to give respect to us and as a result there is no deal.”(Supply Chain Manager Syamil Printing Company)

The result of the importance of supply chain manager's skills revealed that a supply chain manager needs to have skills which will support them in conducting their business strategies. These skills in general is quite extensive, but specifically extremely important for the global world. The main skill is communication, and always keeping up with changes in technology that is taking place.

Besides that, as additional information for the need of study, interviews were also conducted on what the supply chain managers felt was important for them to know in order to face challenges in the future especially in global challenges.

“As a supply chain manager, we undoubtedly have to always be responsive with all technological challenges, market, environment, which will give influence on decision making in the process of supply chain itself. Since at present everything changes so rapidly, we cannot only rely on information from our superiors, we must always be anticipative, especially as a result of globalization at present; the world is fast and changing and dynamic.”(Supply chain manager of Bridgestone)

From the statement, it is explained that challenges in the future which have to be faced by supply chain managers is the impact of globalization taking place, changes in environment, responsiveness toward changes in the process of supply chain (supply chain responsiveness).

“Since our company is a multinational company, what is always expected of us is to be able to master the information system which has become the base of our activities, in addition to the responsibility as a global supply chain manager in which I head several countries, so this system is extremely helpful

for me in coordinating, conducting deals and controlling also integrating supply partners. In facing changes due to globalization, business environment, thus we must be agile, able to quickly make decision, be a fast learner.”(Global Supply Chain Manager of Syngenta)

From the explanation, other challenges are abilities to master system of information technology especially in daily operation which is connecting coordination between inter-organization and intra-organization. Therefore, mastering supply chain integration is also a challenge on its own.

“ We always have to keep up with changes due to globalization, business environment which is rapid. Training and development are also challenges of its own since it is not easy to have a person who has potential to deal with the global context. Also the process of recruitment needs to be considered”
(Supply chain manager of Sansan Company)

The explanation of providing information is another additional challenge in the training and development process also in recruitment process conducted by the company. Especially in regeneration of supply chain manager even further for a global supply chain manager. Statement for recruitment of global supply chain manager was also given by supply chain manager of Syamil Printing Company.

“We, the supply chain managers are being developed to become global supply chain managers, as the scope to compete globally needs the position. Therefore, it has become a challenge of its own on how to improve self competence to manage the global context”(Supply Chain Manager Syamil Printing Company)

Therefore, from the result of the interviews, it can be concluded that challenges in the future which have to be mastered by supply chain managers are globalization issue, environment, information system, training and development, supply chain integration, recruiting and supply chain responsiveness. Besides that, cognitive ability (intelligence) of a supply chain manager is also needed.

“A supply chain manager needs to be intelligent, at least in working even though in terms of IQ, he does not have a high one, but the intelligence to manage, for coordination is needed ”(Bridgestone supply chain manager)

Cognitive Ability (intelligence) is extremely helpful for a supply chain manager in handling problems, managing supply chain partners. Cognitive ability also helps supply chain manager in decision making.

“In decision making, it needs intelligence, especially because creative thinking in business decision making is substantially helpful”(Global Supply Chain Manager Syngeta)

In decision making, a supply chain manager with satisfactory cognitive ability, will give a quick and accurate decision making. Problem solving is also highly supported by cognitive ability.

“Intelligence is exceptionally necessary. Problems encountered by a supply chain manager is abundant, thus having sufficient intelligence, results in problems being handled promptly.”(Supply Chain Manager Sansan Company)

Quick and appropriate problem solving will help a supply chain manager in facing the challenges of rapid changes. Thus, cognitive abilities will support decision making in overcoming problems in the global context

“Intelligence is actually not absolute, experience also helps, but for those having it, it will be different for them in making decision, in taking action, and if combined with experience, it will become a good combination.”(Supply Chain Manager Syamil Company)

The findings revealed that cognitive ability supports a supply chain manager in implementing his business strategy in the global environment. Especially in terms of decision making which demands being creative and fast also accurate.

Therefore, it can be concluded that preliminary findings are consistent with the result of literature review done which show that supply chain manager’s skill has to be improved and is essential in the global context. Besides that the result of the preliminary study, provides basic understanding of the actual situation and challenges that must be faced by manufacturing industries in Indonesia and has developed fundamental support to the research problem of this study. Moreover, these findings complement the literature and support the proposed research framework that investigate what determinant factors that can support supply chain manager’s skill in Indonesia with cognitive ability as a mediator variable. Besides that, the result of the preliminary study also contributed to the background information for this research, directing in establishing research objectives and research questions of this study.

1.5 Research Questions

On the basis of what has been discussed in the study's background and problem statements, the research Questions are as follows:

1. Do determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) influence supply chain manager's skills?
2. Do determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) influence supply chain manager's Cognitive Ability?
3. Does cognitive ability influence supply chain manager's skills?
4. Does cognitive ability mediate the relationship between determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) and supply chain manager's skills?

1.6 Research Objectives

The objectives of this study are:

1. To examine whether determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) influence supply chain manager's skills?
2. To examine whether determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) influence supply chain manager's Cognitive Ability?

3. To examine whether cognitive ability influence supply chain manager's skills?
4. To examine whether cognitive ability mediate the relationship between determinant factors (globalisation issue, environment impact, supply chain integration, training and development, sistem informasion, hiring and recruiting, supply chain responsiveness) and supply chain manager's skills?

1.7 Significance of Study

The potential theoretical and practical contributions of the study are as follows:

1.7.1 Theoretical Significance

This study proposed a framework to fill the gaps by introducing determinant factors as independent variable, cognitive ability as mediator, and supply chain manager's skill as dependent variable. At the end of this study, it is expected that this research will develop the underlying theory by connecting determinant factors that effect supply chain manager's skills and mediate by cognitive ability to help supply chain manager operate his job in a competitive global company.

