

## Supply Chain Management (SCM) Utilisation Based on SCM Drivers in Manufacturing Industry

*(Pengurusan Rantaian Bekalan (PRB) Penggunaan Berdasarkan Pemandu PRB dalam Industri Pembuatan)*

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### ABSTRACT

*Supply chain management (SCM) plays a significant role in enabling manufacturing industry to gain competitive advantage. However, very little attention has been paid to SCM utilisation in manufacturing industry. Therefore, the objective of the study is to explore the awareness of SCM among manufacturers, to determine SCM utilisation based on SCM drivers and to determine the relationship between SCM and competitive advantage. This study has focused on the management aspects of SCM, and provides a theoretical framework to understand a company's performance through SCM in achieving competitiveness. The research design which was based on the established and recommended procedures in literature was utilised to determine the nature of the methodology. A quantitative approach through questionnaire development was utilised. Data collection was distributed randomly to 200 respondents from the manufacturing industry in Malaysia. 150 completed questionnaires were returned and used to measure the relationship between SCM drivers and competitive advantage. The relationship between SCM and competitive advantage were tested and inventory, transportation, information technology, and pricing were found to be strongly related to the competitive advantage in the manufacturing industry; meanwhile, the results show that outsourcing and facility were not strongly related to the competitive advantage. The findings of this study have contributed both to the academic and pragmatic realms. This study adds to the literature on SCM. The results have been essential to measure the implications of SCM in the manufacturing industry.*

*Keywords: Supply chain management; competitive advantage; manufacturing industries; supply chain awareness; SCM drivers*

### ABSTRAK

*Pengurusan rantaian bekalan (PRB) memainkan peranan penting dalam membolehkan industri pembuatan untuk mendapat kelebihan daya saing. Walau bagaimanapun, perhatian yang sangat sedikit telah diberikan kepada penggunaan PRB dalam industri pembuatan. Oleh itu, objektif kajian ini adalah untuk meneroka kesedaran PRB dalam kalangan pengeluar untuk menentukan penggunaan PRB berdasarkan pemandu PRB dan untuk menentukan hubungan antara PRB dan kelebihan daya saing. Kajian ini memberi tumpuan kepada aspek-aspek pengurusan PRB dan menyediakan rangka kerja teori untuk memahami prestasi syarikat melalui PRB dalam mencapai daya saing. Reka bentuk kajian berdasarkan kepada prosedur yang ditubuhkan dan disyorkan dalam kesusasteraan telah digunakan untuk menentukan sifat metodologi. Pendekatan kuantitatif melalui pembangunan soal selidik telah digunakan. Pengumpulan data telah diedarkan secara rawak kepada 200 responden dalam kalangan industri pembuatan di Malaysia. 150 soal selidik yang lengkap telah dikembalikan dan digunakan untuk mengukur hubungan antara pemandu PRB dan kelebihan daya saing. Hubungan antara PRB dan kelebihan daya saing diuji dan inventori, pengangkutan, teknologi maklumat, dan harga amat bertepatan dengan kelebihan daya saing dalam industri pembuatan, sementara itu keputusan menunjukkan bahawa sumber luar dan kemudahan tidak menunjukkan kaitan dengan kelebihan daya saing. Hasil kajian ini menyumbangkan kepada kedua-dua aspek akademik dan pragmatik. Kajian ini memberikan titik tambah kepada kesusasteraan pada PRB. Keputusan telah dilakukan untuk mengukur implikasi PRB dalam industri pembuatan.*

*Kata kunci: Pengurusan rantaian bekalan; kelebihan daya saing; industri pembuatan; kesedaran rantaian bekalan, pemandu PRB*

### INTRODUCTION

Present day organisations need SCM (Supply Chain Management) to compete with other firms. Through effective and efficient SCM, companies can achieve competitive advantage (Hassini 2008). Companies in various sectors focus on SCM because of tough competition in the market place (Christopher 2000; Gligor et al.

2015; Lee et al. 1997). Hence, SCM is very important in manufacturing industries for firms to compete with each others to achieve a competitive advantage through maximising customer values (Kamath 2016). Furthermore, an interesting view was expressed by Christopher (2016) that, SCM plays a significant role in achieve a competitive advantage.

