

## The Impact of Supply Chain Management Practices on Competitive Advantage

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### Abstract

*In today's business world, supply chain management has become a critical competitive advantage and one of the finest ways to improve performance for companies. However, in developing countries supply chain management practices are disregarded as unnecessary and don't have much research on supply chain management practices on competitive advantage. The objectives of this study are to explore the relationship between supply chain management practice and competitive advantage in Selangor. To collect data for this research, Google form was used as questionnaire and distributed to food and beverage companies in Selangor. Then, the data was analyzed using Statistical Package for Social Science (SPSS). Out of four hypothesis, three hypothesis were accepted and shows that customer relationship, integration of supply chain and supplier strategic partnership have impact on competitive advantage. In future research, research suggested to use both quantitative and qualitative method to have more quality data collection.*

**Keywords:** supply chain management, supply chain management practices, competitive advantage

### 1. Introduction

Supply chain management can boost performance and maintain a competitive advantage. Supply chain management is the management of raw materials through their transformation into products-in-process, semi-finished, and finished commodities, followed by delivery to end customers (SCM). This operation involves several suppliers and distributors (Heizer et al., 2017). SCM manages supplier connections, sharing levels, information quality between suppliers and enterprises, and customer complaints to build long-term customer relationships (Al-Douri et al., 2018). Globalization and free trade have enhanced the importance of Supply Chain Management (SCM). In the era of globalisation, supply chains compete rather than commodities or companies (Govindan et al., 2014). In SCM, the supply chain is the physical network. All organisations involved provide raw resources, make commodities, and distribute them to end-users. In the last two decades, supply chain management, which emphasises the interconnectedness of buyer and supplier firms and their joint efforts to improve supply performance, has received much attention (Shin et al., 2000). Today's business rivalry demands a greater focus on consumer value. Most companies aim to deliver more useful products and services than rivals. Aside from clients, corporations operate in a chaotic and dynamic market (Christopher, 2000; Goldman et al., 1995). SCM focuses on the flow of information, resources, and money between customers and suppliers (Li et al., 2006; Wibowo & Sholeh, 2015).

Despite the rising interest in SCM, the literature has not been able to provide much assistance to help with SCM practise (Cigolini et al., 2004). Because of the SCM's multidisciplinary origins, the concept's misunderstanding, and the concept's evolving character, this has been linked to the phenomenon. SCM's definition in the literature is ambiguous at best (Feldmann et al., 2003). Because SCM emphasises inventory reduction inside and across businesses in the supply chain, it is synonymous with integrated logistics systems in the field of transportation and logistics management. An integrated SCM eventually emerged from these two approaches, integrating all of the supply chain operations. The SCM strategy, which is comprised of a variety of ideas and practises that combine suppliers, manufacturers, distributors, and consumers in order to create a business model that is both streamlined and highly successful, has the potential to be beneficial to each and every company that is a part of the supply chain (Chopra & Meindl, 2001). It is the goal of a successful implementation of SCM to strengthen the relationship between upstream suppliers and downstream consumers, and as a result, to increase both customer happiness and corporate performance.

## 1.1 Research Background

Malaysia's food and beverage industry is not only economically vital but also deeply ingrained in the nation's sense of self. The rich history of Malaysia and its strategic location at Southeast Asia's crossroads have left their culinary mark on the country's cuisine, which is often regarded as among the best in the region (Akanmu et al., 2021). Supply chain management in the food and beverage industry in Malaysia involves coordinating the flow of goods and services from suppliers to customers in the most efficient and cost-effective manner possible. This includes managing the procurement of raw materials, production processes, distribution and delivery, and customer service. In the food and beverage industry, supply chain management is particularly important due to the perishable nature of many products, as well as the strict food safety regulations that must be followed. Effective supply chain management ensures that products are delivered to customers in a timely and consistent manner, while also maintaining the quality and safety of the products. In Malaysia, the food and beverage industry relies on a complex network of suppliers, manufacturers, distributors, and retailers to get products to customers. This includes local and international suppliers, as well as small and large businesses. To manage this network effectively, companies in the industry often use specialized software and technology to track orders, inventory levels, and delivery schedules. Supply chain management in the food and beverage industry in Malaysia is also impacted by external factors, such as changes in consumer demand, fluctuations in commodity prices, and shifts in regulatory policies. Companies in the industry must be able to adapt to these changes in order to maintain their competitive edge and meet the needs of their customers (Hasan, &Uthamaputhran, S., 2020).

## 1.2 Problem Statements

According to Nguyen (2016), The goal of supply chain management is to boost sales, decrease expenses, and speed up the process in a way that is both responsible and ethical. Supply chain management is a technique to simplify every part of a corporation. This indicates that having knowledge on how to manage supply chains is quite crucial for a firm. Despite this, supply chain management has been around for years, and in industrialised nations it has become an essential component of every successful firm. However, in developing countries, this approach is typically disregarded as unnecessary.

