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FACTORS AFFECTING SUPPLY CHAIN PERFORMANCE: A QUANTITATIVE STUDY AMONG SMES IN THE FASHION INDUSTRY IN BANDUNG, INDONESIA

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Abstract
Due to globalisation and changes in technology, the factors that affect the performance of supply chains have become more critical. However, there is a dearth of studies on the combined effect of technology adoption, information dissemination and human resources on the supply chain performance in Bandung, Indonesia. This study aimed to examine the impact of technology adoption, information dissemination and human resource on the performance of the supply chain among SMEs engaged in the fashion industry in Indonesia. This was a quantitative study, and the target population were owners of SMEs in Bandung. By using a survey method, primary data was collected from 82 respondents. The results showed that technology adoption had a significant relationship with supply chain performance. Surprisingly, information dissemination and human resources did not show a significant effect on supply chain performance. The results of the study filled the gap that was identified. In addition to the theoretical contribution, this study contributed towards a better understanding of supply chain performance by SMEs.

Keywords: *Supply Chain Performance, Small and Medium-Sized Enterprises, Fashion Industry, Information Dissemination, Technology Adoption, Human Resources.*

1.0 Introduction

Small and medium-sized enterprises (SMEs) have become the backbone of economic growth, especially in both developed and developing countries as their development can be seen as an accelerator of a country's economic performance and as an action to reduce poverty. As reported in the World Economic Forum, Indonesia's small businesses will be an essential driver of the country's future development (Tirta and Sarli, 2021). Currently, most are micro-enterprises, and there is an urgent need to understand how they could scale up and become established companies.

The supply chain is important for today's business, considering the world is transforming by involving technological devices to change work activities to be more efficient and effective (Lee, 2004). In Indonesia, the rapid growth of e-commerce is placing increasing demands on its supply chain infrastructure. Nevertheless, the country's logistics industry is highly fragmented, with companies usually relying on multiple distributors for one shipment, and many warehouses are still concentrated around major cities. A report says that this fragmentation means higher expenses, logistics costs range is between 25% to 30% of the country's gross domestic product (GDP) (Ponti, 2021). Even neighbouring countries, like Malaysia, incur half the cost as a percentage of GDP for logistics expenditure.

Studies have been conducted on the performance of supply chain performance (Wilujeng, Sarwoko, & Nikmah, 2022). The study by Wilujeng, Sarwoko, & Nikmah (2022) showed that supply chain agility, supply chain adaptability and supply chain alignment had a positive effect on supply chain performance. Based on research that was conducted by Kumar *et al.* (2015), and Elmortada, *et al.* (2017), results showed that human resource and information dissemination had a positive impact on supply chain management implementation through building trust among supply chain elements. Another study by Tarofder et al. (2019) showed that GDP growth rate, the degree of openness and balance of payment increases the nationwide supply chain performance. George and Pillai (2019) identified the major factors that affect supply chain performance as supply chain structure, inventory control policy, information sharing, customer demand, forecasting method, lead time and review period length. The critical success factors associated with supply chain management that were identified by Kumar et al. (2017) encompass agility, flexibility, flexible innovation, information and communication technology, collaboration among conglomerate divisions, process structure, and training and leadership programs. It can be concluded that the results from past studies are inconsistent. The factors or factors that predict supply chain performance are not clearly identified.

In addition to inconsistent results in past studies, the factors that can improve the operational performance of SMEs engaged in the fashion industry in Indonesia has not been empirically tested. Therefore, this research will empirically examine the factors, namely technology adoption, information dissemination and human resource, that affect the supply chain performance of SMEs in the fashion industry in Indonesia to raise awareness regarding factors that can improve their performance of supply chain operational performance. SMEs play a major role in contributing to a country's domestic income, providing employment, reducing unemployment, and reducing poverty. Thus, this research on the factors that can improve the operational performance of SMEs can be considered important.

2.0 Literature Review

2.1 Human Resources

Human resources are very important to help companies in dealing with a business environment that grows rapidly and to help companies in facing a greater demand for quality employees. Moreover, human resources also play a role in developing competencies that can improve organisational and even individual performance as employees' skills in terms of the supply chain is important. Furthermore, competencies indicate the way employees should do their duties and the way to react when they face a special case as competencies in human resources contains characteristics in employees which allows them to perform well in their roles or positions

(Rastgoo, 2016). In addition, the competencies of employees are considered as the measurable abilities which are important for the efficiency of performance.