In the domain of SCM, the movement of raw materials to the final product that is finally delivered to the customer in connection with the supply chain consists of completed activities that are critical to business functions and processes (Hervani et al. 2005). A company's supply chain structure includes its internal operations and external suppliers. Supply chain is needed to create value for customers with any products or services. It is a network consisting of downstream and upstream organisations which are involved in different processes and activities in the organisation (Matopoulos et al. 2007; Mustefa 2014).

A company's activities influence the competitive advantage and, subsequently, enhance its quality of products and business performance (Soin 2004). Manufacturers find ways to gain competitive advantage through new ideas and solutions. As stated by Mazlan and Ali (2006), if there is a problem of product delay, the managers have to oversee the causes of the delay and ensure that the SCM is implemented to minimise the loss in value. Those in the middle management need to take action for every level of upstream and downstream suppliers responsible in ensuring that the promised product or service is delivered on time. SCM has emerged as an important for manufacturers due to today's competitive world that is driven by globalization (Rusli et al. 2013).

Many manufacturing firms compete with each other to achieve customer satisfaction in an unsteady competitive market (Chavosh et al. 2011). To remain competitive amongst the manufacturing industries, manufacturers must focus on SCM and the manufacturing industries (Li et al. 2006). Arumugam et al. (2011) found that, the number of competitors in the business environment is more challenging due to the increasing number of competitors nowadays. It is important to improve their business operations through the implementation of SCM in the manufacturing industries to achieve a competitive advantage. As a result, to compete with global competition, manufacturers need to increase the efficiency of their SCM. Increasing market complexity, intensity, and competitiveness requires an extensive knowledge of SCM (Alvarado & Kotzab 2001). Consumers are seeking reliable, local, and international products to purchase (NainaMohamed & Borhan 2014). The understanding and practice of SCM have become necessary prerequisites for maintaining competitiveness and improving profitability in global realms. The speed of change of how the market evolves has given the manufacturing industry a growing focus on understanding the supply chain awareness roles in firms (Hugos 2011).

This study concentrated on the SCM drivers to determine the utilisation of SCM in manufacturing industries and to determine the relationship between SCM and the competitive advantage in the manufacturing industries. This paper examined issues in manufacturing industries as to retain customers and gain more profit. Therefore, the study embarked on the following objectives.

1. To explore the awareness of SCM amongst manufacturers.
2. To determine the SCM utilisation based on the SCM drivers.
3. To determine the relationship between SCM and competitive advantage.

This paper presents the background on the SCM drivers and competitive advantage, and why this research has been carried out in Malaysia. In Malaysia, SCM plays a significant role in the manufacturing and service sectors, and has already been implemented at its beginning. However, the Malaysian manufacturing industry is facing many challenges, such as globalisation and increasing competition. This is because many Malaysian manufacturers want to improve their performance in the manufacturing industry (Kamariah Kamaruddin & Mohamed Udin 2009). In order to compete, successfully, in today's challenging business environment, the manufacturing industry in Malaysia should be able to effectively integrate internal functions by the utilisation of SCM and, effectively, link them to the external operations of the suppliers and SCM members. This paper aims to add to the existing literature and determine the relationship between the SCM drivers and competitive advantage in Malaysia.

## LITERATURE REVIEW

### MANUFACTURING INDUSTRY IN MALAYSIA

Manufacturing is one of the primary strategic functions of any business to help a firm to be competitive and plan management strategies (Zahraee & Zahraee 2016). Manufacturing companies are facing some problems to distribute products or materials on time with lower cost, which in turn, is affecting production costs in the firms, significantly (Golroudbary & Zahraee 2015). In Malaysia, the government has extended the role and responsibility of Federation of Malaysian Manufacturers (FMM) to spearhead the effort for automation process of supply chain management among local industry. This was due to the realization on the importance of supply chain to complete globally (Yong 2002). Malaysia, an upper-middle income country, is striving to transform the manufacturing industry towards sustenance, comprehensiveness, and competitiveness at the international level because the economic growth and gross domestic product (GDP) depend on the manufacturing industry.

In 2007, the economy grew by 6.3 percent which showed manufacturing as the most powerful industrial sector in Malaysia (Abd. Rahman et al. 2009). Since then, industrialisation has accelerated to technology acquisition strategies in the manufacturing industries in Malaysia. Malaysia has now become a major exporter in the world market of computers and electronics, and the producers are known as E&E manufacturers; whereas, the major exporter was known previously as the manufacturer of rubber and tin (Karim et al. 2008). Technological

improvement is essential for Malaysia to become an industrialised nation by 2020. Numerous efforts have been implemented to enhance innovative work in (R&D) research and development in the manufacturing industries and focus on different areas like electronics and automated manufacturing.

