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EFFECT OF INFORMATION SHARING ON SUPPLY CHAIN PERFORMANCE MEDIATED BY COMPANY RELATIONSHIP
(Study at Batik SMEs in Yogyakarta City)

Titik Kusmantini
(Lecturer in the Faculty of Economics and Business, UPN Veterans Yogyakarta)
e-mail : titik.kusmantini@upnyk.ac.id

Dika Setya Prayogi
(Student of Faculty of Economic and Business UPN "Veteran" Yogyakarta)

Tri Wahyuningsih
(Lecturer in the Faculty of Economics and Business, UPN Veterans Yogyakarta)

Krisnandini Wahyu Pratiwi
(Lecturer in the Faculty of Economics and Business, UPN Veterans Yogyakarta)

ABSTRACT

Entering the era of globalization, economic shifts and market trends are increasingly fast and difficult to predict, so the role of information as the main ingredient of decision making in companies becomes important. This study aims to determine the effect of information sharing (IS) on supply chain performance (SCP) which is mediated by the company relationship (CR). The survey was conducted through distributing questionnaires to 48 samples of batik SMEs in Yogyakarta city selected by simple random sampling method then the data was analyzed using path analysis with SPSS 15. The results of the study found a significant positive effect of IS on SCP indicated by the correlation coefficient (R) of 0.374 and t count> t table at a significance level of 5% (4,976> 2,014). Then the significant positive effect of IS on CR is shown by the value of the correlation coefficient (R) of 0.453 and the value of t count> t table at the significance level of 5% (4.540> 2.014). Then the significant positive effect of CR on SCP is shown by the value of the correlation coefficient (R) of 0.360 and the value of t count> t table at the significance level of 5% (3.896> 2.014). Finally, the significant positive effect of IS on the SCP that is mediated by CR is shown by the sum of the coefficients of 0.537 then tested using the sobel test and produces z count> t table at a significance level of 5% (3.078> 2.014). This research contributes to the development and theoretical application, especially in the field of operational management.

Key words:

Information Sharing, Supply Chain Performance, and Company relationship

ABSTRAK

Memasuki era globalisasi, pergeseran ekonomi dan tren pasar semakin cepat dan sulit diprediksi, sehingga peran informasi sebagai bahan utama pengambilan keputusan di perusahaan menjadi penting. Penelitian ini bertujuan untuk mengetahui pengaruh berbagi informasi (IS) pada kinerja rantai pasokan (SCP) yang dimediasi oleh hubungan perusahaan (CR). Survei dilakukan melalui penyebaran kuesioner kepada 48 sampel UKM batik di kota Yogyakarta yang dipilih dengan metode simple random sampling kemudian data dianalisis menggunakan analisis jalur dengan SPSS 15. Hasil penelitian menemukan efek positif yang signifikan dari IS pada SCP yang ditunjukkan oleh koefisien korelasi (R) sebesar 0,374 dan t hitung> t tabel pada taraf signifikansi 5% (4,976> 2,014). Kemudian efek positif signifikan IS pada CR ditunjukkan oleh nilai koefisien korelasi (R) sebesar 0,453 dan nilai t hitung> t tabel pada taraf signifikansi 5% (4,540> 2,014). Kemudian pengaruh positif signifikan CR pada SCP ditunjukkan oleh nilai koefisien korelasi (R) sebesar 0,360 dan nilai t hitung> t tabel pada taraf signifikansi 5% (3,896> 2,014). Akhirnya, efek positif signifikan IS pada SCP yang dimediasi oleh CR ditunjukkan oleh jumlah koefisien 0,537 kemudian diuji menggunakan uji sobel dan menghasilkan z hitung> t tabel pada tingkat signifikansi 5% (3.078> 2.014). Penelitian ini berkontribusi pada pengembangan dan aplikasi teoritis, terutama di bidang manajemen operasional.

Kata kunci:

Berbagi Informasi, Kinerja Rantai Pasokan, dan hubungan Perusahaan

Introduction

Since October 2009 UNESCO established batik as one of the world cultural heritages from Indonesia. The rich cultural treasures of the Indonesian people have led to the birth of various shades and types of traditional batik with their own special characteristics. This makes batik one of the most valuable textile commodities for Indonesia both nationally and internationally.

For developing countries like Indonesia, SMEs are the biggest contributor to economic activity. Entering the era of globalization, economic shifts and market

trends are increasingly fast and difficult to predict because of the increasingly freedom of information that can be accessed by consumers. This makes a decision in the era of the global economy increasingly difficult, therefore information is needed that can be considered for good decision making for the company (Mufaqih et al., 2017).

