

IMPROVING ORGANIZATIONAL PERFORMANCE (OP) THROUGH SUPPLY CHAIN MANAGEMENT PRACTICES (SCMP) AND STRATEGIC INFORMATION SYSTEM (SIS) WITH COMPETITIVE ADVANTAGE (CA) MEDIATION IN MICRO SMALL AND MEDIUM ENTERPRISES (MSMEs) IN SOLO RAYA

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ABSTRACT

The purpose of this study was to find out how to improve organizational performance (OP) by implementing supply chain management practices (SCMP) and strategic information systems (SIS), in micro small and medium enterprises (MSMEs). The population and sample used are MSME actors in the Solo Raya area, which include: Surakarta City, Sragen Regency, Boyolali Regency, Klaten Regency, Sukoharjo Regency, Karanganyar Regency and Wonogiri Regency. The collection of respondents who are used as samples using google forms, which are distributed online. The sample criteria used are MSMEs, that have used or interacted with information technology or the internet. Data entered and can be used as many as 184 respondents. The research approach used is a structural equation model (SEM), the processing use the analysis moment of structural (AMOS) application program. Data processing carried out includes: selecting data that meets the criteria, then: validity test, reliability test, outlier evaluation, data normality test, goodness-of-fit model, and path coefficient analysis, which is continued by discussion, conclusions are made, the implications are explained, the limitations are described, and suggestions are made for further

researchers as well as for MSMEs. The results of this study are: Supply chain management practices and strategic information systems, do not have a direct impact on organizational performance. However, strategic information systems can have a positive impact on competitive advantage and organizational performance levels. Competitive advantage (CA) can improve organizational performance. Furthermore, competitive advantage was found to fully mediate, on the influence of strategic information systems on organizational performance. However, competitive advantage is not able to mediate the effect of supply chain management practices on organizational performance. To improve the organizational performance of MSMEs, especially micro, not only by implementing a good strategic information system, but also needs to be supported by increasing competitive advantage.

Keywords: Supply Chain, Organizational Performance, Competitive Advantage, Strategic Information System

INTRODUCTION

The MSME sector (Micro, Small and Medium Enterprises) has the potential to develop sustainably, if it is transformed to digital. E-commerce or strategic information systems have technology and innovation, access to funding, market access, and logistics systems. According to data from the Ministry of Cooperatives and SMEs of the Republic of Indonesia [1] adapted by YCP Solidiance Research and Analysis, of Indonesia's total GDP (gross domestic product) which is worth 1,055 billion US dollars or equivalent to Rp. 15,240 trillion in 2019, 58% from the MSME sector. Through synergies in accelerating digital transformation, it is hoped that Indonesia's digital economic system will continue to develop rapidly, and become the pillar of the domestic economy[2].

The variables used in this study are: organizational performance, supply chain management practices, strategic information systems and competitive advantage. Organizational performance is a description of the level of achievement of the implementation of tasks, within an organization, in an effort to realize: the goals, objectives, mission, and vision of the organization. In addition, organizational performance also targets: the level of quality of goods and services produced, profitability, profit, minimizing operational costs, and increasing the company's overall performance above competitors [3, 4]. According to [5], the main characteristics of supply chain management practices include: flow-oriented, coordination-based, stakeholder focus, relationship-based, value-oriented and efficiency-oriented, then finally focused on performance. Strategic information system is a traditional or conventional information system that is used in innovative ways [6]. Specifically[4]states that competitive advantage is "a position above the industry average, manifested in the exploitation of market opportunities, and the ability to reduce competitive threats".

The object of this research is micro, small and medium enterprises (MSMEs), which use information technology or are related to online transactions, in the Solo Raya area. Micro, small and medium enterprises are businesses that are rooted in the populist economy[7] The reason for using MSMEs as research objects is because MSMEs are one of the main contributors to Indonesia's economic growth, and also play an important role in economic inclusion. In fact, 99.9% of business entities in Indonesia are classified as MSMEs with a total employment of up to 120 million people [8, 9].

Problem.

Based on the phenomena and research background above, the researchers formulated the following problems:

1. What is the effect of supply chain management practices (SCMP) and strategic information system (SIS) on organizational performance (OP) in MSMEs in Solo Raya?

2. Does competitive advantage (CA) mediate the influence of supply chain management practices (SCMP) and strategic information system (SIS), on organizational performance (OP) in MSMEs in Solo Raya?

Special purpose

The specific objective to be achieved from this research is to contribute to improving the country's economy, through improving the performance of MSMEs.

Research urgency

The urgency of this research is to face the trend of globalization, the progress of the times, and the increasingly rapid development of technology, so that it will have an impact on increasing the level of competition, complexity, challenges and threats that must be faced by business actors, including MSMEs. In addition, micro, small and medium enterprises can support the country's economy. Therefore, it is very important and urgent to immediately strengthen the performance of MSMEs in Indonesia, so that they are not crushed by globalization and left behind by the progress of the times [8, 9].

LITERATURE REVIEW

The following is a literature review of the variables and concepts used in this study.

1. Strategic information system, is a traditional or conventional information system, which is used in innovative ways [10, 11]. According to [12], there are six factors or indicators, which underlie the implementation of SIS in SMEs, namely: information sharing, information system (IS) strategy development, information system integration, information system evaluation practices, extended participation in management of is, information system capability,

2. According to [11], competitive advantage is "a position above competitors or the industry average, which is manifested in better utilization of market opportunities, and the ability to reduce or neutralize threats from competitors". In their article, [13], suggest five dimensions of competitive advantage, which include: product quality, price/cost, speed of delivery, product innovation, and speed of reaching the market.

3. According to [5], the main characteristics of supply chain management practices include: coordination based, smooth flow oriented, stakeholder focus, based on good relationships with suppliers/customers, value and efficiency oriented, the last focus on performance.

4. Organizational performance, is a description of the level of achievement of the implementation of tasks, in an organization, in an effort to realize the goals, objectives, mission, and vision of the organization. The indicators used in this research instrument refer to the opinion of [4] and [14], which state that organizational performance targets are Quality of goods and services, profitability, return on investment, operational cost efficiency, as well as improving overall organizational performance over competitors [4, 14]. In the same way, [9] reported that how the impact of warehouse management influenced the supply chain warehouse operations. [9] explored that if we adopt warehouse management system, it can change supply chain warehouse operation in a positive trend.