#### THEORETICAL FRAMEWORK

This section analyses a theoretical framework in connection to SCM drivers and competitive advantage. The framework below shows six independent variables that

were identified for this study and the dependent variable was the competitive advantage and the moderating variable was SCM awareness. In this study, the drivers of the SCM were chosen because, by utilising the SCM drivers, a firm's performance can be increased (Soni & Kodali 2010). So, these six drivers of SCM were suitable to carry out this research to determine the relationship between the SCM drivers and competitive advantage. The competitive advantage was measured by using a quantitative scale. The theoretical framework described a broader relationship in this study, between the SCM drivers and competitive advantage. These theoretical frameworks were derived from the past studies (Shahzadi et al. 2013).

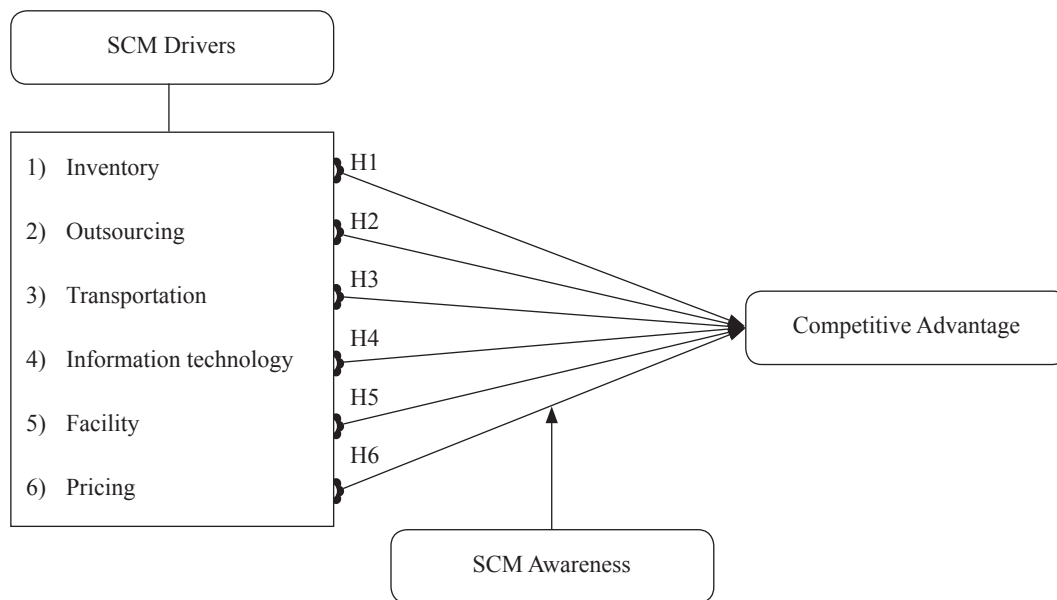


FIGURE 1. Theoretical framework adapted from (Shahzadi et al. 2013)

#### SIX DRIVERS OF SCM

Drivers of supply chain management can be defined as the quality of work needed to deliver a satisfactory to customer (Simchi-Levi et al. 2004). The drivers of SCM concentrate on improving the efficiency of the organisation. Manufacturers can improve their responsiveness and efficiency by implementing the six drivers of SCM in their manufacturing industries. The drivers of SCM are inventory, outsourcing, transportation, information technology, facility, and pricing. This leads to the improved performance of all of the activities in the manufacturing industries.

The drivers of SCM include inventory which is defined by Hugos (2011) as including everything from raw materials relevant to the manufacturers, distributors, and retailers to the distribute goods in the supply chain. Besides that, Abolhasanpour et al. (2009) pointed out that inventory refers to the remaining manufactured products of goods and materials that the manufacturers hold for the ultimate purpose of resale. Inventory in SCM is very important to facilitate the balancing of supply and demand.

Based on the discussion, the inventory in a manufacturing industry is pivotal to manage the relationships of the customers and suppliers.