Information sharing defined as intensity and capacity of companies in their interactions to share information with partners regarding joint business strategies, information sharing enables supply chain members to obtain, maintain, and convey the information needed to ensure effective decision making (Simatupang & Sridharan, 2008). To respond to rapid changes, a company must pay attention to the latest information that appears in the company environment and adopt a structure that can help decision-making and practices that can filter excess information. Along with the communication that occurs in sharing this information will make the company more open and transparent so as to increase collaboration that makes the relationship with the company more embedded, by information sharing it will encourage good cooperation with the company (Sadiyah & Zaini, 2018).

Company relationshipdefined as long-term relationship as a perception of the company's interdependence of suppliers that are expected to bring long-term benefits (Indriani, 2006). According to Sadiyah & Zaini (2018) the company's relationship with suppliers here is the most powerful collaboration in the context of the supply chain. In this case, the supplier's role is to provide material or input materials used by the company. The quality of materials and the ability to distribute these materials depend on supplier performance which in turn affects the overall performance of the company's supply chain.

Supply chain performance defined as performance of the quality of activities related to the flow and movement of goods, from raw materials to end consumers, including those related to information and funds (Zelbst et al., 2009). Previous studies such as those conducted by Li et al. (2006), Ou et al. (2010), and Gorane & Kant (2015) revealed that transparent sharing of information will encourage communication and integration that can accelerate the process of supply chain

activities from suppliers to consumers. Along with the process of sharing this information will build a sustainable relationship between all parties involved in the supply chain so that it creates a long-term cooperative relationship with the company. With the sharing of information and a good cooperative relationship will support good collaboration and mutual benefit so that supply chain management activities can run smoothly so that supply chain performance also increases.

Even though Indonesian batik already has a name in the international world, the economic prospects of batik in the future remain highly dependent on the expertise and role of batik entrepreneurs and traders in managing their production and marketing strategies. Based on reports from the department of trade, production and export, batik in Indonesia is still experiencing an unstable development given the condition of competitiveness of Indonesian products which are also increasingly down in the global market. Therefore efforts are needed to increase for SMEs to improve and maintain the competitiveness of Indonesian batik businesses (www.kemendag.go.id, 2018).

Yogyakarta City is a city of batik producers and cultural centers in Indonesia. Of the total 2028 MSME units, 394 of them are clothing sector with 78 parts engaged in batik business and centered in the Patehan Palace area (www.SMEs.jogjakota.id, 2019). As the center of education and culture in Indonesia, the city of Yogyakarta has the potential to become a world batik city, with Indonesia's entry into the Asian economic community (AEC)should be an opportunity for the Indonesian Batik market. For this reason, the quality of batik products needs to be improved in order to face competition with international products. To achieve this, improvements and improvements are needed for batik craftsmen in Indonesia, especially those who are still mostly in the form of SMEs to compete with global competitors.

Based on the background of the problem, this study aims to determine and analyze the effect of information sharing on supply chain performance, the effect of information sharing on company cooperation relationships, the effect of company cooperation relationships on supply chain performance, and the effect of information

sharing on supply chain performance mediated by relationships company cooperation.

A. LITERATURE STUDY AND HYPOTHESIS

1. *Supply Chain Management*

An approach used to integrate and coordinate the flow of material, information and financial flows along the supply chain so that merchandise can be provided, produced and distributed in an effective and efficient amount, place, time and cost (Kusmantini's dissertation, 2018).

2. *Supply Chain Integration*

The unity and integration of supply chain practices as a set of activities used to encourage the effectiveness of the supply chain which consists of (1) delays as a practice of delaying supply chain activities until customer demand is accepted (2) internal integration as a strategic system across functions and responsibilities shared with all functions. (3) integration of customers as a whole and cohesion involving collaboration and information sharing (4) integration of suppliers as a whole and cohesiveness of logistics activities across company boundaries (5) information sharing as an effort to make information accessible to various parties in the supply chain (Li et al. 2006).

3. *Supply Chain Performance*

The level or performance of supply chain activities in meeting the needs of end customers, including product availability, timely delivery, and all the supplies and capacity needed in the supply chain to provide responsive performance that is decisive in creating the company's competitive advantage. To win in the new environment, the supply chain needs to be evaluated and developed on an ongoing basis in order to adapt to the needs (Hausman 2002).