There are several previous studies on organizational performance, which state that good supply chain management practices will have an impact on improving organizational performance [15]. Other studies suggest that supply chain management practices, do not always have a direct impact, do not have a positive effect, cannot improve organizational performance ([16, 17]. In addition, another variable that can affect organizational performance, is the strategic information system. There have been many studies conducted, in order to examine the effect of strategic information systems on organizational performance. Several research results, show that the use of information technology or strategic information systems on organizational performance, has direct and

indirect effects on organizational performance [17, 18]. the integration of information systems and the use of information technology, can have a positive and significant effect on organizational performance [17-20]. The development of e-commerce, will affect the existence of conventional sales [21]. However, strategic information system can also have no effect on organizational performance [22, 23]. In addition, strategic information systems, in some situations, can also have a negative effect on organizational performance [20, 24]. Table 1 and Table 2 below, contains a summary of the results of studies on the influence of supply chain management practices on organizational performance, and a summary of research results on the effect of strategic information systems on organizational performance.

Table 1

Recap of Research Results: Effect of Supply Chain Management Practices on Organizational Performance

DESCRIPTION	Supply chain management practices, have no effect on organizational performance	Supply chain management practices, have a negative effect on organizational performance	Supply chain management practices have a positive effect on organizational performance
Effect of supply chain management practices on organizational performance	[16, 25-28]	[29-31]	[13, 20, 32-35]

Table 2

Recap of Research Results: Effect of Strategic Information System on Organizational Performance

DESCRIPTION	Strategic information system, has no effect on organizational performance	Strategic information system, has a negative effect on organizational performance	Strategic information system, has a positive effect on organizational performance
Effect of strategic information system, on organizational performance	[14, 16, 29, 36, 37]	[23]	[14, 18, 32-34, 38-41]

Based on the data in Table 1 and Table 2, it can be seen that the relationship or influence, between strategic information systems and supply chain management practices, on organizational performance, is still unclear, still ambiguous, and there is no agreement. The results are still different, varied, confusing, and not yet conclusive.

In order to find research novelty, in figure 1 the researcher also conducted bibliometric analysis. Previous studies that were processed by the researcher, were articles in indexed reputable international journals, which examined the performance of MSMEs:

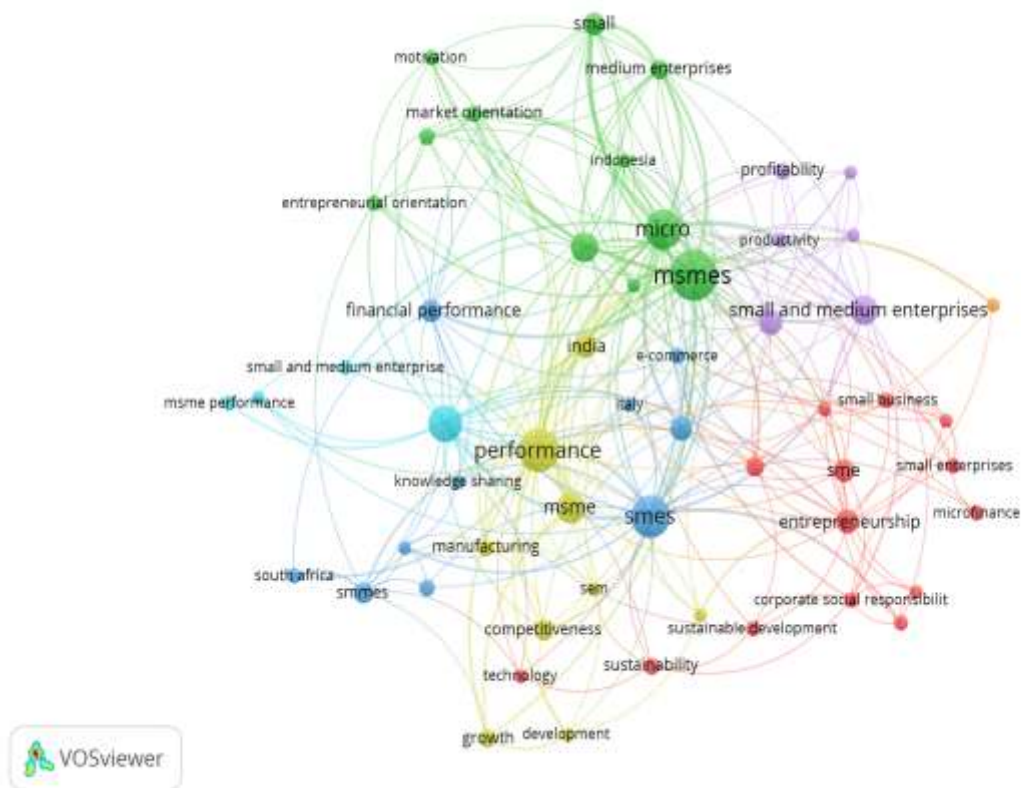


Figure 1. Results of Bibliometric Analysis. Type: Co-Accurrence - Author Keyword.

Based on the results of the analysis above, it was found that research examining the relationship or influence, between: organizational performance of MSMEs, competitive advantage, supply chain management practices, and strategic information systems, has not been widely carried out and published, especially in reputable international journals indexed.

In this regard, the authors try to find a mediating variable, which linking strategic information systems and supply chain management practices to organizational performance, namely competitive advantage. Supported by previous studies and relevant studies, the authors designed the research in this study, as follows: to improve organizational performance, MSMEs not only implement supply chain management or implement a good strategic information system, but also implement a good strategic information system. In addition, it needs to be supported by increasing competitive advantage, so that it can influence or improve the organizational performance of SMEs in Solo Raya. So, to improve the organizational performance of SMEs, it can be done by implementing supply chain management and strategic information systems, which are supported by increasing competitive advantages, for example: lower prices or lower costs, better quality, delivery reliability, product innovation, reaching the market or consumers faster than competitors [4, 11, 13, 14, 31, 42, 43]. This step or alternative solution has never been done by other scientists or other researchers. The solutions proposed by the researchers are expected to be effective, useful, great, and can resolve polemics about improving organizational performance among MSMEs, using current trends, using technology and networks. Strategic information system combined with supply chain, then tested whether supply chain and SIS can improve organizational performance in SMEs. Research on SIS has been done a lot, but the results show that SIS does not necessarily

have an impact on organizational performance in SMEs [2, 11, 15, 27, 44-46]. The novelty of this research, so that SIS can improve organizational performance in MSMEs, it needs to be accompanied by good supply chain management practices, besides that it also needs to be supported or bridged with a strong competitive advantage, then SIS and SCM can improve organizational performance in MSMEs. This solution is in line with the era of society 5.0, a society that is able to overcome various social problems and challenges, by using innovations that were born in the era of the industrial revolution 4.0, including: internet on things (internet for various things), artificial intelligence, big data (large amounts of data) and robots, in order to improve the quality of human life. Society 5.0, can also be interpreted as a concept of society, which is human-centered and technology-based [19, 33, 34, 47].