Supply chain management methods have only been studied in terms of their effect and influence on supply chain performance (Shradha et al., 2015; Balal Ibrahim & Adam Hamid, 2014 & Al-Madi et al., 2017). Research on the impact of supply chain management practises on competitive advantage in supply chains is rare. Despite the fact that Anwer et al. (2017) and Al-Shbout et al. (2017) focused on supply chain management practise and supply chain performance, these were tied to supply chain management and not competitive advantage. There has been a lack of research on the three components of supply chain management: practices, performance and competitive advantage.

## 1.3 Research Questions

What is the relationship supply chain management practice and competitive advantage?

## 1.4Research Objectives

To explore the relationship between supply chain management practice and competitive advantage.

## 2. Literature Review

### 2.1 Supply chain management practices

"Supply chain management practises" are steps a company takes to improve supply chain management (Shradha et al., 2017). "Supply chain management" (SCM) refers to a set of operations organisations perform to improve their internal supply chains' efficiency (Siddig & Adam, 2014). Li et al. (2006) defined supply chain management as a multidimensional term that studies both sides of the Supply Chain. Supply chain management strategies connect suppliers, manufacturers, distributors, and customers to optimise supply chain performance. Supply chain practises are activities an organisation does to manage its supply chain effectively (Mayaka, 2015). SCMP examines supply chain environments to connect SCM theory and practise (Gawankar et al., 2017). SCMP manages supplier and customer collaboration and information to improve supply chain performance (Nafiyad et al., 2020). SCMP promotes effective supply chain management by firms along the supply chain (Muthia&Gesit, 2021).

SCM techniques may also be characterised as methodologies that are used in the management of integration and coordination of supply, demand, and relationships in order to effectively and profitably fulfil customers. According to the findings of a recent research, businesses often utilise supplier assessment or performance measurement to identify certain supplier shortcomings and to establish strategies to rectify them (Krause et al., 2002). These kinds

of initiatives could entail measuring the performance of the supplier in terms of delivery, quality, and cost, making site visits, certifying the supplier's goods and procedures, and defining performance targets. SCM techniques are applied to attain and increase performance across the supply chain. In order for these practises to be effective, internal cross-functional integration inside the company as well as external integration with suppliers and consumers are required (Kannnan and Tan, 2010; Kim,2006). Table 1 shows the dimensions of supply chain management practices that is researched by previous scholars.

The main dimensions are level and quality of information sharing, integration of supply chain, strategic supplier partnerships, customer relationship and postponement. The least focused dimensions are management of customer service, Just in Time (JIT) capabilities, geographic proximity, planned leadership in supply chain, outsourcing, product modularity, information technology, internal operations, training, innovation performance, and operational performance.

Author (Year) SCMP	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Level/ Quality of Information Sharing	√	√	√	√	√	√		√	√	√	√	√	√	12
Integration Of Supply Chain	√	√					√			√				4
Management Of Customer Services	√			√					√					3
Just In Time (Jit) Capabilities	√			√				√						3
Geographic Proximity	√													1
Agreed-Upon Prospects and Goals		√												1
Postponement		√									√	√	√	4
Planned Leadership in Supply Chain		√		√										2
Strategic Supplier Partnerships			√		√	√			√	√	√	√	√	8
Outsourcing			√											1
Customer Relationship			√		√	√	√			√	√	√	√	8
Product Modularity			√											1
Information Technology						√		√		√				3
Internal Operations, Training, Innovation Performance, And Operational Performance						√	√							2

Table 1: Dimensions of supply chain management practice

Key: Author (Year)

1. Tan *et al.*, (2009)
2. Min & Mentzer (2004); Sundram *et al.*, (2016)
3. Lee *et al.*, (2007)
4. Zhou and Benton Jr (2007)
5. Thatte *et al.*, (2013)
6. Chan and Lam (2011)
7. Sukati *et al.*, (2012)
8. Al-Shboulet *et al.*, (2017)
9. Gawankaret *et al.*, (2013)
10. Gharakhani *et al.*, (2012)
11. Karimi & Rafiee (2014)
12. Bani Hani (2022)
13. Shradha *et al.*, (2017)