The next driver of SCM is outsourcing. Outsourcing has a wide range of definitions from different authors. Outsourcing can be defined as “out” and “source,” meaning an external source. Some simple definitions of outsourcing can be defined as a third party service provider managing and completing certain amounts of work, for a specified time, cost, and service (Oshri et al. 2015). An outsourcing company is based on the supply of goods and services to reduce external costs and to restructure the internal process costs (Banfield 1999). Franceschini et al. (2003) found that outsourcing is a management approach in assigning duties to an outside source to perform production and services towards selecting new suppliers to deliver the products and services. Furthermore Pirannejad et al. (2010) stated that outsourcing signifies the process of choosing new suppliers and delivering materials. Therefore, the process of outsourcing involves two main parties, the vendor and the client, who provide services (Alim & Hasan, 2010). It can be concluded that, when

the outsourcing is properly used in the manufacturing industry, outsourcing will be more cost-effective to produce a product at a lower cost. Thus, outsourcing is an important element for the manufacturer to implement in the manufacturing industry

Next, is transportation. According to Chopra and Meindl (2007), the role of transportation in a supply chain refers to the movement of products from one place to another to be delivered to the customers. Somuyiwa (2010) asserted that today's successful managers need to take a broad view of the roles and responsibilities of the management of transportation in the supply chain. There is a need for transportation to be used in a more flexible and responsive way in order to respond effectively to customers and at the same time, minimise the impact of transport costs and environmental impact. Transportation plays a big role in the supply chain to deliver products to customers on time (Hugos 2011).

Shin et al. (2012) found that transportation provides a framework to discover the mechanism of transportation in SCM. By utilising transportation in manufacturing industries, managers can discover ways of which their unforeseen cost becomes low and the risk in the supply chain decreases. Transportation is one of the most popular management concepts, known as logistics distribution and manufacturing in SCM (Huq et al. 2010). Therefore, transportation plays a significant role in SCM because products are rarely produced and consumed at the same location (Haniefuddin et al. 2013).

The next driver of SCM is information technology. The use of information technology can reduce the lead time of paperwork and other activities in a company. Access to information and data exchange can improve the customer and supplier relationship (Bozarth et al. 2008). Recently, the development of IT operations in the SCM paradigm has become popular. The multifaceted nature of SCM has constrained organisations to go for online communication. Walton and Gupta (1999) stated that the internet expands the interchanges through more interactivity between the organisation and its customers. Information technology can increase the information processing capabilities of the suppliers to support more relations to reduce uncertainty (Subramani 2003). Towill (1997) stated that, in order to survive, a company must be part of one or more aspects of information technology in the SCM, producing a world-class performance. Therefore, the manufacturers should work together to optimise the full pipeline by establishing a smooth use of information technology in their SCM.

Next driver of SCM is facility. Melo et al. (2009) found that capacity expansion is an old issue in location. Facilities are widely accepted and cover a wide range of services and management, and contribute to the success or failure of an organisation (Chotipanich 2004). Atkin and Brooks (2009) stated that organisational need is the key to effective facilities, from the perspective of providing value for money. In contrast, poor links can affect poor facility practices that do not support the core business and its capabilities (Barrett & Baldry 2009). Therefore, it is

very important in the manufacturing industry to implement facility to achieve the competitive advantage.

Finally, the last driver is pricing. According to Haniefuddin et al. (2013), pricing and customer expectations affect consumers who choose to buy a product. This can affect the aspects of the supply chain's required level of response in the firms. Formentini et al. (2011) found that an innovative pricing method is the main opportunity for the entire network in an organisation. Voeth and Herbst (2006) were the first to investigate pricing from a supply chain point of view. It is important for a company to discover the internal and external factors that influence the formulation of pricing objectives (Jones 2009). In price-sensitive industries, price changes lead to significant changes in returns, and this situation occurs at a lower level because of the high level of fixed costs (Jain & Haley 2009). The cost incurred by a product or service plays an essential role in the pricing process in the firm. The statement above clearly explained that pricing is very important in the manufacturing industry. The manufacturers need to know the market conditions in order to determine the correct pricing strategy.

#### COMPETITIVE ADVANTAGE

Walras (2013) defined that "competitive advantage is a theory of competition." In a flawless competition, materials and cost can achieve equilibrium and, subsequently, benefits in the long run. Porter (2008) asserted that to achieve competitive advantage, companies need to implement SCM to achieve customer satisfaction and gain more profit. Porter's idea has influenced many other researchers to achieve the competitive advantage. Competitive advantage involves the abilities of an organisation to separate itself from its competitors to have a good performance in the company (Li et al. 2006). According to Taib (2012), every company in Malaysia must focus on SCM so that it can create superior value and competitive advantage in the marketplace.