The research model used in this study is shown in Figure 2.

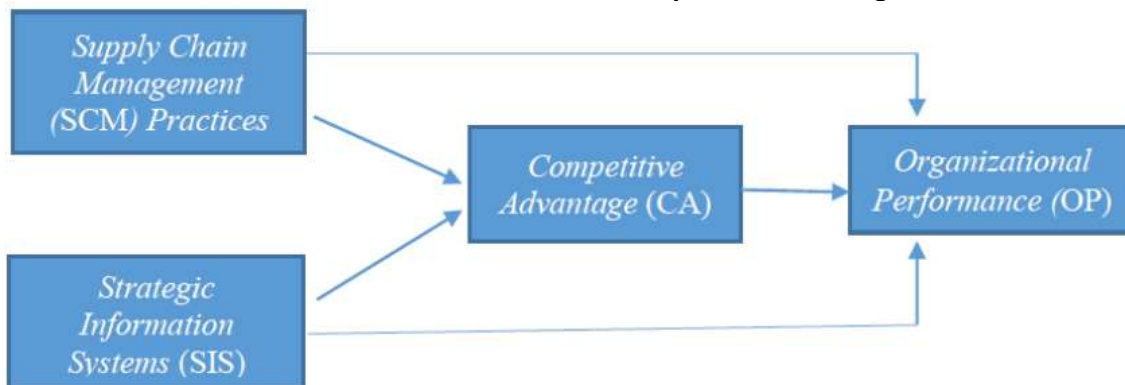


Figure 2. Conceptual Schematic of Research

The solution uses the grand theory of Industrial-Organization (I/O) and Resource-Based View (RBV), with the illustration in Figure 3 below:

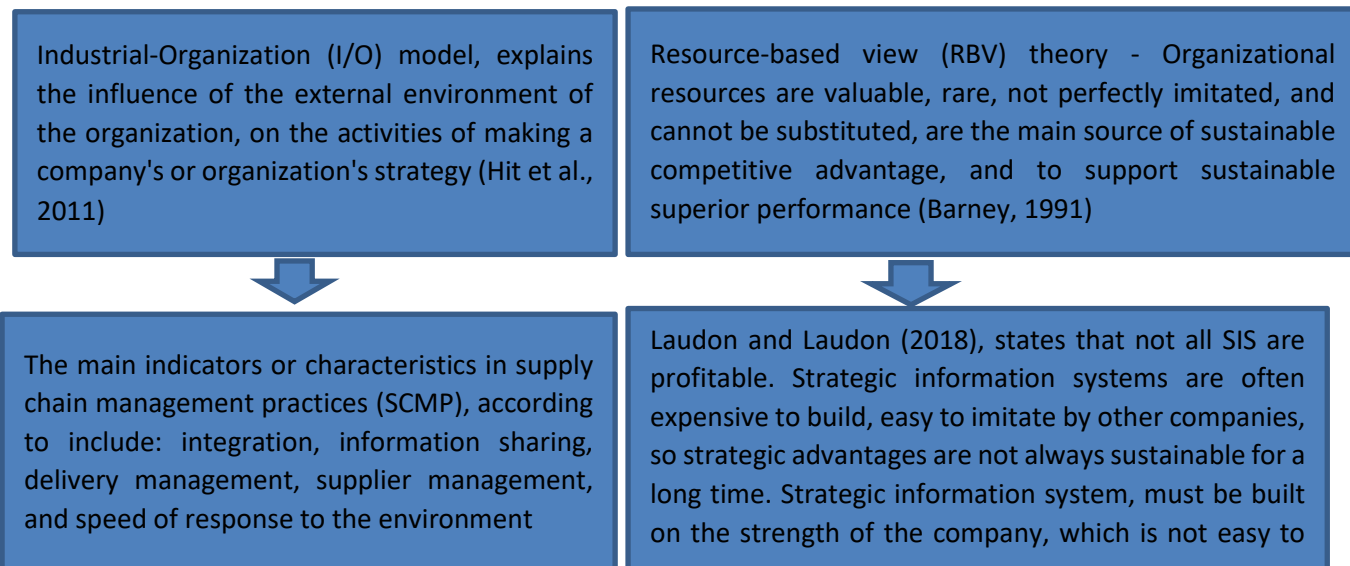


Figure 3. The Grand Theory Used

In addition, according to [24], competitive advantage generally indicates that a company can achieve higher performance than competitors in the industry, by utilizing its assets and/or competencies.

RESEARCH METHOD

The methods used in this study, include: making research instruments (questionnaires) using google forms, distributing questionnaires online to MSME actors in the Solo Raya Region, with the criteria for MSME actors using information technology or using the internet. Furthermore, data processing and analysis were carried out, including summarized and classified using descriptive statistics, use the SPSS data processing application program. Furthermore, by using the structural equation model (SEM) and using the analysis moment of structural (AMOS) application program to test the validity, reliability tests, data normality tests, outlier evaluation, model suitability analysis (Goodness-of-fit), and path coefficient analysis were carried out.

Validity Test

Validity test, using Confirmatory Factor Analysis (CFA). The statement item is said to be valid, if it has a factor loading value of 0.50 [48]

Reliability Test

The accepted reliability value is Cronbach's Alpha 0.60 [48]

Evaluation of Outliers

Tests on multivariate outliers were performed using the Mahalanobis distance criterion at the level of $p < 0.001$. The Mahalanobis distance, evaluated using χ^2 at degrees of freedom, is equal to the number of variables used in the study [48]

Normality of Data

Normality is divided into two, namely:

- (1) Univariate normality
- (2) Multivariate normality

To test the assumption of normality, the z statistic value can be used for skewness and kurtosis. Distribution of data into three parts:

- (1) Normal, if the value of z statistic (Critical Ratio or C.R.) skewness < 2 , and the value of C.R. kurtosis < 7 .
- (2) Moderately non-normal, if the C.R. kurtosis, ranging from 7 to 21.
- (3) Extremely non-normal, if the C.R. skewnes > 3 , and the value of C.R. kurtosis > 21 . (Hair et al. 2014).