(a) *Level of information sharing*

Quantity and quality of shared information are key. Both of these components are necessary for supply chain management (SCM), which was formerly studied separately (Chau, 1997). The degree of information sharing is the quantity of sensitive and secret information shared with a supply chain partner (Tan, 2002) Both sides can share ideas, tactics, market, and consumer information (Slater & Narver, 2000). According to a number of academics, accurate marketing data at every point in the supply chain is the most critical aspect in creating a smooth supply chain (Lopes *et al.*, 2011). Using supply chain information and sharing it can give you a competitive edge (Hsu *et al.*, 2009). Information exchange is one of five core components of a strong supply chain partnership, according to Lee and colleagues. Open communication helps them function as a unit. By working together, they may better understand end-user needs and adapt to market trends faster. Some feel that using relevant and timely information by all supply chain functional units is crucial to being competitive and standing out. Only through simplifying material transportation, including streamlining and clarifying information flow at every level, can an integrated and efficient supply chain be created. Includes information's correctness, timeliness, adequacy, and dependability (Min *et al.*, 2005). The effectiveness of supply chain management depends on the correctness, efficiency, and calibre of the information produced and transmitted (Peng *et al.*, 2011). The literature gives several examples of how erroneous or delayed information can harm supply chain operations (Stock *et al.*, 2010). Divergent goals and opportunistic behaviour by supply chain participants, together with informational asymmetries, degrade information quality (Kroes *et al.*, 2010). According to certain assumptions, companies may deceive their competitors, suppliers, and customers. This might hurt everyone (Salles *et al.*, 2010). Businesses are reluctant to disclose more information than necessary, maybe because doing so is perceived as a power grab. Due to these predispositions, verifying the quality of transmitted information is vital to efficient supply chain management. Due to the importance of data in corporate strategy, organisations must manage information with care and ensure it's handled appropriately.

(b) *Integration of supply chain*

A manufacturer's "degree of integration in the supply chain" may be defined as the extent to which the manufacturer engages in proactive interaction with its partners in the supply chain and collaborates with other organisations to manage both intra- and inter-organizational operations (Flynn *et al.*, 2010). Integration of supply chains strives to maximise value for customers by coordinating operations all along the supply chain and offering the most time and cost-effective service possible (Frohlich & Westbrook, 2001). Integration of the supply chain is essential due to the fact that interactions within and outside the supply chain take place simultaneously (Chen *et al.*, 2009). "The amount to which a firm can organise its organisational practises, procedures, and behaviours into collaborative, synergistic, and controlled processes in order to fulfil consumer demands" is the definition of "internally integrated" (Zhao *et al.*, 2011). The sharing of data and information across different departments and activities, in addition to the creation of new goods, is one of the components of internal integration that is considered to be among the most crucial (Zhao *et al.*, 2011). Integration with one's customers and suppliers are both instances of external integration. "The degree to which a manufacturer works together with its external partners to coordinate inter-organizational strategies, practises, and procedures into coordinated, cooperative workflows" (Flynn *et al.*, 2010). The primary drivers of integration include the information revolution, increased levels of global competition, and the emergence of new types of inter-organizational links. Therefore, cooperation, collaboration, sharing of information, trust, and partnerships can be described as the foundation of integration. Shared technology and a fundamental shift away from managing individual functional processes and toward managing integrated chains of processes are also essential components of this foundation. This is the fundamental principle of integration (Huo *et al.*, 2015).

(c) *Supplier strategic partnership*

Strategic supplier relationships are long-term partnerships between a company and its suppliers. Strategic and operational competencies of each participant are used to achieve long-term advantages (Peng *et al.*, 2011; Tan & K.C., 2002). To help participants gain long-term strategic and operational benefits (Mwale, 2014). This engagement builds and manages a network of skilled suppliers for the organisation. This connection comprises all processes needed to maximise provider performance. It also fosters direct, long-term interactions with suppliers and

collaborative planning and problem-solving. Working collaboratively, supplier organisations may save time and effort (Li et al., 2006). An industry-leading SC may need strong supplier relationships. Strategic collaboration involves a direct, long-term link with the other party and joint problem-solving (Zhao & Lee, 2009) These forms of strategic partnerships are developed to encourage the parties' continued engagement in one or more major strategic areas, such as manufacturing, distribution, and technological progress (Lambert et al., 2000). Through this type of partnership, a company's most significant suppliers may share in product success. Early supplier contributions to product design can result in cost-effective design options, aid in selecting the most relevant components and technologies, and design review support (Jie et al., 2013).

An efficient supplier partnership may be needed for a cutting-edge supply chain since connected organisations may interact closely, saving time and effort (Kronmeyer et al., 2004).