To achieve competitive advantage and improve the performance amongst the other firms, SCM needs to be implemented in the manufacturing industry to get effective production and distribution as one of the major strategies to face the competition amongst other firms (Premkumar 2000). Resources and activities are required to strengthen the coordination amongst the management and increase the technical complexity, greater integration, and cooperation amongst the enterprises in the SCM to achieve the competitive advantage.

#### SCM AWARENESS

For SCM awareness in the manufacturing industry, there is a need for interconnectedness and relationships in the management amongst partners, which has given birth to a wide range of literature and research studies in the area of SCM (Eyong 2009). Traditionally, this was an area that was very much confined to the background of a business' operations, with customers having little awareness of

interest in where the products and services were sourced from. Now, however, it is more important than ever that businesses go to great lengths to ensure that they have the necessary SCM visibility to limit the chances of unethical practices occurring. Suppliers need to be aware of the growing SCM awareness as they may find themselves overlooked by buyers unless they can show themselves to be free of unethical practices.

Furthermore, the SCM awareness is to understand the new perspectives of the SCM based on its core process and problems in order to comprehend and concentrate on the firms issues and evaluate the effects of its own culture and behavior, which has deterred from the whole system in the organisation (Holweg & Bicheno 2002). Therefore, in a company, employees are required to play a role in different chains other than just their own company. The goal is to develop an understanding of the processes in the chain, to understand the importance of communication in the SCM, and to raise awareness of the consequences of the decisions in the chain.

#### METHOD

The quantitative approach was used to measure the systematic empirical data used in the statistical analysis to test the hypothesis. Bernard (2011) defined the quantitative research as a method used more in scientific research. Respondents for this study were selected from the Federation of Malaysian Manufacturers' online index databases in the manufacturing industry. The questionnaires were distributed to 300 Malaysian manufacturing industries. Moreover, past studies have exhibited that senior managers or top management are more knowledgeable and can give valid and reliable information. The sample size of this study was 200 respondents and the responses were received from 150 respondents through an online survey. This study was a cross-sectional study that focused on the Malaysian manufacturing industry. In this research, simple random sampling was chosen.

Descriptive statistical analyses were conducted. Amongst the types of descriptive analyses undertaken in these studies were frequency distributions and central tendency, consisting of the mean, median, and mode measures using the variance and standard deviation. A multiple regressions analysis was conducted using SPSS version 21. As a way to collect data, the researchers used an online web-based questionnaire as the primary mechanism for the collection of data using an online survey. In order to generate measurement items, a descriptive research can utilise certain techniques, including literature search, empirical study, and insight stimulation (Churchill 1979). For this study, the questionnaire was outlined after an extensive review of the literature, focusing on generating several details that revealed the core theoretical constructs.

#### RESULTS

In the first step, this study identified the utilisation of SCM in the manufacturing industries. The questionnaires were used to measure the variables. The questionnaires were derived from the literature. Basically, a pilot study was conducted to test the reliability, scales and measures, and the readability of the questionnaires. 20 respondents were selected from middle management to senior management in the manufacturing industries. Participants were asked to rate their responses based on the five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree." After receiving the responses from the respondents, changes were made based on the feedback and, finally, the questionnaires were distributed online.

The respondents for this study were selected from the Federation of Malaysian Manufacturers' online index databases in the manufacturing industry. The questionnaires were distributed to 300 Malaysian manufacturing industries. Moreover, past studies have exhibited that senior managers or top management staff are more knowledgeable and can give valid and reliable information. The responses were received from 150 organisations through an online survey.

Table 1 shows the results of the descriptive statistics for the demographic profile. The education level of the employees consisted of 82.7% undergraduates, 15.3% postgraduates, and 2.0% secondary/high school. Middle management staff comprised 65.5%, 28.4% of senior management, and 4.7% of managing directors. In terms of sales and turnover, 57.3% constituted more than RM15 mil, 40.7% for between RM300,000 and RM15 million, and 2.0% for less than RM300,000. The number of employees was shown as more than 150 employees comprised 86.7%, between 50 to 75 (8.7%), and less than 50 (4.7%). Finally, employees with 5-10 years working experience comprised 27.3%, 1-3 years (24.7%), 3-5 years (22.7%), more than 10 years (16.0%), and for 1 year (9.3%).