In addition, human resources are also in charge of managing and monitoring the integration and implementation of technology through improved staffing, training, and communication with employees. Furthermore, they also have a role in identifying the weakness and strong points of an employee's behaviour and developing plans to turn the weaknesses into strengths as an evaluation of performance (Rastgoo, 2016). Lastly, human resources can make sure an advanced and effective workforce enables the organisation to achieve its goals and objectives more effectively. Therefore, despite several challenges faced by the company, supply chain guidelines must be adapted to each of the company's culture, which has mutual influence with human resources policies (Elmortada *et al.*, 2017).

H1: Human resources has a significant relationship with supply chain performance

2.2 Information Dissemination

In general, information includes data and analysis in terms of facilities, inventory, transportation, costs, prices, and customers throughout the supply chain. Moreover, information is considered as the biggest driver of supply chain performance as it directly affects other supply chain performance drivers and the growth process as well (Chopra and Meindl, 2016). Furthermore, information dissemination involves sharing information with individuals within the firm, and the information would flow through the organisation by providing feedback questions and insights to the organisation members (Ratten, 2004).

In addition, information dissemination is considered as one of the key components of a supply chain management system. By adopting the existing data and making them available to other supply chain parties, the information and data can have a function as the source of a competitive advantage which has an impact on customer's and partner's satisfaction (Sheikhi *et al.*, 2018). Lastly, good information dissemination supports management with the opportunity to make their supply chain performance more responsive and efficient.

H2: Information Dissemination has a significant relationship with supply chain performance

2.3 Technology Adoption

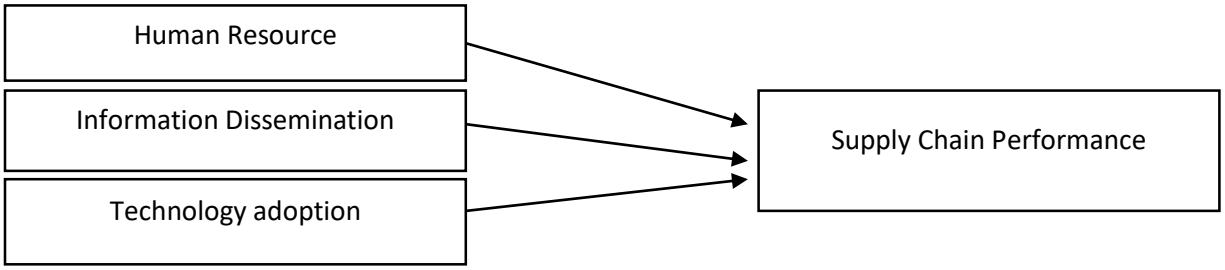
Technology adoption has developed rapidly since its introduction in the 1990s. With the rapid expansion of information technology (IT) throughout this period, nowadays, customers can order products through an automated system (Pratt and Cole, 2020). Moreover, e-business can comprehend a range of services and functions such as intranets and extranets in terms of e-services over the internet by service providers. In addition, enterprises are conducting their business in technology adoption to buy parts and to get supplies from their suppliers, collaborate on sales promotions, and conduct joint research.

Furthermore, technology adoption, which is supported by information technology (IT), facilitates and accelerates information exchange that allows organisations and suppliers to be aware of each other's needs and can meet them in a timely manner which improves performance (Sheikhi *et al.*,

2018). However, the security of business transactions on the web remains a pressing issue for consumers and enterprises for the growth of technology adoption.

H3: Technology adoption has a significant relationship with supply chain performance

Figure 1: Conceptual Framework



3.0 Research Methodology

Because objective knowledge was accessible and measurable, this study was founded on positivism philosophy. For positivism philosophy, a deductive approach was more suitable as earlier theories were used to construct hypotheses before data was collected (Saunders et al. (2016). The hypothesis for this quantitative study was to look at the relationship between the independent variables of human resources, knowledge distribution, and technology adoption and the dependent variable of supply chain performance. A survey technique was employed to collect primary data in this cross-sectional investigation. Convenience sampling was found to be the most appropriate mode of data collection for the target population of the owners of SMEs in Bandung. Primary data was collected via a self-administered questionnaire. Before utilising the SPSS application to analyse the data, the collected data was edited and coded.