*(d) Customer relationship*

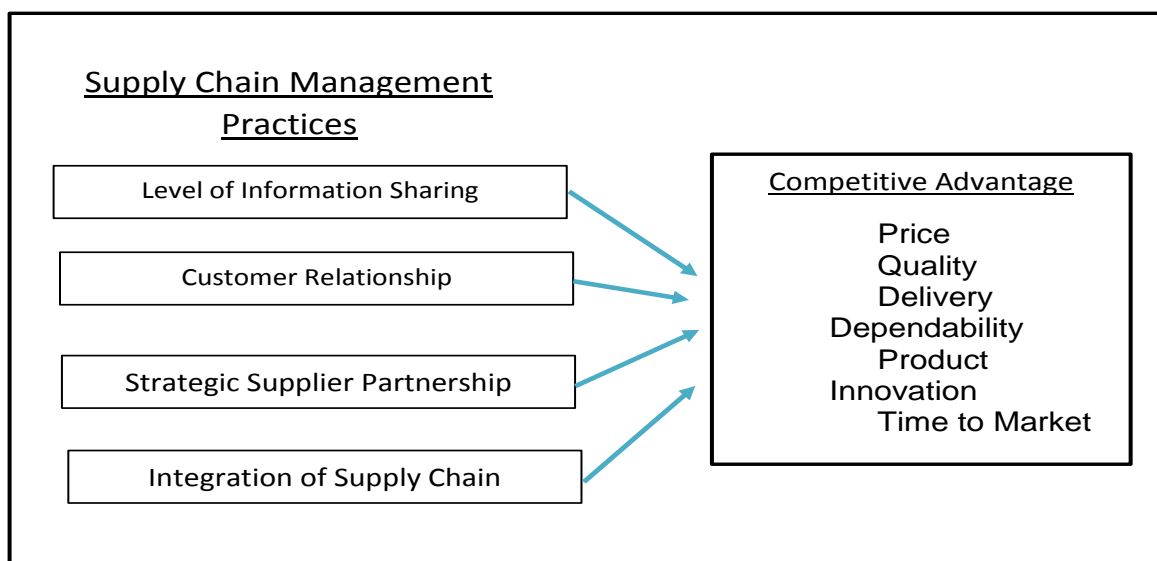
In practise, firms focus on client demands, requirements, and satisfaction, which is assessed by how well a product or service meets expectations (Oliver, 1980; Gupta and Zeithaml, 2006; Xue et al., 2013). Customer relationship management is valued for its capacity to recruit new customers while retaining existing ones by boosting customer satisfaction and loyalty (Ranjan and Bhatnagar, 2010). "Customer relationship practise" means handling customer complaints, building long-term partnerships, and increasing customer happiness (Tan et al., 1998). By developing intimate ties with customers, a firm may differentiate its product from its competition, boost the value it gives consumers, and preserve client loyalty through customer satisfaction (Cox, 2004; Dadzie and Winston, 2007). A company's ability to learn from its customers and work closely with them is a key competency. Businesses generate new items and processes by adapting to changing consumer expectations. Maintaining excellent customer engagement practises and soliciting consumer feedback are viable supply chain management practises. Customer relations practises may help manage the entities that make up the SC's value chain to improve its overall performance. (Noble, 1997; Tan et al., 1999; Cook et al., 2011);.

**2.2 Competitive advantage**

A competitive advantage has been attained by a company when it is in a position to establish a level of superiority over its competitors that can be defended (Cachon et al., 2000; Kroes et al., 2010). A company's ability to differentiate itself from its competitors is dependent on a number of factors, all of which can be traced back to decisions made by management (Peng et al., 2011). Price/cost, quality, delivery, and flexibility have all been highlighted time and time again as essential competitive capabilities in the research that has been conducted (Robb et al., 2008). In addition, time-based competition has only recently been recognised as a crucial competitive aim in recent study. This study investigates and analyses several areas of a company's competitive advantage, including price/cost, quality, delivery dependability, and product innovation.

**2.3 Conceptual Framework**

Figure 1: Framework of the research



### **3. Research Methodology**

#### **3.1 Research Design**

The survey design is a quantitative study technique that consists of researchers conducting surveys on samples or research populations in order to explain the attitude, opinions, behaviour, and features of the populations being studied. Non-random sampling is used in this study and it involves selecting a subset of a broader population to examine. The demographic of this research is the food and beverage manufacturing industry in Selangor that actively exports its goods. According to the website of the Federation of Malaysian Manufacturers (FFM), there were a total of 42 firms. The survey is made up of three parts: A, B, and C. Part A is about the demographics of the respondents, and Part B is about how they manage the supply chain. Section C, on the other hand, is about competitive advantages. 5 Likert point scale is used throughout sections B and C of the questionnaire. As the primary data of this research, this questionnaire is distributed in food and beverage manufacturing sector in Selangor. Online articles, journal and thesis are used as secondary data.