TABLE 1. Socio demographic

Description	N	%
<i>Education level</i>		
Secondary/High School education	3	2.0
Undergraduates	124	82.7
Postgraduates	23	15.3
<i>Position in firm</i>		
Managing Director	7	4.7
Senior management	42	28.4
Middle management	97	65.5
<i>Sales turnover</i>		
Less than RM300,000	3	2.0
RM300,000 to less than RM15 mil	61	40.7
More than RM15 mil	86	57.3
<i>Number of employees</i>		
Less than 50	7	4.7
Between 50 to 75	13	8.7
More then 150	130	86.7

*continue*

TABLE 1 *continued*

Description	N	%
<i>Working experience</i>		
1 year	14	9.3
1-3 years	37	24.7
3-5 years	34	22.7
5-10 years	41	27.3
> 10 years	24	16.0

## RELIABILITY ANALYSIS

The coefficient alpha was used to measure the validity and reliability of all of the items. Zailani et al. (2008) stated that a coefficient alpha as low as 0.60 is acceptable in social science research. The lowest Cronbach's alpha for this study was 0.801 (facility) and the highest value was 0.824 (information technology). Hence, the sampling results for this study can be accepted and are reliable.

TABLE 2. Results of reliability test

Variable	Cronbach's Alpha
Inventory	.819
Outsourcing	.807
Transportation	.812
Information technology	.824
Facility	.801
Pricing	.812
SCM awareness	.817

## CORRELATION ANALYSIS

The results of the correlation analysis indicated that the SCM drivers were significantly correlated with all of the variables, and all of the correlations were positive.

TABLE 3. Results of correlation analysis

Variable	1	2	3	4	5	6	7	8
Competitive advantage	150							
Inventory	.406**	150						
Outsourcing	.417**	.340**	150					
Transportation	.498**	.315**	.517**	150				
Information technology	.163**	.406**	.371**	.286**	150			
Facility	.398**	.627**	.515**	.484**	.427**	150		
Pricing	.338**	.328**	.490**	.544**	.437**	.454**	150	
SCM awareness	.475**	.405**	.518**	.439**	.346**	.404**	.338**	150

The relationship between inventory and competitive advantage was 0.406, outsourcing and competitive advantage was 0.417, transportation and competitive advantage was 0.498, information technology and competitive advantage was 0.163, facility and competitive advantage was 0.398, pricing and competitive advantage was 0.338, and SCM awareness and competitive advantage was 0.475. Table 3 illustrates the results of this test.

## REGRESSION ANALYSIS

The regression analysis was utilised to ascertain the typical value of the changes in the competitive advantage and the drivers of SCM. Table 4 shows the multiple regression analysis for the SCM drivers and competitive advantage. The result showed 39.8% of the variation in the level of implementation of the SCM drivers ( $R^2 = 0.398$ ,  $F = 15.047$ ,  $p < 0.05$ ). The relationship between inventory and competitive advantage was ( $\beta = 0.26$ ,  $t = 2.55$ ), between outsourcing and competitive advantage it was ( $\beta = 0.04$ ,  $t = 0.58$ ), between transportation and competitive advantage it was ( $\beta = 0.26$ ,  $t = 2.42$ ), between information

technology and competitive advantage it was ( $\beta = -0.24$ ,  $t = -2.74$ ), between facility and competitive advantage it was ( $\beta = 0.01$ ,  $t = 0.09$ ), between pricing and competitive advantage it was ( $\beta = 0.30$ ,  $t = 3.29$ ), and finally, between SCM awareness and competitive advantage it was ( $\beta = 0.26$ ,  $t = 3.14$ ).

TABLE 4. Regression analysis

Variable	Direct effect on Competitive advantage
Inventory	0.26
Outsourcing	0.04
Transportation	0.26
Information technology	-0.24
Facility	0.01
Pricing	0.30
SCM awareness	0.26
$R^2$	0.426
Adjusted $R^2$	0.398
F-change (sig)	15.047

## HYPOTHESIS TESTING

Hypothesis testing is an assertion or a conjecture about a population parameter, such as the mean or variance of the normal population. Table 5 shows the hypothesis testing for the SCM drivers and competitive advantage. The relationship between inventory and competitive advantage was significant (sig .012), outsourcing and competitive advantage was not significant (sig .557), transportation and competitive advantage was significant (sig .017), information technology and competitive advantage was significant (sig .007), facility and competitive advantage was not significant (sig .993), pricing and competitive advantage was significant (sig .001), finally the relationship between SCM awareness and competitive advantage was significant (sig .002).