4. *Effects of Information Sharing on Supply Chain Performance*

According to previous studies such as those conducted by Cook et al. (2011), Jabbour et al. (2011), and Abdallah et al. (2014) in general found that information sharing in the supply chain has a positive influence on supply chain performance, transparent information sharing can help fulfill company information needs so as to speed up the decision making process or decision making in supply chain activities from upstream to downstream. Information sharing activities can appropriately reduce uncertainty and improve services in fulfilling customer orders thereby increasing the overall performance of the company's supply chain (Zelbst et al. (2010). Based on the description, the hypothesis is proposed:

H_1: Information sharing has a positive effect on supply chain performance

5. *Effects of Information Sharing on Company Cooperation Relations*

According to previous studies such as those conducted by Ogden (2006), Indriani (2006), and Ganesan (2006) show that information sharing has a positive effect on increasing company cooperation, by information sharing the company can build a cooperative relationship with its suppliers, and a good relationship and long-term sustainability will bring benefits in the form of price stability and supply of raw materials. Information sharing is an appropriate approach for companies in building long-term partnerships or cooperation (Khan et al., 2015). Based on the description, the hypothesis is proposed:

H_2: Information sharing has a positive effect on company relationship.

6. *Effect of Company Cooperation Relations on Supply Chain Performance*

According to previous studies such as those conducted by Prajogo & Olhager (2012) and Ariani (2013) show that long-term relationships have a positive effect on supply chain management performance. Dyer & Singh (2009) states that cooperative relationships in supply chains can help companies to create competitive advantage through supply chain capabilities built together with partners, so that long-term relationships can drive performance improvement in supply chain management. Based on the description put forward a hypothesis:

H_3: Company cooperation has a positive effect on supply chain performance.

7. *Effects of Information Sharing on Supply Chain Performance Mediated by Company Cooperation Relations*

Fawcett (2008) explains that through information sharing not only meets the needs of the company for material for decision making, along with the occurrence of information exchange processes that occur will build close relationships and increasingly close collaboration between parties who communicate with each other. With the increasing relationship and collaboration will bring a positive influence in the supply chain activities that occur so that in the end the company's supply chain performance increases. Based on the description, the hypothesis is proposed:

H_4: Company cooperation relationships are able to mediate the effect of information sharing on supply chain performance.

Based on the hypothesis, the research framework to trace the relationship of various variables is illustrated in the picture as follows:
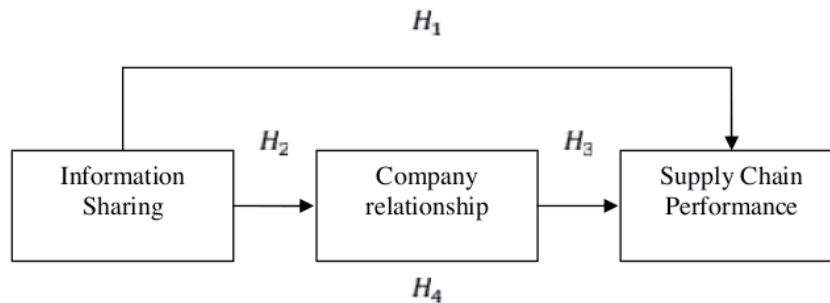
Picture 1: Research framework

B. RESEARCH METHODS

1. *Types of research*

This type of research is a survey research method that is research conducted on large or small populations, but the data studied is data from samples taken from these populations, so that relative events, distribution, and relationships between sociological and psychological variables are found. Sugiyono (2008).

2. *Population, Samples, and Sampling Techniques*

The population in this study were all batik MSME owners and managers registered in the database of the official website of the Yogyakarta MSME website (www.SMEsjogjakota.id) as many as 78 SMEs taken 48 representative samples as representatives of the entire population using random sampling techniques.

