Uncertain Supply Chain Management 10 (2022) 95–100

Contents lists available at GrowingScience

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

Triple-A strategy: For supply chain performance of Indonesian SMEs

Sri Wilujeng[a], Endi Sarwoko[a] and Farika Nikmah[b*]

[a]*Management Study Program, Faculty of Economics and Business, Universitas PGRI Kanjuruhan Malang, Indonesia*
[b]*Business Administration Department, State Polytechnic of Malang, Indonesia*

A B S T R A C T

Article history:
Received July 18, 2021
Received in revised format September 21, 2021
Accepted October 14 2021
Available online October 14 2021

Keywords:
Supply chain agility
Supply chain adaptability
Supply chain alignment
Supply chain performance

Supply chain management is an activity that effectively integrates suppliers, companies, retailers where goods are produced and distributed at the right quality, location, and time with minimum cost levels to provide the highest quality services for consumers. Supply chain agility, supply chain adaptability, supply chain alignment, which is known as the Triple-A strategy, are elements to form supply chain performance. In this study, we tried to apply it to SMEs in developing countries, such as Indonesia. The purpose of this study is to show whether it is true that the supply chain cannot be applied to SMEs, while for a disruption as it is today, competition is getting tougher not only among SMEs but also against large companies, and SMEs need to develop several strategies that were previously unimaginable. This study uses quantitative techniques to determine the effect of supply chain agility, supply chain adaptability, supply chain alignment on supply chain performance either partially or simultaneously. The results showed that all hypotheses were accepted. This shows that supply chain management can be a strategy to create better SMEs performance and can even be used to achieve competitive advantage.

1. Introduction

How to improve the performance of SMEs is still a hot topic for discussion today. Especially in developing countries such as Indonesia, the government is increasingly aggressive in positioning SMEs as important as large companies to play a role in helping the country's economy. SMEs are a business unit that contributes greatly to the economic condition of a country (Nikmah et al., 2020). SMEs are the key to accelerating a country's economic growth process, both domestically and internationally (Korcsmaros & Simova, 2018). Thus, SMEs have tried several strategies to carry out their role, one of which is supply chain management (Lee, 2021). Supply chain is an activity that is described as the flow of products from raw materials to consumption by consumers. Supply chain management is an activity that integrates efficiently between suppliers, companies, warehouses, retailers that goods are produced and distributed at the right quality, location, and time with minimum cost levels to provide the best service for consumers (Kozma, 2017). There have been many studies that explain the benefits of implementing supply chains, including creating a harmonious relationship between raw material providers and companies (Nguyen & Mai, 2021); improve company performance (Darmawan, Maulida, & Nasito, 2021); operational and financial (Lee, 2021), digitization process (Farahani, Meier, & Wilke, 2015); and supply chain during the pandemic (Farooq et al., 2021). Supply chain management has been implemented well by large companies (Kot, Goldbach, & Slusarczyk, 2018), and not by SMEs. Several previous studies have stated that supply chain management is not suitable for SMEs, because it requires extra costs (Arend & Wisner, 2005); requires the latest information technology (Kumar, Singh, & Shankar, 2015); and skilled human resources are needed (Kherbach & Mocan, 2016), and SMEs do not have them. While if it is understood more deeply that SMEs have flexibility, the ability to adapt quickly, supply chain management should be implemented (Kot, Goldbach, & Slusarczyk, 2018), if supply chain management is also an open system that is innovative,

* Corresponding author
E-mail address: farika.nikmah@polinema.ac.id (F. Nikmah)

doi: 10.5267/j.uscm.2021.10.007

adaptive and easy to redesign (Shpak et al., 2017; Szczepańska, 2014). As stated by Lee (2004), 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. Some large companies can create supply chains that make production and distribution faster and more cost-effective, by implementing triple-A that is agile, adaptable, and aligned (Lee, 2004). If this strategy can be applied to large companies and has a positive impact in achieving better performance, then in this study we try to apply it to SMEs. Considering that SMEs play a major role in a country, such as: contributing to a country's domestic income, providing employment especially for people with limited skills, reducing unemployment, and reducing poverty. Thus, this research was conducted to cover the gap, that usually supply chain management is only applied to large companies, but now it will be tried to be applied to SMEs.