#### **3.2 Data Collection**

The survey is made up of three parts: A, B, and C. Part A is about the demographics of the respondents, and Part B is about how they manage the supply chain. Section C, on the other hand, is about competitive advantages. 5 Likert point scale is used throughout sections B and C of the questionnaire. As the primary data of this research, this questionnaire is distributed in food and beverage manufacturing sector in Selangor. Online articles, journal and thesis are used as secondary data. The questionnaire survey design flaws were discovered through a pilot test, and the reliability and validity of the questions were enhanced through further sampling. Cronbach's alpha for each variable is less than 0.7, hence the survey may be sent out.

#### **3.3 Data Analysis**

Reliability analysis and Analysis Spearman correlation's rho was used as analysis method. The reliability of an instrument is often assessed using the Cronbach Alpha coefficient technique, where a value of 0.7 or above on the resulting 1-point scale is considered adequate. If the test fails below the 0.7 threshold, then it is important to keep track of which variable was dropped from the study.

The dependability coefficient can be improved by knowing which item, and when it is issued. A spearman correlation's rho analysis is done to find out how supply chain management practises affect a company's competitive advantages. This test is done at either a 5% or 1% level of significance.

### **4. Results and Discussion**

#### **4.1 Respondent rate**

The respondent for this research were from food and beverage manufacturer that is 36 companies in Selangor. 42 questionnaires have been sent out. However, the questionnaire had been received were only 30 with return rate as 71%. Some companies refused or declined to respond and all returned as usable questionnaires (100%).

#### **4.2 Demographic profile analysis**

There are five questions that are gender, age, job title and number of employees in company. There have 36 respondents take part in this research. As much as 18 person (60%) from this respondent are male and 12 person (40%) are female. The majority of respondents are 31-40 years old that are 21 person (70%), followed by 5 person (17%) raga from 41 years old and above. Respondent from 18-30 years old are minority that 4 person (20%). Majority of this respondent are logistics manager that are 16 person (53%), followed by 8 person (27%) of respondent are supply chain management officer and 6 person (20%) are purchasing manager. Majority of the respondent company have 51-100 employees which is 19 companies (63.3%). 10 companies (33.3%) have 101 employees and above. Only one company have lower than 50 employees with percentage of 3.3 %.

#### **4.3 Reliability test analysis**

After the real study is being conducted, table 3 shows that the overall Cronbach's alpha value is 0.684 with 32 questions. All the variable has 0.60-0.69 Cronbach's alpha so it means the reliability are acceptable.

Table 3: Reliability test analysis for real test

Description of Dimension	Cronbach's alpha	N of item
IV1: Level of Information Sharing	0.721	16
IV2: Customer Relationship		
IV3: Strategic Supplier Partnership		
IV4: Integration of Supply Chain		
DV1: Price	0.646	16
DV2: Quality		
DV3: Delivery dependability		
DV4: Product Innovation		
DV5: Time to Market		
Total	0.684	32

#### 4.4 Descriptive analysis for section B

Table 6 shows that all the independent and dependent variable have high reliability level according to table 5 in appendix A.

Table 6: Interpretation level of independent and dependent variable

Statistics	N		Mean	Minimum	Maximum	Interpretation Level
	Valid	Missing				
Supply Chain Management practices: Level of Information Sharing 1	30	0	4.20	3	5	High
Supply Chain Management practices: Level of Information Sharing 2	30	0	4.57	3	5	High
Supply Chain Management practices: Level of Information Sharing 3	30	0	4.53	4	5	High
Supply Chain Management practices: Level of Information Sharing 4	30	0	4.43	3	5	High
Supply Chain Management practices: Customer Relationship 1	30	0	4.27	3	5	High
Supply Chain Management practices: Customer Relationship 2	30	0	4.57	3	5	High
Supply Chain Management practices: Customer Relationship 3	30	0	4.47	3	5	High
Supply Chain Management practices: Customer Relationship 4	30	0	4.40	3	5	High
Supply Chain Management practices: Strategic Supplier Partnership 1	30	0	4.50	4	5	High
Supply Chain Management practices:	30	0	4.53	3	5	High