Analysis of Model Fit (Goodness-of-Fit)

The structural model is categorized as "good fit", if it meets the following requirements in *able 3*

Goodness-of-fit Indices

Goodness-of-fit Indices	Cut-off Value
Chi-square (χ^2)	Expected a small value.
Degrees of freedom	Positive.
Significance Probability (p)	$\geq 0,05$
CMIN/DF	$\leq 2,00$
GFI	$\geq 0,90$
AGFI	$\geq 0,90$
TLI	$\geq 0,95$
CFI	$\geq 0,95$
RMSEA	$\leq 0,08$

Source: Hair et al., (2014)

Path Coefficient Analysis

This analysis is seen from the significance of the regression weight model. The path criteria analyzed are significant, if they have a C.R. t table value, or significance level (p), which is less than 5% [48]

Finally, based on the results and discussion, conclusions are made, the implications are explained, the limitations are described, and suggestions are made for further researchers as well as for SMEs.

RESULTS

Table 4 below is a summary of the results of the validity test, reliability test, outlier evaluation, and data normality test.

Data Quality Test Results

Table 4

Variables and Indicators		Loading Factor	Cronbach's Alpha	Skewness	c.r.	Kurtosis	c.r.
Variable of organizational performance			0,814				
1	Return on investment or our MSME capital, faster than competitors.	0,671		-0,397	-2,123	-0,748	-2,002
2	The return on our MSME assets, is greater than competitors.	0,731		-0,139	-0,744	-0,714	-1,912
3	The total operating costs of our MSMEs, are lower compared to the total operating costs of our competitors.	0,726		-0,754	-4,036	1,193	3,193
4	The performance of our MSMEs last year, was better than competitors.	0,763		-1,357	-7,264	1,942	5,200
Variabel of competitive advantage			0,783				
5	We offer competitive prices.	0,532		-0,193	-1,034	-0,924	-2,473
6	We can offer lower prices than competitors.	0,512		-0,354	-1,897	-1,059	-2,834
7	We deliver orders to customers on time.	0,566		-0,889	-4,762	0,990	2,651
8	We are able to modify products, according to consumer demand.	0,612		-0,236	-1,264	-0,749	-2,006
9	We are able to introduce new products, faster than competitors.	0,717		-0,366	-1,958	-0,669	-1,791

Table 4

Continued from

Variables and Indicators		Loading Factor	Cronbach's Alpha	Skewness	c.r.	Kurtosis	c.r.
10	We reach consumers, faster than our competitors.	0,727		-0,661	-3,538	0,535	1,431
Variable of supply chain management practices			0,717				
11	Our MSMEs can participate in supplier decisions and policies.	0,555		-0,799	-4,277	0,478	1,278
12	Our MSME suppliers are reliable.	0,727		-0,334	-1,791	-0,847	-2,267
13	Our SMEs anticipate the needs or desires of customers, in the future.	0,588		-0,282	-1,510	-0,685	-1,835
14	Our MSMEs always identify, whether or not to add or reduce suppliers.	0,615		-0,295	-1,579	-0,655	-1,754
Variable of strategic information system			0,770				
15	Our MSMEs often make reports, to meet our internal needs.	0,553		-0,755	-4,042	0,132	0,353
16	Our MSMEs participate in the implementation of information systems or information technology used by suppliers.	0,621		-0,806	-4,313	0,456	1,221
17	Our MSMEs participate in the application of information technology used by our customers.	0,663		-0,593	-3,172	-0,714	-1,911
18	Our MSMEs are always improving the capabilities of information technology used in our business.	0,727		-1,211	-6,486	1,959	5,244
19	Our MSMEs frequently update the information technology, which we use.	0,598		-0,671	-3,592	-0,198	-0,531
							4,184

The critical distance of mahalanobis $43,820 = \text{CHIINV}(0.001, 19)$

Source: Processed primary data, 2022

Validity Test

According to [48], the validity test uses confirmatory factor analysis (CFA), the question or statement item is valid, if it has a factor loading ≥ 0.50 . The process of testing the validity of this research, Initially, there were 36 statements in the questionnaire used, of which 19 items were valid, consisting of: 4 statements from the OP variable, 6 statements from the CA variable, 4 statements from the SCMP variable, and 5 statements from the SIS variable, because the value is more than 0.5.

Reliability Test

The acceptable reliability value is Cronbach's Alpha ≥ 0.60 [48]. The four variables used in this study were reliable.

Evaluation of Outliers

The test on the evaluation of Multivariate Outliers was carried out using the Mahalanobis distance criterion at the level of $p < 0.001$. The Mahalanobis distance was evaluated using χ^2 in degrees of freedom equal to the number of indicator variables used in the study (Hail et al., 2014). In this study, using 172 samples as respondents, with 19 valid question items. All cases that have Mahalanobis distance, greater than $\chi^2 (19; 0.001) = 43,820$ are multivariate outliers.

Normality of Data

Univariately, for the values in the C.r skewness, there is no statement item that shows the result >2 (absolute value). While the value of C.r. kurtosis, there are no statement items that show a value > 7, multivariately the value of C.R. kurtosis of 4.184 < 7. Based on these data, it can be concluded that the distribution of the data used in this study is normal, because the statistical z value (Critical Ratio or C.R.) skewness of all items is < 2 (absolute value), and the value of C.R. kurtosis < 7.

Analysis of Model Fit (Goodness-of-Fit)

Table 5

Goodness-of-Fit Model Results (after modification)

Goodness of fit indices	Cut of value	Results	Model evaluation
Chi Square (χ^2)	Diharapkan kecil	183,752	-
Degress of freedom (p)	Positif	121	Fit
Probability level	$\geq 0,05$	0,006	Not fit
CMIN/DF	$\leq 2,00$	1,359	Fit
GFI	$\geq 0,90$	0,916	Fit
AGFI	$\geq 0,90$	0,862	Not fit
TLI	$\geq 0,95$	0,952	Fit
CFI	$\geq 0,95$	0,968	Fit
RMSEA	$\leq 0,08$	0,046	Fit

Source: Processed primary data, 2022

The overall model is acceptable. Usually for research models such as SEM, we can use three to four indices that fit or meet, to assess the feasibility of a model. In addition to showing the chi-square (χ^2) and degress of freedom values that meet, we must also show the CFI, TLI, and RMSEA values that meet, because some of these indices are considered sufficient to evaluate the feasibility of a model [35, 48-50].