2. Theoretical framework and research hypotheses

2.1 Theoretical framework

Previous studies have reviewed many of the benefits of supply chain management in large companies, such as for competitive advantage (Darmawan, Maulida, & Nasito, 2021; (Kot, Goldbach, & Slusarczyk, 2018) management strategy on operational and finance performance (Lee, 2021); digitalization (Farahani, Meier, & Wilke, 2015) and on the relationship between suppliers and companies (Nguyen & Mai, 2021). However, this is not the case with SMEs, because supply chain management requires large investments (Arend & Wisner, 2005); adaptation to technology (Dubihlela & Omoruyi, 2014); and competent resources (Diaconu & Alpopi, 2014). Those are all weaknesses of SMEs. Whereas for SMEs, supply chain management is used as business continuity (Ahmad et al., 2018; Zygmut, 2018); (Kovacs & Kot, 2016), to ensure the activity, flow and transformation of products from raw materials to acceptable to consumers (Kozma, 2017; Zimon, 2017; Kovacs & Kot, 2016).

Nowadays SMEs are an opportunity for a country to improve economic conditions. Thus, it is necessary to strengthen the management of SMEs, one of which is by implementing supply chain management. Supply chain management is correlated with supply chain performance (Darmawan, Maulida, & Nasito, 2021). Supply chain performance is important to ensure that the organization is able to adapt to a dynamic environment (Vanderhaeghe & de Treville, 2003), and is able to provide quality products to end consumers in the right quantity and time to ensure that consumers are satisfied (Green & Inman, 2005). According to Lee (2004) supply chain management is a quick response to sudden changes in supply and demand, able to control unpredictable disruptions, reduce costs (efficiency) and quickly rise from market shocks, such as disasters, pandemics, etc. (agility), always involved and monitoring economic progress, political conditions, demographic trends, and technological updates (adaptability); and work loyally for the interests of all members in the supply chain circle, and try to contribute to the group's performance to be maximized (aligned).

2.2 Research hypotheses

Supply chain agility and supply chain performance

Supply chain agility is the ability to respond quickly to short-term changes in supply and demand and quickly bounce back when faced with problems (Lee, 2004). Supply chain agility collaborates the ability of all entities in the supply chain to provide quick responses to changing customer demands (Bakker, 2008). Collaboration by sharing information among partners in the supply chain network can increase the ability to respond to market changes (Thomas, 2008). Supply chain agility plays an important role in supporting organizational performance (Lee L. H., 2004); (Khan et al., 2009); (Yusuf., 2014), then Whitten, Green Jr, & Zelbst (2012); Attia (2015) proves that agility which is a dimension of Triple-A has a significant effect on supply chain performance, so H1: supply chain agility has a positive and significant effect on supply chain performance.

Supply chain adaptability and supply chain performance

Supply chain adaptability is the ability to modify the supply chain according to market changes (Lee, 2004), so the supply chain must be flexible (Richey, Tokman, & Wheeler, 2006). Adaptability is a determinant in supporting the performance of the entire supply chain (Chan et al., 2009), and adaptability is a Triple-A dimension that has a relationship with supply chain performance (Attia, 2015; Whitten, Green Jr, & Zelbst, 2012), so H2: supply chain adaptability has a positive and significant effect on supply chain performance (Adler, 2006).