Strategic Supplier Partnership 2						
Supply Chain Management practices: Strategic Supplier Partnership 3	30	0	4.43	3	5	High
Supply Chain Management practices: Strategic Supplier Partnership 4	30	0	4.47	3	5	High
Supply Chain Management practices: Integration of Supply Chain 1	30	0	4.53	3	5	High
Supply Chain Management practices: Integration of Supply Chain 2	30	0	4.53	4	5	High
Supply Chain Management practices: Integration of Supply Chain 3	30	0	4.53	4	5	High
Supply Chain Management practices: Integration of Supply Chain 4	30	0	4.63	3	5	High
Competitive advantage: Price 1	30	0	4.40	4	5	High
Competitive advantage: Price 2	30	0	4.77	4	5	High
Competitive advantage: Quality 1	30	0	4.50	4	5	High
Competitive advantage: Quality 2	30	0	4.60	3	5	High
Competitive advantage: Quality 3	30	0	4.50	4	5	High
Competitive advantage: Quality 4	30	0	4.67	4	5	High
Competitive advantage: Delivery Dependability 1	30	0	4.40	4	5	High
Competitive advantage: Delivery Dependability 2	30	0	4.67	4	5	High
Competitive advantage: Delivery Dependability 3	30	0	4.37	4	5	High
Competitive advantage: Product Innovation 1	30	0	4.50	3	5	High
Competitive advantage: Product Innovation 2	30	0	4.43	3	5	High
Competitive advantage: Product Innovation 3	30	0	4.53	3	5	High
Competitive advantage: Time to Market 1	30	0	4.37	3	5	High
Competitive advantage: Time to Market 2	30	0	4.57	4	5	High
Competitive advantage: Time to Market 3	30	0	4.37	3	5	High
Competitive advantage: Time to Market 4	30	0	4.73	4	5	High



#### 4.5 Normality test

Table 8 shows Kolmogorov-Smirnov analysis and Shapiro-wilk analysis is used to test data normality. Shapiro-wilk test is used because the sample size is less than 50. The analysis results show the significance level for level of information sharing, customer relationship, strategic supplier partnership, integration of supply chain, price, quality, delivery dependability, product innovation and time to market has value  $p < 0.05$ , so the data is not normal.

Table 8: Normality test of independent and dependent variable

Tests of Normality						
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Level of Information sharing	.257	30	.000	.914	30	.019
Customer Relationship	.281	30	.000	.801	30	.000
Strategic Supplier Partnership	.186	30	.009	.929	30	.046
Integration of Supply Chain	.217	30	.001	.893	30	.006
Price	.390	30	.000	.703	30	.000
Quality	.223	30	.001	.903	30	.010
Delivered Dependability	.239	30	.000	.878	30	.003
Product Innovation	.245	30	.000	.871	30	.002
Time to Market	.224	30	.001	.907	30	.012
a. Lilliefors Significance Correction						

#### 4.6 Spearman correlation's rho

This study uses Spearman correlation's rho because the data set is not normal. Spearman's rho ranges from -1 to 1. The higher the coefficient, the stronger the independent-dependent relationship. For the hypothesis to be accepted,  $p < 0.05$ . Table 9-16 in appendix A shows the correlation between variables and significance and correlation value for variables. Table 17 shows the summary of hypothesis acceptance.

Table 17: Acceptance of hypothesis

	Hypothesis	Hypothesis accepted/ hypothesis rejected
H1	Level of information sharing are positively related to competitive advantages.	Hypothesis rejected
H2	Customer relationship are positively related to competitive advantages.	Hypothesis accepted
H3	Strategic supplier partnership are positively related to competitive advantages.	Hypothesis accepted
H4	Integration of supply chain are positively related to competitive advantages.	Hypothesis accepted

## 5. Conclusion

The results shows that hypothesis 2,3 and 4 is accepted which means customer relationship, strategic supplier relationship and integration of supply chain are positively related to competitive advantage. The study shows that customer relationship, strategic supplier partnership and integration of supply chain positively related to competitive advantage. A company needs a competitive advantage to be marketable. The business determines that increasing company efficiency is not a competitive advantage to gain a competitive advantage. This is because the sustainable competitive advantage is not produced by the company alone; rather, the entire supply chain must also develop a competitive advantage (Muthia&Gesit, 2021). The company needs improve efficiency to get a competitive advantage. Supply chain management is a must-have for international expansion and competitive advantage. A business may have competitive advantages like lower costs, higher quality, or faster response times. A firm's competitive advantage boosts its performance. When suppliers and customers cooperate across the supply chain, the organisation may gain a competitive advantage. Supply chain management affects a company's competitive advantage and overall success. The corporation should increase its competitive advantage by enhancing pricing and costs, quality, delivery dependability, market reaction speed, and product innovation (Muthoni et al., 2020). When a company increases cooperation and integration in supply chain management, it gains competitive advantage. This means a firm can get competitive advantage in its commercial activities if it successfully applies supply chain management methods, especially in interacting with other supply chain enterprises. Supply chain management focuses on a company's supplier connections, technology use, competitive advantage, and production, shipping, and material demands. This study's results are consistent with those of Muthia&Gesit (2021), Nafyad, et al. (2020), and Muthoni et al. (2020), who found that supply chain management improved competitive advantage. The limitation of this research is time constraints and not updated research source. Future research may focus on one of the supply chain management practises and competitive advantages. Future research can widen supply chain management by considering customer management, just-in-time (Jit) capabilities, postponement, outsourcing, and IT. Future investigations should combine qualitative and quantitative methodologies. The qualitative method involves language, which is more subjective than numbers. Using a qualitative approach, such as an interview, respondents can share their perspectives about the research. Mixing qualitative and quantitative research can provide important information since qualitative research helps researchers appreciate nuances more deeply while quantitative research provides static proof.