Path Coefficient Analysis

The criteria of the analyzed path is significant, if it has a C.R. \geq t table value, or significance level (p) is less than 5% [48]. Path coefficient analysis test results are in table 6.

Table 6

Hypothesis Test Results

			Estimate	S.E.	C.R.	P
CA	<---	SIS	0,673	0,143	4,702	***
CA	<---	SCMP	0,158	0,136	1,165	0,244
OP	<---	CA	0,690	0,148	4,655	***
OP	<---	SCMP	0,162	0,125	1,294	0,196
OP	<---	SIS	-0,019	0,128	-0,148	0,882

Source: Processed primary data, 2022

The test results in Table 6, show that of the five analyzed paths, there are 2 paths that have a significant influence, as seen from the magnitude of the significance level (p) of hypothesis testing, which is smaller than 5%. While the 3 analyzed paths have an insignificant effect, as be seen from the magnitude the significance level (p) of hypothesis testing is greater than 5%. The summary of the results of the hypothesis test is presented in Table 7.

Table 7

Research Result

Hipotesis	Conclusion
H1: The practice of supply chain management, has a positive and significant effect on organizational performance.	Not supported
H2: The practice of supply chain management, has a positive and significant effect on competitive advantage.	Not supported
H3: Competitive Advantage, has a positive and significant effect on organizational performance.	Supported
H4: Strategic information system, has a positive and significant effect on competitive advantage.	Supported
H5: Strategic information system, has a positive and significant effect on organizational performance.	Not supported
H6: Competitive Advantage, can mediate the influence of Strategic Information Systems on organizational performance.	Supported
H7: Competitive advantage, can mediate the effect of supply chain management practices on organizational performance..	Not supported

Source: Processed primary data, 2022

DISCUSSION

Supply chain management practices, have no positive and significant effect on OP

The results of this study, indicate that SCMP has no positive and significant effect on OP. These results mean, that a series of activities are carried out in MSMEs to improve effective supply chain management practices, which include: supplier partnerships, outsourcing, time reduction, continuous process flow, information technology sharing, purchasing, quality, and customer relations at MSMEs, it has not been able to directly improve organizational performance on MSMEs in Solo Raya. This is possible because:

1. The types of goods or services sold or offered by MSMEs, are not always the same, they are likely to change at any time.
2. The place or location of the MSME business, can move or not settle.
3. The location of the business, is in the home environment or the residence of MSMEs actors.
4. The management of MSMEs business, is carried out in a simple way.

Thus, SCMP does not have a significant effect on: increasing returns on investment or assets, significantly decreasing operational costs, and increasing the achievement of market-oriented or financial goals, for MSMEs in Solo Raya [15, 22, 26, 28, 42, 47, 51-53].

Supply chain management practices have no positive and significant effect on CA.

The results of this study, indicate that SCMP has no positive and significant effect on CA. This means, that a series of activities carried out by MSMEs to improve supply chain management practices that are effective (appropriate/targeted), have not been able to increase their competitive advantage, which includes: the ability of MSMEs to achieve and maintain a position above their competitors, or the ability of MSMEs to differentiate themselves from competitors. Supply chain management practices, have no effect on organizational performance. In addition, supply chain management practices, also have no effect on competitive advantage. This is because MSMEs are basically a people's economy, where most people will make products or offer services, based on the needs and desires, of the surrounding community. MSMEs do not really need a supply chain, because MSMEs (especially micro ones), only make products or offer services, based on what they can make or can do. In addition, the product or service is needed by the community [5, 13, 24, 37, 41, 54]

Competitive advantage has a positive effect on OP.

The results of this study, indicate that CA has a positive and significant effect on OP, on MSMEs in Solo Raya. This means, that the higher the MSMEs in achieving and maintaining their position above competitors, the better the MSMEs' ability to achieve consumer-oriented goals and achieve financial-oriented goals. Based on the results of hypothesis testing, it can be concluded that increasing the ability to maintain a position above competitors, will be able to increase the OP of MSMEs in Solo Raya, which includes: increasing returns on capital, returning assets, reducing operational costs, and improving the quality of MSME output [4, 5, 11, 14, 55-58]

Strategic information system, has a positive effect on CA.

The results of the study, showed that SIS had a positive effect on CA. This means, that the higher or the better the use of traditional or conventional information systems, used in innovative ways, so the higher or better the ability of MSMEs to achieve and maintain their position above competitors. In this study, it was found that SIS or the use of information technology in innovative ways, can increase competitive advantage, which includes: being able to lower selling prices, improve product or service quality, speed up delivery, and be able to adapt to consumer tastes [11, 13, 22, 27, 45, 46, 51]

Strategic information system, does not have a positive effect on OP.

The results of this study, indicate that SIS has no effect on OP SMEs in Solo Raya. This means good or not the use of traditional or conventional information systems used in innovative ways, does not affect the ability of MSMEs to achieve consumer-oriented and financial-oriented goals. This is possible because the application of SIS will not necessarily increase the OP of MSMEs, but it is necessary to match or harmonize, the use of information technology with the needs of MSMEs. In this study, it was found that the application of SIS or the use of information technology, could not have a significant impact on the OP of MSMEs. The SIS or the creative use of information technology were unable to: lower prices, create quality products, speed up delivery, provide suitable products. consumer tastes, increasing speed in reaching consumers [4, 10, 12, 14, 29, 36, 37, 42, 45, 49, 59].

Competitive advantage, fully mediates the influence of SIS on OP.

The results of the study, indicate that CA fully mediates the effect of the application of SIS on OP, on SMEs in Solo Raya. A good SIS implementation cannot have a direct effect on increasing OP, but must be supported by a competitive advantage. The use of information technology does not directly have a significant impact on MSMEs OP. The application of SIS or the use of new technology, will be able to increase the OP of MSMEs,

if the application of the SIS can reduce the price of the products offered, can improve product quality, can speed up product acceptance or reach consumers, be able to create products that suit consumer tastes or consumer desires, can accelerate new product introduction to consumers, and be able to increase the speed to reach consumers [4, 11-14, 19, 49, 60, 61]

Competitive advantage, does not mediate the influence of SCMP on OP.

The results showed that CA did not mediate the effect of SCMP on OP, on SMEs in Solo Raya. Supply chain management practices cannot directly improve OP. Supply chain management practices, also can not improve CA. *Supply chain management practices* can not increase the advantages, in terms of: more efficient prices or costs, better quality, delivery reliability, product innovation, and faster entry into the market. This is possible due to the characteristics of MSMEs, especially micro, which include:

1. The types of goods or services that are sold or offered may change at any time,
2. The place of business can be moved, not permanent.
3. The location of the business, usually in the neighborhood where the MSME actors live, and
4. Business management is done alone without many people and in simple ways.