3. *Data Types, Data Collection Techniques, and Variable Operations*

The type of data used in this study is primary data and secondary data. Primary data were obtained directly from informants using a questionnaire while secondary data were obtained from journals and internet pages. The measurement scale used is a Likert scale. The operationalization of variables is presented in the following table:

Table 1: Operationalization of Research Variables

Variable	Operational Definition	Indicator	Source
Information Sharing (IS)	Information sharing is defined as the company's willingness to share strategic data such as inventory levels, forecasts, sales promotions, and marketing strategies in forming the supply chain.	1. Information disclosure 2. Information quantity 3. Information quality 4. Information process 5. Information sources 6. Information speed	Zelbst *et al.* (2010), Chang *et al.* (2013), Rashed *et al.* (2015)
Company Relationship (CR)	The cooperative relationship is a perception of the company's needs for raw materials, information, and relationships with suppliers, so it is expected to be well maintained and bring long-term benefits.	1. Maintained relationship 2. Benefit and risk sharing 3. Trust 4. Communication 5. Collaboration 6. Long termrelationship	Ganesan (2006), Prajogo & Olhager (2012), Rashed *et al.* (2015)

| Supply Chain Performance (SCP) | Supply chain performance is the company's ability to meet consumer needs effectively and efficiently in terms of both quality of products produced and costs incurred by the company. | 1. Punctuality
2. Return
3. Period
4. Flexibility
5. Product Quality
6. Effeciency Cost | Gunasekaran *et al.* (2001), Khan *et al.* (2006), Bourlakis *et al.* (2012), Rashed *et al.* (2015) |

4. *Research Instruments*

Data analysis was performed with the help of the SPSS 15 Windows computer program. In this study the value of r for the validity test of 48 respondents was 0.287; Pearson correlation method is used to declare whether or not the statement item in the two-tailed test is valid if the significance level <0.05 (Ghozali, 2011).

For reliability testing, a variable is said to be reliable if the cronbach's alpha value of each variable is> 0.6 (Ghozali, 2011). The research instrument test results are presented in the following table:

Table 2: Research Instrument Test Results

Variable	Statement Items	Valid	Invalid	*cronbach's alpha*
BI	6	6	0	0,679
HKP	6	6	0	0,660
KRP	6	6	0	0,664

C. RESULTS AND DISCUSSION

1. *Regression Analysis*

Table 3: Summary Results of Phase I Regression Analysis

Independent Variable	B	t	Sig.
Constant	13,159	4,982	0,000
Information Sharing (IS)	0,453	4,540	0,000

Dependent Variable: Company relationship (CR)

R= 0,556 , R Square= 0309, Adjusted R Square= 0,29

F= 20,607 , Sig. F= 0,000

Based on table 3 it can be seen that the regression equation obtained is Z = 13.159 + 0.453 X. From these results it shows that the coefficient of information sharing on the company cooperation relationship is 0.453; shows that information sharing has a positive influence on company cooperation relationships, meaning that the higher the level of information sharing, the company cooperation relationships will also increase. The results of statistical calculations show a significant influence with the value of t arithmetic> t table at a significance level of 5% (4,540> 2,014). The significance value in the F test is 0.000 (<0.05) meaning that there is an effect of variable X on the variable Z simultaneously with a coefficient of determination of 30% while the remaining 70% is explained by other variables outside the study.

Table 4: Summary Results of Phase II Regression Analysis

Independent Variable	B	t	Sig.
Constant	6,230	3,036	0,004
Information Sharing (IS)	0,374	4,976	0,002
Company relationship (CR)	0,360	3,896	0,003

Dependent variable: Suply Chain Performance (SCP)

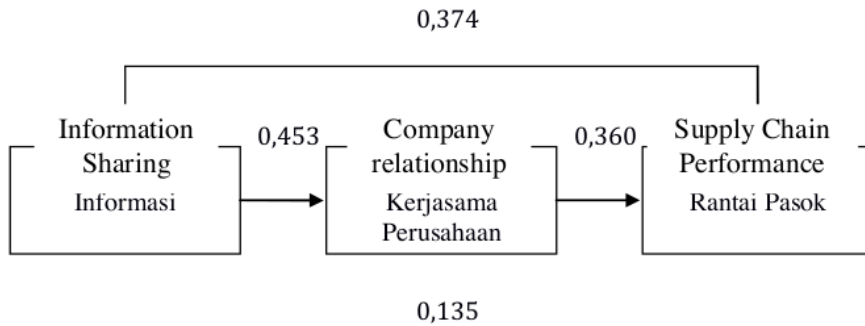R= 0,556 , R Square= 0,664, Adjusted R Square= 0,64

F= 44,526 , Sig. F= 0,000

Based on table 4 it can be seen that the regression equation obtained is Z = 13.159 + 0.453 X. From these results it shows that the coefficient of information sharing on the company cooperation relationship is 0.453; shows that information sharing has a positive influence on company cooperation relationships, meaning that the higher the level of information sharing, the company cooperation relationships will also increase. The results of statistical calculations show a significant influence with the value of t arithmetic> t table at a significance level of 5% (4,540> 2,014).