TABLE 5. Results of hypothesis testing

Variable	Significant
Inventory	.012
Outsourcing	.557
Transportation	.017
Information Technology	.007
Facility	.993
Pricing	.001
SCM awareness	.002

Note: Dependent Variable: Competitive advantage

## DISCUSSION

The objective of this research was to determine the relationship between SCM and competitive advantage. This article discusses the basic theoretical and practical issues associated with the SCM drivers in the manufacturing industries. The results showed the six dimensions of the SCM drivers, which were inventory, outsourcing, transportation, information technology, facility, pricing, and the moderating variable, SCM awareness. The multiple regression analysis was conducted to test hypotheses 1 until 6.

The first objective of this research was to explore the awareness of SCM. This study has successfully supported the development of the drivers of SCM. From the finding, it was seen that the majority agreed that they were aware of SCM in the manufacturing industry. This shows that they had knowledge of SCM, and they were qualified to answer the questionnaire. Objective 3 shows that SCM awareness had a significant relationship with competitive advantage.

The regression results for inventory and competitive advantage showed that inventory did not have a significant effect on competitive advantage. However, inventory is an important factor to increase the competitive advantage in manufacturing industries. In emphasising the technical arrangements and the importance of SCM in an organisation,

Hugos (2011) highlighted that inventory is distributed through the supply chain and includes everything from raw materials to work in process in the supply chain. Verwijmeren et al. (1996) found the expanding customer requests is a good driver for organised and incorporated management in inventories. Objective 2 shows that the utilisation of SCM for inventory can be determined based on the SCM drivers in the manufacturing industry.

In terms of outsourcing and competitive advantage, outsourcing was found to be not important in increasing competitive advantage. The present study showed that the hidden cost in outsourcing could be risky in firms even though outsourcing is very important to reduce cost (Schraven 2012). This because, most manufacturers underestimate the hidden cost. Furthermore, inexperienced staff could also be a risk in outsourcing (Oswald et al. 1997), because if new staff members are hired from different countries, they are not able to produce the products with the same quality. Besides that, it will take longer for them to learn or be given training, and it will be a waste of time and money for the firms. Furthermore, a lot of problems related to cultural differences often arise in outsourcing, which is one of the biggest reasons for outsourcing transactions' failure, especially when outsourcing to third parties (Kvedaraviciene & Boguslauskas 2015). Moreover, as the supplier acquires the knowledge of the product being manufactured, they tend to use that knowledge to start selling their own products by imitating a product from the company which outsourced to it (Pralhad & Hamel 1990). The result for objective 2 shows that the utilisation of SCM can be determined based on the SCM drivers.

The results for transportation showed a strong significance between transportation and competitive advantage. Therefore, it can be concluded that transportation had a significant relationship with competitive advantage. These results were fully supported in previous studies. Somuyiwa (2010) stated that successful supply chain managers, today, need to take a broad view of the role and responsibilities of the management and transportation. Transportation is part of the manufacturing process in ensuring that the supply chain enables the delivery of materials needed for the production, including materials and labour necessary to enable the finished product to be distributed to the target customers. The use of SCM for transportation determines the SCM utilisation based on the SCM drivers for objective 2.

Moreover, there was a significant relationship between information technology and competitive advantage. The findings from this study are in accordance to a few prior studies. In addition, information technology can reduce the lead time for customers, manufacturers, distributors, retailers, and suppliers to gain a competitive advantage and provide benefits in sustaining firms (Bozarth et al. 2008). According to Melo et al. (2009), the globalisation of economic activities, along with the rapid development in information technology has led to shorter product life cycles, smaller sizes, and a very dynamic behaviour of customers in terms of preference. In the past, managers and

scholars concentrated on the development in information technology to achieve a competitive advantage in firm (Alreemy et al. 2016). The results for objective 2 indicate that information technology can determine the SCM utilisation based on the SCM drivers.