Supply chain alignment and supply chain performance

Supply chain alignment is the ability to align the wishes of all partners in the supply chain network with the interests of the organization (Lee, 2004). Alignment must be extended to the external of the organization to create good relationships with partners (Whitten, Green Jr, & Zelbst, 2012). Alignment must fulfill the entire process from the beginning to the product enjoyed by consumers and finally to achieve competitive advantage (Bryson, 2004). Whitten, Green Jr, & Zelbst (2012);

Attia (2015) explains that alignment is the Triple-A dimension that has a positive relationship to supply chain performance, so

H_3: *Supply chain alignment has a positive and significant effect on supply chain performance*.

The research concept framework is described as follows:

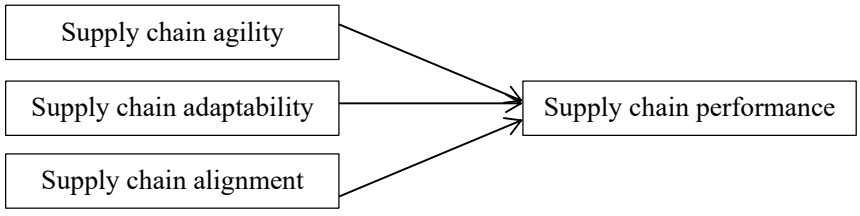

Fig. 1. Proposed research model

Table 1
Interpretation of variables in the research model

Observed of variables	Resources
Supply chain agility	
Establish a good communication with suppliers and consumers	
Develop a good cooperative relationship with suppliers	
Have a reliable supplier	
Have a good inventory planning in the uncertain circumstances	
Supply chain adaptability	
Monitor the business environment changes to find a new market	
Finding new suppliers to adapt to markets changes	Whitten, Green Jr, & Zelbst (2012)
Develop products based on consumer needs	
Has diverse product variants	
Measuring product image compare it with the similar in the market	
Supply chain alignment	
Inform the products to suppliers and consumers openly	
Has a clear rights and obligations with suppliers and consumers?	
Share the risks, costs and benefits with suppliers and consumers fairly	
Supply chain performance	
The supply chains are able to deliver products to consumers without defect	
The supply chains are to transform raw materials from suppliers into finished products	
The supply chains are able to reduce delays, breakdowns, and incompleteness in fulfilling consumer orders	
The supply chains are able to respond and fulfill consumer orders immediately	Darmawan, Maulida, & Nasito (2021)
The supply chains are able to deliver orders to consumers on time	
The supply chains are able to fulfill consumer's orders in correct quantity	
The supply chains are able to deliver orders with different quantities according to consumer orders consistently	
The supply chains are able to fulfill consumer's orders either in small or large quantities	
The supply chain is able to minimize the total cost of production process	

3. Method

This research is based on statistical analysis, is multiple regression analysis, is a type of analysis used for modeling and analyzing the relationship between several independent variables and one dependent variable (Constantin, 2015). The multiple regression model can more realistically describe the relationship than the uni factorial regression model (Zsuzsanna & Marian, 2012). In our research, the independent variables are supply chain agility, supply chain adaptability, and supply chain alignment, while the dependent variable is supply chain performance.

Respondents were 310 SMEs owners spread across Indonesia, who are engaged in culinary, fashion, and handicrafts. A total of 400 questionnaires were distributed via email and confirmed by sending a written message via WhatsApp, and 326 questionnaires were returned, and 310 questionnaires were deemed appropriate. The study was conducted in a span of six months, due to the very slow response of the respondents. Requires effort to remind respondents through written communication via WhatsApp to fill out the questionnaire and send it to the researcher. It is understandable because at the time of the study, SMEs owners were also facing a crisis due to the pandemic which required them to fight harder in order to maintain their business.

First, we present the data needed for analysis, then the regression equation is obtained, then proceed with the t test and F test with n-(k+1) for the degree of freedom, next step the coefficient of determinant (R^2) is calculated, which is used to show how big the percentage of the total variance explained by the independent variable is. The data analysis using minitab application.