Therefore, SCMP cannot increase OP, either directly or by being bridged by CA [4, 5, 11, 13, 18, 39, 41, 56, 57, 62]

CONCLUSION

Conclusion

This study examines the organizational performance of micro MSMEs in the Solo Raya area, which related to the use of information technology or related to online transactions, with mediated by competitive advantage. Based on the results of research and data processing, the following conclusions are drawn:

1. Supply chain management practices, have no effect on organizational performance.
2. Supply chain management practices, have no effect on competitive advantage.
3. Competitive advantage, has a positive and significant effect on organizational performance.
4. Strategic information system, has a positive and significant impact on competitive advantage.
5. Strategic information system, has no effect on organizational performance.
6. Competitive advantage, fully mediates the influence of strategic information system on organizational performance.
7. Competitive advantage, does not mediate the influence of Supply chain management practices on organizational performance.

Suggestions

Suggestions that can be given are as follows:

1. Suggestions for further research:
 - a. Sample collection can be done by combining the distribution of online and offline questionnaires, as well as interviews, in order to obtain more complete and maximum quality data.
 - b. It is hoped that further research will be able to test the sample by differentiating the size of MSMEs, based on turnover, assets, number of employees, so that they can be classified into micro, small, or medium criteria. By doing so, it is hoped that it will be

analyzed further, so that the results can be used as a basis for making policies related to MSMEs more detail. In addition, it can also be analyzed and researched further by subsequent researchers.

Advice for MSMEs

Based on the results of research conducted on SMEs in Solo Raya, the researchers suggest the following:

To improve the organizational performance of SMEs, especially micro, not only by implementing a good strategic information system, but also needs to be supported by increasing competitive advantage, so that they can influence or improve the organizational performance of SMEs in Solo Raya. The application of SIS alone, cannot improve the organizational performance of SMEs in Solo Raya. So, to improve the organizational performance of SMEs, it can be done by implementing a strategic information system, which includes: utilizing information technology (for example: computers, cellphones, smartphones, internet, applications that can be accessed) that exist and are owned in innovative ways, for example: using computers in processing data for higher speed and accuracy, using the internet, using social media applications (eg Youtube, Whatsapp, Facebook, Instagram, Tiktok, Line, Twitter, Telegram) to support marketing and service to consumers, using marketplaces (eg.: Tokopedia, BliBli, Bukalapak, Shopee, Lazada and its kind) to support marketing, service to consumers, as well as maintain good relations with suppliers and other related parties. In addition, it needs to be supported by increasing competitive advantage, for example: by creating lower prices or costs, better quality, reliability of delivery, product innovation, reaching markets or consumers faster than competitors. That way, it will improve the organizational performance of MSMEs.

LIMITATION

The limitations encountered at the time of the study were as follows:

1. Collecting data used in this study, using an online questionnaire. Although online questionnaires are considered more efficient and economical, there are obstacles that researchers cannot explain directly and in detail the meaning of the statements in the questionnaire for respondents, who do not understand the meaning of the statements from the questionnaire. In addition, it is also not possible to dialogue, or conduct direct and open interviews to all respondents, to explore in more detail about the intricacies of MSMEs.
2. Sampling in this study not by classifying MSMEs, based on: turnover, assets, number of employees.

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DECLARATION OF CONFLICTING INTERESTS

Researchers have no conflict of interest in this study.

REFERENCES

1. Raharja, S.u.J., et al., *Utilisation analysis and increasing strategy: e-commerce use of SMEs in Bandung, Indonesia*. International Journal of Trade and Global Markets, 2019. **12**(3-4): p. 287-299.DOI: <https://doi.org/10.1504/IJTM.2019.101557>.
2. Purbasari, R., Z. Muttaqin, and D.S. Sari, *Digital entrepreneurship in pandemic Covid 19 Era: The digital entrepreneurial ecosystem framework*. Review of integrative business and economics research, 2021. **10**: p. 114-135.
3. Ferro G., C.J., et al., *Sustainable Competitive Advantage: A Survey of Companies in Southern Brazil*. BBR - Brazilian Business Review, vol. 14, núm. 3, mayo-junio, pp. 352-367 FUCAPE Business School Vitória, Brasil. 2017.DOI: <https://doi.org/10.15728/bbr.2017.14.3.6>.
4. Paladino, A., *Investigating the drivers of innovation and new product success: a comparison of strategic orientations*. Journal of Product Innovation Management, 2007. **24**(6): p. 534-553.DOI: <https://doi.org/10.1111/j.1540-5885.2007.00270.x>.
5. Ahi, P. and C. Searcy, *A comparative literature analysis of definitions for green and sustainable supply chain management*. Journal of cleaner production, 2013. **52**: p. 329-341.DOI: <https://doi.org/10.1016/j.jclepro.2013.02.018>.
6. Rubel, M., M.A. Kashem, and N. Sultana, *Strategic Information System and Organizational Structure a Case on Meena Bazar Super Shop in Bangladesh*. Journal Impact Factor, 2014. **5**(4): p. 50-65.
7. Majid, R., *The Model of Islamic Social Fund (Zakah, Infaq, Sadaqah, and Waqf) Utilization through Synergy of the Mosque-Baitul Maal Wat Tamwil as an Economic Stimulus for Micro and Small Enterprises*. Islamic Sosial Finance and Its Role for Achieving Sustainable Development Goals: Islamic Economics Winter Course, 2021: p. 227.
8. Julita, J. *Development of a Sharia Financing Model to Increase MSME Revenues in Lubuk Pakam District*.
9. Kuruba, G., T.L. Ngwato, and R.L. Boy, *Warehouse management systems (WMS) and business performance: an exploration of potential impact of WMS implementation on warehouse*. International journal of logistics & supply chain management perspectives, 2019. **8**(02): p. 3606-3614.
10. Siahaan, T., Nazaruddin, and I. Sadalia, *The Effect of Supply Chain Management on Competitive Advantage and Operation Organization Performance at PT PLN (Persero)*. International Journal of Research and Review, 2020. **7**(4): p. 80-87.
11. Sigalas, C., *Competitive advantage: the known unknown concept*. Management Decision, 53(9), 2004-2016. 2015.DOI: <https://doi.org/10.1108/MD-05-2015-0185>.
12. Sharma, M.K., R. Bhagwat, and G.S. Dangayach, *Performance measurement of information systems in small and medium sized enterprises: a strategic perspective*. Production Planning and Control, 2008. **19**(1): p. 12-24.DOI: <https://doi.org/10.1080/09537280701737059>.
13. Li, S., et al., *The impact of supply chain management practices on competitive advantage and organizational performance*. Omega, 2006. **34**(2): p. 107-124.DOI: <https://doi.org/10.1016/j.omega.2004.08.002>.
14. Guimarães, J.C.F.d., E.A. Severo, and C.R.M.d. Vasconcelos, *Sustainable competitive advantage: a survey of companies in Southern Brazil*. BBR. Brazilian Business Review, 2017. **14**: p. 352-367.DOI: <https://doi.org/10.15728/bbr.2017.14.3.6>.
15. Thoo, A.C., et al. *Understanding supply chain management practices for small and medium-sized enterprises*. IOP Publishing.DOI: <https://doi.org/10.1088/1757-899X/215/1/012014>.
16. Mabhungu, I. and B. Van Der Poll, *A review of critical success factors which drives the performance of micro, small and medium enterprises*, Vol. 12, No. 6. 2017.DOI: <https://doi.org/10.5539/ijbm.v12n6p151>.
17. Marques, C., et al., *High-fat diet-induced obesity Rat model: a comparison between Wistar and Sprague-Dawley Rat*. Adipocyte, 2016. **5**(1): p. 11-21.DOI: <https://doi.org/10.1080/21623945.2015.1061723>.
18. Alshubaily, N.F. and A.A. Altameem, *The Role of Strategic Information Systems (SIS) in Supporting and Achieving the Competitive Advantages (CA): An Empirical Study on Saudi Banking Sector*. Int. J. Adv. Comput. Sci. Appllocations, 2017. **8**(7): p. 128-139.DOI: <https://doi.org/10.14569/IJACSA.2017.080718>.
19. Devece, C., et al., *Information systems strategy and its relationship with innovation differentiation and organizational performance*. Information Systems Management, 2017. **34**(3): p. 250-264.DOI: <https://doi.org/10.1080/10580530.2017.1330002>.