The convenience sampling approach with snowball sampling was employed to collect data for this study, which was based on the non-probability sampling method. This sampling and data collection strategy made it easier and more feasible to contact respondents (Saunders et al.). (2016). The study's target population is owners of SMEs in Bandung, Indonesia. The method published by Green (1991) was used to determine the minimal sample size in this investigation. In this study, n=50 + 80m" is the proposed formula, where "m" denotes the number of independent variables. The minimum sample size was "50 + 8(3) = 74" after incorporating three independent variables into the algorithm. Data were obtained from 103 respondents to ensure accuracy, but after initial checking, 82 questionnaires were included in the data analysis.

4. Data Analysis

4.1 Respondent Profile (Demographic Profile)

To begin with, 103 respondents have participated in this research, which is SMEs of the Fashion Industry in Bandung, Indonesia. However, only 83 questionnaires were included after initial checking. Below is the demographical information of respondents:

Table 1: Respondent Profile

Demographic		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	43	52.4	52.4	52.4
	Female	39	47.6	47.6	**100**
Age	21-30	40	48.8	48.8	48.8
	31-40	28	34.1	34.1	82.9
	Above 40	14	17.1	17.1	**100**
Education	High School	12	14.6	14.6	14.6
	Diploma	5	6.1	6.1	20.7
	Bachelor's Degree	64	78.0	78.0	98.8
	Junior High School	1	1.2	1.2	**100**
Business Type	Micro	24	29.3	29.3	29.3
	Small	37	45.1	45.1	74.4
	Medium	21	25.6	25.6	**100**
Business Experience	Less than a year	10	12.2	12.2	12.2
	1 – 5 years	33	40.2	40.2	52.4
	5 – 10 years	39	47.6	47.6	**100**

Based on the research, in terms of gender, the majority of respondents were male, with a total of 43 males and a percentage of 52.4%, while females had a total number of 39 with a percentage of 47.6%. Moreover, based on their age, the majority of respondents are between the range of 21-30 years old with a total number of 40 and a percentage of 48.8%, followed by the range of 31-40 years old with the total number of 28 respondents and percentage of 34.1%, while the rest of respondents are above 40 years old with a total number of 14 and percentage of 17.1%.

On the other hand, in terms of education, the majority of respondents are bachelor's degree with a total number of 64 and percentage of 78%, followed by High School with a total number of 12 respondents and percentage of 14.6%, then Diploma with the total number of 5 respondents and percentage of 6.1%, and Junior High School with 1 respondent and percentage of 1%.
In addition, in terms of business type, the majority of respondents of SMEs of Fashion Industry in Bandung are categorised as small with the total number of 37 and percentage of 45.1%, while SMEs that categorised as micro have a total number of 24 with a percentage of 29.3%, followed by the rest of respondents are medium SMEs with the total number of 21 and percentage of 25.6%. Furthermore, in terms of business experience, most of the respondents have past experience between the range of 5-10 years with the total number of 39 and a percentage of 47.6%, followed by the range of 1-5 years with the total number of 33 and percentage of 40.2%, while the rest of respondents have experience of less than a year with a total number of 10 and percentage of 12.2%. The results derived from the distribution of the summation of customer loyalty

4.3 Multiple Regression Test

To further study the supply chain performance and multiple variables, linear regression was used.

Table 2: Summary of Multiple Regression Analysis Output

	Unstandardised Coefficients		Standardised Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.344	.262		5.124	.000
Human Resource	.041	.086	.053	.475	.636
Information Dissemination	.097	.114	.103	.849	.399
Technology adoption	.188	.101	.221	1.867	.049

The multiple regression analysis gives a clear view of the relationship between the dependent variable, which is supply chain performance and independent variables, which are human resources, information dissemination, and technology adoption in this study. Thus, in this section, the researcher will use the modified multiple regression equation to predict the value of supply chain performance by using the beta value of independent variables.

To predict the dependent variable's value, the β (beta) value of the unstandardised coefficient from the table above will be utilised. The β value measures the strength of the linkage or relationship between the dependent variable, which is supply chain performance, and the independent variables, which are human resources, information dissemination, and technology adoption. Moreover, the utilisation of β value from the table above can help to draw the comparison of distribution for each independent variable. The β value also shows the degree of change in the outcome variable for every one-unit change of independent variable. Based on the table above, supply chain performance will increase by 0.053 units with an increase in one unit of human resources, which is categorised as the weakest association. Moreover, for one unit increase of information dissemination, supply chain performance will increase by 0.103. In addition, with a one-unit increase of technology adoption, supply chain performance will increase by 0.221 units.