4. Result and Discussion

The regression equation is:

> Y Supply Chain Performance = 7.16 + 3.73 X_I Supply Chain Agility – 3.10 X_2 Supply Chain Adaptability + 1.31 X_3 Supply Chain Alignment

The equation shows that there is an increase and decrease in the condition of supply chain performance because of the independent variables, if it is assumed to be applied in normal conditions. The regression equation shows that none is 0, so the equation can be accepted even though not all are positive. In normal condition, supply chain agility will increase supply chain performance by 37%, there is a decrease in supply chain adaptability by 31%, and every time there is a 13% increase in supply chain alignment. In normal conditions, it is assumed that there are no fluctuations in economic, political, and social conditions that result in changes in the structure and social order in a country.

Indeed, adaptation to technology is still a challenge for SMEs. Technological developments are very fast, making SMEs difficult to follow. SMEs are still trying to understand a technology and have not implemented it, the technology itself has led to the next innovation without being damned. Low absorption capacity because it is not supported by competent resources in terms of education, knowledge and scholarship. Often they are self-taught and their experience is not related to technology implementation, because so far technology has been an expensive investment for SMEs.

The next step, the analysis is carried out to test the relationship between variables partially. How big is the support of each independent variable to the dependent variable. This test is carried out to find out in detail the contribution given by each variable so that it will be used as a consideration of which things need to be improved and which need to be maintained to achieve optimal supply chain performance. The results of the t-test analysis, as follows:

Table 1
t test analysis

Predictor		Coef	SE Coef	t	P
Constant		7.160	1.642	4.36	0.000
X1	Supply chain agility	3.7316	0.3428	10.89	0.000
X2	Supply chain adaptability	-3.0996	0.5352	-5.79	0.000
X3	Supply chain alignment	1.3115	0.6218	2.11	0.038

Based on the partial test between variables (t test), it was found that the p-value of each variable was <0.05, so that each of supply chain agility, supply chain adaptability and supply chain alignment had a positive and significant effect on supply chain performance. The formulation of the hypothesis that H0 which states that there is no partial influence of supply chain agility, supply chain adaptability and supply chain alignment on supply chain performance is rejected, and H1 which states that there is an effect of supply chain agility, supply chain adaptability and supply chain alignment variables on supply chain performance is accepted.

Then we calculate the simultaneous effect of independent variables on the dependent variable. This test is to find out how strong if the independent variables are simultaneously treated to contribute to the dependent variable. So that it will be known the influence partially or simultaneously which gives a stronger contribution to supply chain performance. The results of the F test analysis are stated as follows:

Table 2
F test analysis

Source	DF	SS	MS	F	P
Regression	3	2730.28	910.09	98.10	0.000
Residual Error	307	853.46	9.28		
Total	310	3583.74			

The p-value of 0.000 <0.05 proves that simultaneously supply chain agility, supply chain adaptability and supply chain alignment have an effect on supply chain performance. So that the formulation of the hypothesis presented with H_0: There is no simultaneous effect between supply chain agility, supply chain adaptability, and supply chain alignment on supply chain performance, is rejected and H_1: There is a simultaneous influence between supply chain agility, supply chain adaptability, and supply chain alignment to supply chain performance, accepted.

The detailed results are continued with the calculation for R^2 which aims to show the proportion of variance in the dependent variable (Y) that is predicted or explained by linear regression and predictor variable (X). In general, a high R^2 value indicates that the model is suitable for the data, although the interpretation of the fit depends on the context of the analysis. R2 will always be greater than zero, even when the predictor and outcome variables have no relationship with each other. As follows the results of the calculation of R^2:

S = 3.04578 R-Sq = 76.2% R-Sq(adj) = 75.4%

The value of the coefficient of determination is found in the Adjusted R-Square value of 75.4%. This means that the ability of the independent variable in explaining the dependent variable is 75.4%. The results of this study support several previous studies: Nguyen & Mai (2021); Lee (2021); Farahani, Meier, & Wilke (2015); Farooq et al (2021); Kot, Goldbach, & Slusarczyk (2018). However, all these studies were applied to companies, and it is a novelty in this research to be applied in SMEs. It turns out that the results are encouraging, that supply chain management is important not only for companies but also for SMEs for today's business with increasingly complex and fierce competition. SMEs are trying to implement several strategies that were previously considered unreachable.