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## Appendix A

Cronbach's alpha value	Reliability
>0.90	Excellent
0.70-0.89	Good and acceptable
0.60-0.69	Acceptable
0.50-0.59	Poor
<0.50	Unacceptable

Table 2: Reliability coefficient value (NSSE,2012)

Mean score range	Interpretation Level
5.00-3.67	Higher
3.66-2.33	Moderate
2.32-1.00	Lower

Table 5: Level of interpretation

Correlation range	Interpretation
Below 0.20	Very weak correlation
0.21-0.40	Weak correlation
0.41-0.60	Moderate correlation
0.61-0.80	Strong correlation
0.81-1.00	Very strong correlation

Table 7: Interpretation of coefficient correlation

**Correlations**

			IV1	DV1	DV2	DV3	DV4	DV5
Spearman's rho	IV1	Correlation Coefficient	1.000	.395*	.262	.140	.341	.513**
		Sig. (2-tailed)	.	.031	.161	.460	.066	.004
		N	30	30	30	30	30	30
	DV1	Correlation Coefficient	.395*	1.000	.172	-.111	.427*	.280
		Sig. (2-tailed)	.031	.	.362	.558	.019	.134
		N	30	30	30	30	30	30
	DV2	Correlation Coefficient	.262	.172	1.000	.321	.371*	.137
		Sig. (2-tailed)	.161	.362	.	.084	.044	.471
		N	30	30	30	30	30	30
	DV3	Correlation Coefficient	.140	-.111	.321	1.000	.208	.201
		Sig. (2-tailed)	.460	.558	.084	.	.271	.287
		N	30	30	30	30	30	30
	DV4	Correlation Coefficient	.341	.427*	.371*	.208	1.000	.561**
		Sig. (2-tailed)	.066	.019	.044	.271	.	.001
		N	30	30	30	30	30	30
	DV5	Correlation Coefficient	.513**	.280	.137	.201	.561**	1.000
		Sig. (2-tailed)	.004	.134	.471	.287	.001	.
		N	30	30	30	30	30	30

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 9: Correlation between level of information sharing and competitive advantage

	Hypothesis	Correlation coefficient	Significance value	Hypothesis accepted/ hypothesis rejected
H1a	Level of information sharing are positively related to price.	.395*	.031	Hypothesis accepted
H1b	Level of information sharing are positively related to quality.	.262	.161	Hypothesis rejected
H1c	Level of information sharing are positively related to delivery dependability.	.140	.460	Hypothesis rejected
H1d	Level of information sharing are positively related to product innovation.	.341	.066	Hypothesis rejected
H1 e	Level of information sharing are positively related to time to market.	.513**	.004	Hypothesis accepted

Table 10 Significance and correlation value for level of information sharing and competitive advantage

Correlations									
			IV2	DV1	DV2	DV3	DV4	DV5	
Spearman's rho	IV2	Correlation Coefficient	1.000	.160	.464*	.429*	.280	.530**	
		Sig. (2-tailed)	.	.397	.010	.018	.134	.003	
		N	30	30	30	30	30	30	
	DV1	Correlation Coefficient	.160	1.000	.172	-.111	.427*	.280	
		Sig. (2-tailed)	.397	.	.362	.558	.019	.134	
		N	30	30	30	30	30	30	
	DV2	Correlation Coefficient	.464**	.172	1.000	.321	.371*	.137	
		Sig. (2-tailed)	.010	.362	.	.084	.044	.471	
		N	30	30	30	30	30	30	
	DV3	Correlation Coefficient	.429*	-.111	.321	1.000	.208	.201	
		Sig. (2-tailed)	.018	.558	.084	.	.271	.287	
		N	30	30	30	30	30	30	
	DV4	Correlation Coefficient	.280	.427*	.371*	.208	1.000	.561**	
		Sig. (2-tailed)	.134	.019	.044	.271	.	.001	
		N	30	30	30	30	30	30	
	DV5	Correlation Coefficient	.530**	.280	.137	.201	.561**	1.000	
		Sig. (2-tailed)	.003	.134	.471	.287	.001	.	
		N	30	30	30	30	30	30	
	**. Correlation is significant at the 0.01 level (2-tailed).								
	*. Correlation is significant at the 0.05 level (2-tailed).								