Social Capital Theory. It was first discovered by Coleman (1988) and later developed by Nahapiet and Ghosahal (1998) defined as "the sum of the actual and potential resources embedded within. Available through, and derived from the network of relationships possessed by an individual or social unit, which economics, political, technological dan cultural resources embedded in relationship." Social capital theory is often used in research on building career success for employees both in the field of supply chain management and human resource management. Seibert et al., (2001) stated that social capital theory plays an important role in building a successful career. The success of a career requires the flexibility of information and networks that support the improvement of employee knowledge which will later contribute to employee

performance and support them in the decision-making process. Furthermore, Dubey al. (2018) developed it for building supply chain manager skills and it was empirically proven that all information, resource factors obtained by supply chain managers can improve their skills. To be globally competitive, companies must be able to identify the challenges they will face and supply chain managers are required to be able to utilize relevant information and resources to get solutions. In addition, supply chain managers need cognitive abilities to help them digest and master information that will ultimately improve their decision-making skills to support the company's success in global competition. Dubey and Sekaran (2018) also stated that social capital theory has not been exploited by the operation management research, especially when it is associated with human resource management research. Thus, this study argued that social capital theory can be exploited to further explain how supply chain managers can be formed by also linking one of the variables in social capital theory, namely cognitive.

Socio-Technical Theory. Theory developed by Trist and Bramforth (1950) in Upadhyaya and Malik (2013) explained that organizations are seen as two independent aspects, namely technical and social. The technical aspects include knowledge and material about technology, while the social aspects include individual behavior and social reciprocity. In this research, the determinant factors discussed are environment issues, training and development, hiring and recruiting and supply chain integration. They are part of social aspects that will help companies develop business strategies. Meanwhile, supply chain responsiveness and information technology are aspects of technology that will support companies in facing dynamic environmental changes. They will make it easier for supply chain managers to do their jobs in global companies. In addition, Prajogo and Sohal (2013) stated that this socio-technical

theory helps companies to formulate factors that support supply chain professionals carrying out their duties in the global world with technological advancements that cannot be separated from supply chain management.

The study contributes by providing a novel theoretical framework which aims to establish the interface between human resource management and supply chain management, especially with regard to global competition under economic uncertainty. There are limited empirical studies on human resource management which combine the supply chain management concept observed through the lens of the global business perspective. Previous studies mostly employ qualitative methods (Hoheinstein et al., 2014; Ellinger & Ellinger, 2013; Harvey et al., 2013), mainly based on a literature review or conceptual study. This study investigates the theoretical model which interference concept between human resource management and supply chain management. The theoretical model is analysed in an empirical base survey study. Base on previous studies, in the future researchers have been encouraged to test the relationship between determinant factor and supply chain manager's skills (Prajogo & Sohal, 2013; Ellinger & Ellinger, 2013; Hohenstein et al., 2014). This is because previous studies have only extended to conceptualisation of the human resource model in supply chain management, so researchers have elaborated the urgent need for human resource management to support supply chain management activities and to develop better global company competitiveness. Therefore, this study provides insights into extending the existing model of the effect of the supply chain on human resource factors in order to leverage the skills of supply chain managers.

1.6.2 Practical Significance

Indonesia's government continues to develop ways to make local and globally oriented companies or even multinational ones operating in Indonesia remain globally competitive. For this purpose, supply chain managers with global skills are needed. Indonesia currently still lacks such human resources. This will be an obstacle for companies to face increasingly complex challenges in the future if not immediately addressed.

This research will reveal determinant factors to be faced and overcome by supply chain managers to enable companies to make anticipatory decisions, including those relating to legal action, in order to survive and successfully compete globally. Furthermore, human resource development may also use information from this research for their supply chain manager training and development program.

1.8 Definition of Key Terms

The key terms used in the study are defined below for clarification.

Skills

Within the context of this study and following Chell (2013), perceived skills are defined as multidimensional constructs which comprise knowledge and what has been learnt; affection emotional expression and what is experienced felt; behavioural action at strategic, tactical and personal levels; and occupational, job and task level contexts, including their breadth, demands and inherent responsibilities

Communication

Communication and teamwork are the ability to work effectively with individuals and groups/teams; to manage relationships in diverse contexts (cross-culturally, intra- and inter-organisationally); and to be able to communicate effectively employing different media and styles (Prajogo & Sohal, 2013).

Technology

Technology refers to the ability to use numerical techniques for decision making (e.g. forecasting and scheduling); to lead major projects; to apply continuous improvement and customer-focused concepts; and to apply supply chain technologies and application software (Prajogo & Sohal, 2013).

Understand law, ethical and regulations

Understand law, ethical and regulations refer to awareness of ethical issues at national and international levels; respect for diversity, social justice principles, the environment and corporate governance; and understanding of contractual and legal/regulatory aspects of the business (Prajogo & Sohal, 2013).

Environment issues

According to Qin and Peng (2016), the environment defined as “sustainability,” “climate change,” “global warming,” “habitat fragmentation” and “pollution”. For the purposes of this study, environmental issues can be categorised as transportation costs, lean concepts in the supply chain, limited natural resources, reverse logistics, and the closed-loop supply chain (Prajogo and Sohal, 2013).

Supply chain responsiveness

Based on the definition by Blome, Schoenherr & Rexhausen (2013), supply chain responsiveness is the main indicator of how well the supply chain strategy fulfils its objectives. Supply chain responsiveness is important because it denotes the ability of the chain to adapt to changing customer needs, which ultimately leads to improved performance. For the purposes of this study, the definition of environmental issues follows that of Prajogo and Sohal (2013), and relates to measuring supply performance, responsiveness, and agility to fragmentation and the variety of customer