Facility is important in manufacturing industries. Thus, with proper planning, facility can bring a lot of benefits to the manufacturing industries. However, there are still some challenges in facility. The results showed that there was no significant relationship between facility and competitive advantage. The challenge is to incorporate facility as a part of the business in all areas (Lindberg 2010). Furthermore, there may be wastage of funds, space, and facilities where decisions are taken in the long term, with the ultimate results of the facility project being less than desirable, especially in many organisations which do not plan properly for their development and management (Aikens 1985). Thus, manufacturers must plan at all stages of the facilities in their firms to complete the project and adhering to specified standards. Objective 2 shows that it can be inferred that the use of facility can determine the SCM utilisation based on the SCM drivers.

There was also a significant relationship between pricing and competitive advantage. Chopra and Meindl (2007) found that companies can decide how much to charge their customers for their products and services. Pricing can affect the segment of the consumers who buy the product and the customers' expectations. This can influence the supply chain's required level of reaction in order to achieve a competitive advantage in the firm. Besides that, Jones (2009) also stated that pricing may be regarded as the process for all production lines or for each individual product. It is vital to recognise the values of different relationships between the sales amount and revenue, as well as the competitors' prices and the costs related to the production and promotion of the product. This shows the vital role of the utilisation of pricing, which can determine the SCM utilisation based on the SCM drivers for objective 2.

Next, there was a positive relationship between SCM awareness and competitive advantage. In previous research, Barker and Naim (2008) examined that, the awareness of supply chains in a firm was still low and much inefficiency remained. Therefore, this research has determined the awareness of SCM amongst employees in the Malaysian manufacturing industries. Hence, most of the respondents had good knowledge of SCM in the manufacturing industries based on the results.

#### IMPLICATION OF RESEARCH

Managers strive to achieve organisational goals to the highest standard to achieve a competitive advantage in firm. The implication of this is that, the managers will have to manage the resources that they have carefully in order to meet the target. The best way to provide such justification is to use SCM that would be profitable for

the organisation in the long-term. Several important managerial implications follow from this study. First and foremost, it is clear that SCM drivers can be leveraged to provide customer information which can help to achieve a competitive advantage for the firm. Since, the traditional way of increasing retention of customers incurs high cost, the best practice of SCM provides firms with a promising way to attack this critical problem.

The practice of SCM in a firm will help it to adopt, build, and test integrative strategies in the manufacturing industry. Second, periodic measurement of a firm's SCM could help managers track changes over time. Other than the applicability of the model in the monitoring process, the three components in the SCM model may serve training needs by assisting managers to develop appropriate training programmes that can help improve the staff's understanding of the activities involved in implementing SCM.

This discussion is important for helping the manufacturer and academics to draw a clear line in the utilisation of SCM in the manufacturing industry. In academic pragmatics, with the theoretical contribution of this study, researchers can get a deeper and fresher view of the SCM drivers and the utilisation of SCM in the manufacturing industry. Moreover, this is a useful research for future researchers in the related fields because all of the information collected was from reliable sources. The present study makes both theoretical and managerial contributions, and suggests several applications for future research.

The theoretical contribution is to offer a significant advance to the current literature of SCM drivers by offering an integrative framework to organisations. This study provides a clear conceptualisation of the SCM drivers' constructs and has developed a theoretical framework with management. Though some of the ideas expressed in this study may be familiar to manufacturers, its value is in integrating these various notions to provide a more comprehensive and holistic picture of SCM drivers.

#### CONCLUSION AND RECOMMENDATION

In conclusion, the study has strived to explore the awareness of SCM amongst manufacturers and has shown that it has a statistically significant influence towards manufacturers to achieve competitive advantage. The relationship between SCM drivers and competitive advantage was tested and the result was that inventory, transportation, information technology, pricing, and SCM awareness were strongly related to the competitive advantage in the manufacturing industries. This study adds to the literature on SCM. The results have essential implications on SCM in manufacturing industries in acknowledging the essential drivers, which encompass inventory, outsourcing, transportation, information technology, facility, pricing, and SCM awareness, in achieving a competitive advantage. Future research can look into several areas; first, as the



samples were small, adding to the number of respondents would be beneficial; next, the involvement of various SCM personnel from a single organisation could be considered so that the discrepancies of the SCM perception between the groups and the impact of such discrepancies on the overall performance can, thus, be examined.

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