20. F, A.A., A. A, and G.R. A, *The Effect of Information Technology on Organizational Structure and Firm Performance: An Analysis of Consultant Engineers Firms (CEF) in Iran. Social and Behavioral Sciences*. 81, 644 – 649. 2013.DOI: <https://doi.org/10.1016/j.sbspro.2013.06.490>.
21. Nasution, E.Y. *The Impact of E-Commerce Development on Conventional Merchants' Income (case study: Medan central market)*.DOI: <https://doi.org/10.32535/jicp.v2i3.642>.
22. Hemmatfar, M., M. Salehi, and M. Bayat, *Competitive advantages and strategic information systems*. International Journal of Business and Management, 2010. 5(7): p. 158.DOI: <https://doi.org/10.5539/ijbm.v5n7p158>.
23. Muawanah, N.S. and M.K.d. Romandhon, *The Effect of Effectiveness of Using Accounting Information Systems, Trust in Accounting Information Systems, Technical Ability of Users of Accounting Information Systems and Physical Convenience on Individual Performance (Empirical Study of Employees Working at the Regional Secretariat of Wonosobo Regency)*. ISSN: 1907-426X, Volume 11 No.2. 2016.
24. Lee, J.-S. and C.-J. Hsieh, *A research in relating entrepreneurship, marketing capability, innovative capability and sustained competitive advantage*. Journal of Business & Economics Research (JBER), 2010. 8(9).DOI: <https://doi.org/10.19030/jber.v8i9.763>.
25. Alamanda, D.T., et al., *The Interest of Technology Adoption in E-Commerce Mobile Apps Using Modified Unified Theory of Acceptance and Use of Technology 2 in Indonesia*. International Journal of Applied Business and International Management (IJABIM), 2021. 6(3): p. 35-45.DOI: <https://doi.org/10.32535/ijabim.v6i3.1327>.
26. Niu, Y., *The impact of information technology on supply chain performance: A knowledge management perspective, 1-24*. . 2010.
27. Whitten, et al., *"Triple-A supply chain performance"*, *International Journal of Operations & Production Management*. Vol. 32 Iss: 1 pp. 28 – 48. 2012.DOI: <https://doi.org/10.1108/01443571211195727>.
28. Younis, H. and B. Sundarakani, *The impact of firm size, firm age and environmental management certification on the relationship between green supply chain practices and corporate performance. Benchmarking*, 27(1), 319–346. . 2020.DOI: <https://doi.org/10.1108/BIJ-11-2018-0363>.
29. K, L. and L. J, *Management Information Systems: Managing the Digital Firm, 15th Edition*. NJ: Prentice Hall. 2018.
30. Salamah, I., *Utilization of Information Systems and Information Technology Effects on Individual Employee Performance*. Jurnal Akuntansi dan Keuangan, 2012. 14(1): p. 56-68.
31. Y, A.C. and A.A. L, *"Effects of strategic information systems on competitive strategy and performance"*, *International Journal of Productivity and Performance Management*, Vol. 67 Issue: 9, pp.2018-2045. 2008.DOI: <https://doi.org/10.1108/IJPPM-07-2017-0166>.
32. Astuti, E. and S.M. Rahayu, *The influence of information technology strategy and management support to the internal business process, competitive advantage, financial and non-financial performance of the company*. International Journal of Web Information Systems, Vol. 14 No. 3, pp. 317-333. , 2018.DOI: <https://doi.org/10.1108/IJWIS-11-2017-0079>.
33. Barney, J.B. and W.S. Hesterly, *Strategic management and competitive advantage: Concepts*. 2010: Prentice Hall Englewood Cliffs, NJ, USA.
34. David, R.F., *Strategic Management Concepts and Cases. (Thirteenth Edition)*. United States of America: Pearson Education. 2011.
35. S, T., Nazaruddi, and S. I, *The Effect of Supply Chain Management on Competitive Advantage and Operation Organization Performance at PT PLN (Persero)*. International Journal of Research and Review. Vol.7. 2020.
36. Hetri, L., K. Kirmizi, and D. Desmiyawati, *Effect of competitive environment and management accounting system on organizational performance: organizational strategy as a moderating variable*. Jurnal Ekonomi. 23(1).
37. Ho, C.C., *The influence of Supply Chain Management (SCM) practices on organizational performance: Knowledge Management processes as mediator, 1-39*. 2011.
38. Almazán, D.A., Y.S. Tovar, and J.M.M. Quintero, *Influence of information systems on organizational results*. Contaduría y Administración, 2017. 62(2): p. 321-338.DOI: <https://doi.org/10.1016/j.cya.2017.03.001>.
39. Apriliya, L.C. and R.F. Hutami, *Supply Chain Management Practices (SCMP) on Sentra Industri Tahu Cibuntu Bandung, 1-6*. . 2019.
40. Arisman, A. and L. Fuadah, *Analysis of Factors Affect to Organizational Performance In Using Accounting Information Systems Through Users Satisfaction and Integration Information Systems*.