5. Conclusion and Recommendation

Of the three independent variables in this study, supply chain adaptability needs to be improved if it is to have a positive effect on supply chain performance. From the outset, it has been stated that SMEs are having a hard time dealing with rapidly evolving technological sophistication. However, this time should be considered no longer an obstacle. Instead, it is seen as a challenge to conquer. Technology is considered expensive but now it is done with simple technology utilizing mobile phones for transactions and promotions, making it affordable. As for low competence, it is no longer an excuse. Nowadays almost everyone is technology literate. Along with the rise of online transactions in every aspect of human life. In a situation like this, technological competence becomes a life skill to be able to keep up with the times, otherwise, we will be extinct. Likewise with SMEs, they can no longer choose to reject or accept technology as part of their business activities. The choice is only to accept, and if they refuse, they must be prepared to lose in the competition and fail to survive.

References

Adler, N. J. (2006). The Arts & Leadership: Now That We Can Do Anything, What Will We Do? *Academy of Management Learning & Education*, *5*(4), 486–499, Vol. 5, No. 4, .

Ahmad, I., Oláh, J., Popp, J., & Máté, D. (2018). Does business group affiliation matter for superior performance? Evidence from Pakistan. *Sustainability*, *10*(9), 3060.

Arend, R. J., & Wisner, J. D. (2005). Small business and supply chain management: is there a fit?. *Journal of Business Venturing*, *20*(3), 403-436.

Attia, A. (2015). Testing the effect of marketing strategy alignment and triple-A supply chain on performance in Egypt. *EuroMed Journal of Business*, *10*(2), 163-180.

Bakker, P. (2008). The design and operation of distribution centres within agile supply chains. *International Journal of Production Economics*, *111*(2), 27-41.

Bryson, J. M. (2004). *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement.* San Francisco: Jossey-Bass.

Chan, H., Wang, W., Luong, L., & Chan, F. (2009). Flexibility and adaptability in supply chains: a lesson learnt from a practitioner. *Supply Chain Management*, *14*(6), 407-410.

Constantin, C. (2015). Using the Logistic Regression model in supporting decisions of establishing marketing strategies . *Bulletin of the Transilvania University of Braşov* , *8*(2), 43-50.

Darmawan, B. A., Maulida, R., & Nasito, M. (2021). Supply Chain Performance of SMEs: The Role of Triple-A Strategy. *Kinerja*, 91-102.

Diaconu, D., & Alpopi, C. (2014). Strengths and weaknesses of current Supply Chain Management and initiatives for the future. *Proceedings of the 8th International Management Conference "Management Challenges for Sustainable Development"* (pp. 1165-1172). Bucharest: Romania.

Dongre, A. P., & Narkhede, P. A. (2015). *Global Workforce in a Borderless World & Challenges Ahead.* North Maharashtra University, Jalgaon (Maharashtra): Faculty, Department of Management Studies.

Dubihlela, J., & Omoruyi, O. (2014). Barriers To Effective Supply Chain Management, Implementation, And Impact On Business Performance Of SMEs In South Afric. *Journal of Applied Business Research, 30*(4), 1091-1031.

Farahani, P., Meier, C., & Wilke, J. (2015). A Vision on A Digital Supply Chain Management. *The Business Transformation Journal*, *360*(13), 1-15.

Farooq, M. U., Hussain, A., Masood, T., & Habib, M. (2021). Supply Chain Operations Management in Pandemics: A State-of-the-Art Review Inspired by COVID-19. *Sustainability*, *13*(5), 1-33.

Green, K. W., & Inman, R. (2005). Using a just-in-time selling strategy to strengthen supply chain linkages. *International Journal of Production Research*, *43*(16), 3437-3453.