The significance value in the F test is 0.000 (<0.05) meaning that there is an effect of variable X on the variable Z simultaneously with a coefficient of determination of 30% while the remaining 70% is explained by other variables outside the study.

2. *Path Analysis*

Based on the regression analysis it can be traced path analysis as follows:

0,374

| Information Sharing
Informasi | 0,453 | Company relationship
Kerjasama Perusahaan | 0,360 | Supply Chain Performance
Rantai Pasok |

0,135

Picture 2: Path Analysis

Direct effect (IS □ SCP)   =0,374

Indirect effect (IS □ CR □ SCP) =0,453 x 0,360   = 0,163

Total effect   = 0,537

3. *Mediation Test*

To find out the effect of mediation is significant or not, a mediation test with multiple tests is performed. In this study the value of t table to test the validity of 48 respondents was 2,014; with the help of an online calculator (www.danielsoper.com/statcalc, 2019) z count> t table with a significance level of 5% (2,974> 2,014). in conclusion the effect of mediation is significant.

4. *Effect of Information Sharing (IS) on Supply Chain Performance (SCP)*

The results found a significant positive effect of IS on the SCP indicated by the correlation coefficient (R) of 0.374 and the value of t count> t table at a significance level of 5% (4.976> 2.014). If information sharing increases, supply chain performance will also increase and vice versa, which meansH_1isaccepted

In line with the theory (Moberg et al., 2002). efforts to share and make information accessible to various parties in the supply chain allow decisions to be made more quickly and accurately so that supply chain performance will also improve.

5. *Effect of Information Sharing (IS) on Company relationship (CR)*

The results found a significant positive effect of IS on CR shown from the correlation coefficient (R) of 0.453 and the value of t count> t table at a significance level of 5% (4,540> 2,014). If the sharing of information increases, the company's cooperative relationships will also increase and vice versa, which means H_2 is **accepted**.

Supply chain partners who exchange information regularly can work as a unit so that they are able to respond quickly to market changes in line with (Khan et al., 2015) ultimately information sharing is an appropriate approach for companies to build partnerships or long-term cooperative relationships.

6. *Effect of Company relationship (CR) on Supply Chain Performance (SCP)*

The results found a significant positive effect of CR on the SCP indicated by the correlation coefficient (R) of 0.360 and the value of t count> t table at a significance level of 5% (3.896> 2.014). If company relationship increases, the suply chain performance will also increase and vice versa, which means H_3 is **accepted**.

In line with the theory of Dyer & Singh (2009) that the cooperative relationship in the supply chain can encourage improved supply chain management performance and better integration of information in the supply chain. the existence of a cooperative relationship brings various benefits in the process of supply chain activities which in turn can improve overall supply chain performance.

7. *Effects of Information Sharing (IS) on Supply Chain Performance (SCP) Mediated by Company relationship (CR)*

The results found a significant positive effect of IS on SCP mediated by CR shown from the sum of the coefficients of 0.537 then tested using the sobel test and

produced z count> t table at a significance level of 5% (2,974> 2,014), meaning that the cooperative relations of the company were able to mediate in the positive relationship between information sharing and supply chain performance,Which means H_4 is accepted.

In line with the theory of Fawcet (2008) that through information sharing not only meets the company's needs for information needed for decision making and improvement of the company, but along with the process of exchanging information that occurs will build closer relations and closer collaboration between the parties that communicate with each other.   With the increasing relationship and good collaboration will bring a positive influence in supply chain activities that occur so that in the end the company's supply chain performance also increases.

D. CONCLUSIONS AND SUGGESTIONS

The results showed that (1) There was a positive direct effect of information sharing on supply chain performance in batik SMEs in the city of Yogyakarta, thus hypothesis 1 was supported. (2) There is a positive direct effect of information sharing on the company relationship on batik SMEs in the city of Yogyakarta, thus hypothesis 2 is supported. (3) There is a positive direct effect of company relationship on the supply chain performance in batik SMEs in the city of Yogyakarta, thus hypothesis 3 is supported. (4) The company relationship is able to mediate the effect of information sharing on supply chain performance at batik SMEs in the city of Yogyakarta, thus hypothesis 4 is supported.

The author's advice to the owners and managers of batik SMEs and similar companies, to improve the efficiency and effectiveness of the company's supply chain performance by reviewing various factors that are proven to affect the performance of the supply chain such as the level of information sharing and company relationships that are expected to improve the performance of supply chain.

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