Based on the analysis above, technology adoption is a better predictor for the outcome of supply chain performance (β = 0.221) in comparison with other independent variables such as information dissemination (β = 0.103) and human resources (β = 0.053).
Therefore, the overall final estimated model of the multiple linear regression analysis would become:

$$\boldsymbol{Y = 1.344 + 0.188(X_1) + 0.097(X_2) + 0.041(X_3)}$$

Where:
Y = supply chain performance
$\mathbf{X_1}$ = technology adoption
$\mathbf{X_2}$ = information dissemination
$\mathbf{X_3}$ = human resources

5.0 Research Findings and Discussion

The Influence of Human Resources towards Supply Chain Performance

Firstly, the result of this study shows that human resources have a very weak and not significant relationship with supply chain performance. Moreover, human resources have the lowest beta (β) value of 0.053 which means that it has the weakest influence on supply chain performance. The findings deviated from past research. In this regard, a study carried out by Nugroho and Rofiq (2018) has shown and proven that human resources positively impact the supply chain performance of food industry SMEs in Malang. In their study, it is proven that a good human resource management strategy will focus on service efficiency, emphasise shipping volume and speed and strive to respond to consumer desire. The deviation can be due to more focus on the adoption of technologies by SMEs.

The Influence of Information Dissemination towards Supply Chain Performance

Based on the result, it is shown that information dissemination has a very weak and not significant predictor of supply chain performance. The multiple regression test showed that information dissemination has the beta (β) value of 0.103, which is in between other independent variables in terms of influencing the supply chain performance. This hypothesis is not supported and deviated from past studies. In line with this study, research conducted by Chen *et al*. (2019) has proven that information dissemination is considered an influential factor that positively impacts the supply chain performance of fashion enterprises in China. From their study, it is found that information dissemination is critical to enhancing the supply chain integration, operations performance, and business performance of fashion enterprises. The deviation in this study may be due to more focus on technology adoption by SMEs.

The Influence of Technology Adoption on Supply Chain Performance

Thirdly, the result of this study shows that technology adoption has a weak positive and not significant relationship with supply chain performance which answered the last research objective in the first chapter. Based on the Pearson correlation test, it is shown that technology adoption has an R-value of 0.259 and a p-value of 0.019, which represent the weak positive and not significant relationship between technology adoption towards supply chain performance. Furthermore, a multiple regression test was carried out to obtain more evidence. The results of the multiple regression test show that technology adoption has the highest beta (β) value of 0.188, which is considered as a better predictor and has the largest influence on supply chain performance compared to other independent variables. In this regard, a study conducted by Tripathy *et al*., 2014 has proven that technology adoption positively impacts the supply chain performance of SMEs in India as it can enhance the competitive advantage of supply chain management which accelerates a better customer relationship and supplier relationship. Moreover, a study conducted by Nugroho and Rofiq (2018) also showed that technology adoption positively impacts supply chain performance, particularly in terms of shipping flexibility and customer service.

5.1 Implications

This quantitative study has practical, theoretical, and academic implications. In this study, it was uncovered that technology adoption had a positive and significant impact on the supply chain performance of SMEs. The competition among SMEs is increasing, and there are disruptions in the supply chain. This is leading to an increasingly important role in supply chain performance. This study showed that technology adoption is an important contributor to supply chain

performance. Therefore, SME owners and entrepreneurs should focus and invest in technology to improve the supply chain performance. The findings showed the power of technology adoption in improving the supply chain operational performance. It is recommended that SMEs need to have both short term and long-term strategies to adopt new technologies to improve the operational performance of the supply chain continuously. In addition, there were also some theoretical implications of this study. From the theoretical perspective, the research adds additional knowledge to the existing literature. Additionally, it could help in supporting and building theory in the aspect of supply chain performance. Lastly, the research results are useful to academicians who can replicate or extend this study in other locations or cultures.

5.2 Limitations and Recommendations

This study only covered the SMEs engaged in the fashion industry in Bandung Indonesia. Therefore, there is a limitation on a generalisation of the results to other industries and regions. It is recommended that this study be replicated or extended to other industries and regions. There are several stakeholders in the supply chain. This includes the supplier, manufacturer, distributor, service provider, wholesaler, retailer, and customer. This study only included owners of SMEs. Therefore, it is recommended that future studies include data from other stakeholders such as suppliers to get deeper information on how technology adoption influence supply chain operational performance. Thirdly, this study did not differentiate between the short term and long-term impact on the supply chain. Therefore, it is recommended that future studies look at both the short term and long-term impact on supply chain operational performance.

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