Table 11: Correlation between customer relationship and competitive advantage



	Hypothesis	Correlation coefficient	Significance value	Hypothesis accepted/ hypothesis rejected
H2a	Customer relationship are positively related to price.	.160	.397	Hypothesis rejected
H2b	Customer relationship are positively related to quality.	.464**	.010	Hypothesis accepted
H2c	Customer relationship are positively related to delivery dependability.	.429*	.018	Hypothesis accepted
H2d	Customer relationship are positively related to product innovation.	.280	.134	Hypothesis rejected
H2e	Customer relationship are positively related to time to market.	.530**	.003	Hypothesis accepted

Table 12: Significance and correlation value for customer relationship and competitive advantage

Correlations			IV3	DV1	DV2	DV3	DV4	DV5
Spearman's rho	IV3	Correlation Coefficient	1.000	.087	.462*	.409*	.431*	.388*
		Sig. (2-tailed)	.	.647	.010	.025	.017	.034
		N	30	30	30	30	30	30
	DV1	Correlation Coefficient	.087	1.000	.172	-.111	.427*	.280
		Sig. (2-tailed)	.647	.	.362	.558	.019	.134
		N	30	30	30	30	30	30
	DV2	Correlation Coefficient	.462*	.172	1.000	.321	.371*	.137
		Sig. (2-tailed)	.010	.362	.	.084	.044	.471
		N	30	30	30	30	30	30
	DV3	Correlation Coefficient	.409*	-.111	.321	1.000	.208	.201
		Sig. (2-tailed)	.025	.558	.084	.	.271	.287
		N	30	30	30	30	30	30
	DV4	Correlation Coefficient	.431*	.427*	.371*	.208	1.000	.561**
		Sig. (2-tailed)	.017	.019	.044	.271	.	.001
		N	30	30	30	30	30	30
DV5	Correlation Coefficient	.388*	.280	.137	.201	.561**	1.000	
	Sig. (2-tailed)	.034	.134	.471	.287	.001	.	
	N	30	30	30	30	30	30	
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

Table 13: Correlation between strategic supplier partnership and competitive advantage

	Hypothesis	Correlation coefficient	Significance value	Hypothesis accepted/ hypothesis rejected
H3a	Strategic supplier partnership are positively related to price.	.087	.647	Hypothesis rejected
H3b	Strategic supplier partnership are positively related to quality.	.462*	.010	Hypothesis accepted
H3c	Strategic supplier partnership are positively related to delivery dependability.	.409*	.025	Hypothesis accepted
H3d	Strategic supplier partnership are positively related to product innovation.	.431*	.017	Hypothesis accepted
H3e	Strategic supplier partnership are positively related to time to market.	.388*	.034	Hypothesis accepted

Table 14 Significance and correlation value for strategic supplier partnership and competitive advantage

**Correlations**

			IV4	DV1	DV2	DV3	DV4	DV5
Spearman's rho	IV4	Correlation Coefficient	1.000	.495*	.373*	.193	.383*	.327
		Sig. (2-tailed)	.	.005	.042	.306	.037	.078
		N	30	30	30	30	30	30
	DV1	Correlation Coefficient	.495**	1.000	.172	-.111	.427*	.280
		Sig. (2-tailed)	.005	.	.362	.558	.019	.134
		N	30	30	30	30	30	30
	DV2	Correlation Coefficient	.373*	.172	1.000	.321	.371*	.137
		Sig. (2-tailed)	.042	.362	.	.084	.044	.471
		N	30	30	30	30	30	30
	DV3	Correlation Coefficient	.193	-.111	.321	1.000	.208	.201
		Sig. (2-tailed)	.306	.558	.084	.	.271	.287
		N	30	30	30	30	30	30
	DV4	Correlation Coefficient	.383*	.427*	.371*	.208	1.000	.561**
		Sig. (2-tailed)	.037	.019	.044	.271	.	.001
		N	30	30	30	30	30	30
	DV5	Correlation Coefficient	.327	.280	.137	.201	.561**	1.000
		Sig. (2-tailed)	.078	.134	.471	.287	.001	.
		N	30	30	30	30	30	30

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 15: Correlation between integration of supply chain and competitive advantage

	Hypothesis	Correlation coefficient	Significance value	Hypothesis accepted/ hypothesis rejected
H4a	Integration of supply chain are positively related to price.	.495**	.005	Hypothesis accepted
H4b	Integration of supply chain are positively related to quality.	.373*	.042	Hypothesis accepted
H4c	Integration of supply chain are positively related to delivery dependability.	.193	.306	Hypothesis rejected
H4d	Integration of supply chain are positively related to product innovation.	.383*	.037	Hypothesis accepted
H4e	Integration of supply chain are positively related to time to market.	.327	.078	Hypothesis rejected

Table 16 Significance and correlation value for integration of supply chain and competitive advantage