- Sriwijaya International Journal of Dynamic Economics and Business, 2017. **1**(2): p. 167-180. DOI: <https://doi.org/10.29259/sijdeb.v1i2.167-180>.
41. B, I.S. and H.A. A, *Supply chain management integration and implementation: a literature review*. *Supply Chain Management: An International Journal* 10/4 (2005) 252–263. 2015. DOI: <https://doi.org/10.1108/13598540510612721>.
 42. Yoshikuni, A.C., et al., *The influences of strategic information systems on the relationship between innovation and organizational performance*. *BBR. Brazilian Business Review*, 2018. **15**: p. 444-459. DOI: <https://doi.org/10.15728/bbr.2018.15.5.3>.
 43. Yulianto, R.T. and G.P. Gusti. *The Mediation Role of Trust from Past Experience on Market Orientation and MSME Performance: A Quantive Study During the Covid-19 Pandemic in Indonesia*.
 44. Ratnawati, R., *Smes' innovation of the mediator of the influence of the implementation of csr program on competitive advantage of smes in malang*. *Jurnal Aplikasi Manajemen*, 2017. **15**(2): p. 261-270. DOI: <https://doi.org/10.21776/ub.jam.2017.015.02.10>.
 45. Setiawan, S. and Nuryakin., *The Effect of Experiential Marketing on Visitor Satisfaction and Visitor Loyalty at The CGV Cinemas Hartono Mall Yogyakarta, Indonesia*. *International Journal od Business Quantitative Economics and Applied Management Research*, Volume 5, Issue 5. 2018.
 46. V, A., *The Effect of Lean Manufacturing on a Supply Chain Relationship and Performance*. *Sustainability*, 11, 5751. 2019. DOI: <https://doi.org/10.3390/su11205751>.
 47. C, A.J., A.R. T, and S. B, *The Effect of Supply Chain Management Processes on Competitive Advantage and Organizational Performance (Case Study: Food Industries based in West Azerbaijan Province)*. *Global Journal of Management Studies and Researches*, 2(3) 2015, Pages: 152- 157. . 2015.
 48. Shepard, L.A., *Chapter 9: Evaluating test validity*. *Review of research in education*, 1993. **19**(1): p. 405-450. DOI: <https://doi.org/10.3102/0091732X019001405>.
 49. Sitharam, S. and M. Hoque, *Factors affecting the performance of small and medium enterprises in KwaZulu-Natal, South Africa*. *Problems and perspectives in Management*, 2016. **14**(2): p. 277-288. DOI: [https://doi.org/10.21511/ppm.14\(2-2\).2016.03](https://doi.org/10.21511/ppm.14(2-2).2016.03).
 50. Yap, L.L. and C.L. Tan, *The effect of service supply chain management practices on the public healthcare organizational performance*. *International Journal of Business and Social Science*, 2012. **3**(16).
 51. Spina, D., et al., *The influence of supply chain management practices in the enterprise performance*. *American Journal of Management*, 2015. **15**(2): p. 54.
 52. Wirdiyanti, R., *“Digital Banking Technology Adoption and Bank Efficiency: The Indonesian Case”*. *December:1–34*. 2019.
 53. Xuhua, H., et al., *Effects of business-to-business e-commerce adoption on competitive advantage of small and medium-sized manufacturing enterprises*. *Economics & sociology*, 2019. **12**(1): p. 80-366. DOI: <https://doi.org/10.14254/2071-789X.2019/12-1/4>.
 54. B, M., C. P, and K. K, *Understanding Purchase Intention for Global Brands Among Young Indian Consumers*. *Amity Journal of Marketing*. 3 (1), (112-122). 2018.
 55. A, J.T., K. S.G, and Deshmukh, *Supply chain issues in Indian manufacturing SMEs: insights from six case studies”*, *Journal of Manufacturing Technology Management*, Vol. 23 Iss 5 pp. 634 - 664. 2012. DOI: <https://doi.org/10.1108/17410381211234444>.
 56. Adam, M., *Effectiveness of Service Information Systems at Hospitals (Case Study on Outpatient Installation of Regional General Hospital Dr. Haryoto, Lumajang Regency)*, 1-123. 2018.
 57. Agoba, A.M., et al., *Central bank independence and inflation in Africa: The role of financial systems and institutional quality*. *Central Bank Review*, 2017. **17**(4): p. 131-146. DOI: <https://doi.org/10.1016/j.cbrev.2017.11.001>.
 58. Zhou, K.Z., J.R. Brown, and C.S. Dev, *Market orientation, competitive advantage, and performance: A demand-based perspective*. *Journal of business research*, 2009. **62**(11): p. 1063-1070. DOI: <https://doi.org/10.1016/j.jbusres.2008.10.001>.
 59. Porter, M.E., *The contributions of industrial organization to strategic management*. *Academy of management review*, 1981. **6**(4): p. 609-620. DOI: <https://doi.org/10.5465/amr.1981.4285706>.
 60. Q, T.H., et al., *“Supply chain management practices and firms’ operational performance”*, *International Journal of Quality & Reliability Management*, Vol. 34 Issue: 2, pp.176-193. 2017. DOI: <https://doi.org/10.1108/IJQRM-05-2015-0072>.

61. Qrunfleh, S. and M. Tarafdar, *Supply chain information systems strategy: Impacts on supply chain performance and firm performance*. International journal of production economics, 2014. **147**: p. 340-350.DOI: <https://doi.org/10.1016/j.ijpe.2012.09.018>.
62. Islami, N.N., S. Wahyuni, and T. Tiara, *The Effect of Digital Marketing on Organizational Performance Through Intellectual Capital and Perceived Quality in Micro, Small and Medium Enterprises*. Jurnal organisasi dan manajemen, 2020. **16**(1): p. 59-70.DOI: <https://doi.org/10.33830/jom.v16i1.718.2020>.