Khan, K. A., Bakkappa, B., Metri, B., & Sahay, B. (2009). Impact of agile supply chains' delivery practices on firms' performance: cluster analysis and validation. *Supply Chain Management: An International Journal*, *14*(1), 41-48.

Kherbach, O., & Mocan, M. (2016). Overview of Information Technology and a Theoretical Model in Supply Chain Management for local SMEs. *SEA – Practical Applications of Science*, *4*(3), 527-537.

Korcsmaros, E., & Simova, M. (2018). Factors affecting the business environment of SMEs in Nitra region in Slovakia. *Oeconomia Copernicana*, *9*(2), 309-331.

Kot, S., Goldbach, I., & Slusarczyk, B. (2018). Supply chain management in SMEs-Polish and Romanian Approach. *Economics & Sociology*, *11*(4), 142-156.

Kovacs, G., & Kot, S. (2016). New logistics and production trends as the effect of global economy changes. *Polish Journal of Management Studies*, 115-126.

Kozma, T. (2017). Cooperation in the supply chain network. *Forum Scientiae Oeconomia*, *3*(5), 45-58.

Kumar, R., Singh, R., & Shankar, R. (2015). Critical success factors for implementation of supply chain management in Indian small and medium enterprises and their impact on performance. *IIMB Management Review*, *27*(2), 92-104.

Lee, L. H. (2004). *The Triple-A Supply Chain.* New York, United States: Harvard Business Review.

Lee, R. (2021). The Effect of Supply Chain Management Strategy on Operational and Financial Performance. *Sustainability*, 1-13.

Nguyen, Q. N., & Mai, V. (2021). The role of relationship quality and loyalty between rice farmers and food companies in supply chain. *Uncertain Supply Chain Management*, *9*(4), 851-856.

Nikmah, F., Sudarmiatin, Wardoyo, C., Hermawan, A., & Soetjipto, B. (2020). The Role of SMEs' Maket Orientation in Developing Countries: A General Investigation in Four Countries. *Innovative Marketing*, 1-12.

Panzl, B., & McMahon, T. (1989). *Ethical Decision Making: Developmental Theory and Practice.* Denver, Colorado: Institute of Education Science.

Richey, R., Tokman, M., & Wheeler, A. (2006). A supply chain manager selection methodology: empirical test and suggested applications. *Journal of Business Logistics*, *27*(2), 163-190.

Shpak, N., Satalkina, L., Sroka, W., & Hittmar, S. (2017). The social direction of enterprises' innovation activity. *Polish Journal of Management Studies*, 187-201.

Szczepańska, W. (2014). The importance of organizational culture for innovation in the company. *Forum Scientiae Oeconomia*, *2*(3), 27-39.

Thomas, R. (2008). Exploring relational aspects of time-based competition. *International Journal of Physical Distribution & Logistics Management*, *38*(7), 540-550.

Vanderhaeghe, A., & de Treville, S. (2003). How to fail at flexibility. *Supply Chain Forum: An International Journal*, *4*(1), 64-73.

Whitten, G. D., Green Jr, K., & Zelbst, P. (2012). Triple-A Supply Chain Performance. *International Journal of Operations & Production Management*, *32*(1), 28-48.

Yusuf, Y., Gunasekaran, Y., Musa, A., Dauda, M., El-Berishy, N., & Cang, S. (2014). A relational study of supply chain agility, competitiveness and business performance in the oil and gas industry. *International Journal of Production Economics*, *147*, 531-543.

Zimon, D. (2017). The influence of quality management systems for improvement of logistics supply in Poland. *Oeconomia Copernicana*, *8*(4), 643-655.

Zsuzsanna, T., & Marian, L. (2012). Multiple regression analysis of performance indicators in the ceramic industry . *Procedia Economics and Finance*, *3*, 509-514.

Zygmut, J. (2018). Entrepreneurial activity drivers in the transition economies. Evidence from the Visegrad countries. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *13*(1), 89-103.