

---

## **The external environment dynamics analysis towards competitive advantage and company performance: the case of manufacture industry in Indonesia**

---

**S. Riyadi\***

Faculty of Economics and Business,  
Dr. Soetomo University,  
Surabaya, East Java Province, Indonesia  
Email: slamet.riyadi@unitomo.ac.id  
\*Corresponding author

**M. Munizu**

Faculty of Economics and Business,  
Hasanuddin University,  
Makassar, South Sulawesi Province, Indonesia  
Email: m3.feunhas@gmail.com

**Abstract:** This study investigates the direct effect of external environment dynamics on competitive advantage and company performance. To analyse the direct effect of competitive advantage on company performance, this study also explains the indirect effect of external environment dynamics on company performance through competitive advantage as mediation variable. Primary data is collected by using a questionnaire, while secondary data is obtained from relevant documents. The number of samples was 267 manufacturing companies taken from the population based on proportional random sampling method. This study uses descriptive statistics, and structural equation modelling (SEM) as method of analyses. The findings of the study prove that external environment dynamics can increase competitive advantage. The external environment dynamics also can improve company performance. Then, competitive advantage can improve company performance. Moreover, external environment dynamics indirectly can influence company performance mediated by variable of competitive advantage. Company performance can be improved by improving the competitive advantage variable elements for getting best results.

**Keywords:** external environment dynamics; competitive advantage; company performance; manufacture industry; Indonesia.

**Reference** to this paper should be made as follows: Riyadi, S. and Munizu, M. (2022) 'The external environment dynamics analysis towards competitive advantage and company performance: the case of manufacture industry in Indonesia', *Int. J. Productivity and Quality Management*, Vol. 35, No. 2, pp.143–156.

**Biographical notes:** S. Riyadi is an Associate Professor of Strategic Management at the Faculty of Economics and Business, Dr. Soetomo University, Surabaya, East Java Province, Indonesia. He is also a researcher in management and organisation field. His research interest includes strategic

management, tourism management, operation management and business and organisation. Some of his articles have published in reputable national and international journal.

M. Munizu is a Professor of Strategic Management and Operations at the Faculty of Economics and Business, Hasanuddin University, Makassar, South Sulawesi Province, Indonesia. His research interests concerns on operations management, supply chain management, quality management, strategic management and research methodology. He has also published some articles and books at reputable journal and publisher.

---

## 1 Introduction

The contribution of manufacture industry sector is very important in economic development. The manufacture industry can encourage an increase in GRDP, absorb workforce, reduce poverty, and become a supporting sector of other sectors, such as retail and services. However, as a business entity in a global environment, the manufacture industry cannot be separated from the effect of external environment dynamics. Manufacturing industries must be able to adapt the changing of dynamic environment in order still exist in the market (Munizu et al., 2019; Phan et al., 2020). In addition, the ability of organisations to adopt advances in information technology and production technology from external environment is an important factor that drives innovation and company performance (Nguyen et al., 2018; Pérez et al., 2019).

Nowadays, the external environment changes very rapidly and dynamically. These changes can affect directly or indirectly the existence of the organisation. In macro terms, the socio-cultural, economic, political, legal and environmental dimensions are a number of important elements that shape the external environment. On a micro level, the external environment is also related to customers, suppliers, competitors, industry, financial institutions, the labour market, and other elements that affect company policies in carrying out its business activities (Pearce and Robinson, 2013). The external environment is very fast changing, and uncertain. Therefore, each company should be able to fit with environmental changes and translate it into strategies, policies and business activities. Companies that can adapt to environmental changes will be successful in the global market (David and David, 2016).

According to Krajewski et al. (2013), cost, quality, time, and flexibility are priorities for competition in the global market and those are sources of a company's competitive advantage. Companies that have high competitiveness will be market leader. Cost and quality are important elements of competitiveness (Lakhal, 2009). In addition, flexibility in production and speed of product delivery are important elements of competitive advantage (Pono and Munizu, 2020). The ability of innovation is influenced by the level of knowledge and technology adoption (Jain, 2013). Adoption of information technology accelerates the increase in company competitiveness in terms of innovation. Innovation is an important element that establish a company's competitive advantage (Kleynhans and Swart, 2012; Motohashi and Yuan, 2018).

Some studies have been conducted relating for testing the effect of the external environment dynamics on the company's business operations. Study was conducted by Commander et al. (2008) emphasises the importance of analysis of the external

environment to improve competitiveness and company performance. This means that a stable external environment tends to improve business performance, whereas uncertain external environment tends to disrupt the company's operating performance. External environmental factors can affect company performance. Therefore, the external business environment is an important element that influences the business activities (Asad et al., 2020). In contrast to the results of previous studies, Sandra and Purwanto (2017) describes that external environmental factors have insignificant effect on company performance, especially in the small business context. However, external environment has significant effect on firm performance primarily export-oriented.

Several studies have also tested the effect of competitive advantage on firm performance. In general, it is found that high competitiveness has a positive effect on organisational performance. Han et al. (2007) found that company performance can improve when the company becomes more competitive. Competitive advantage as measured through four dimensions, namely: quality, cost, delivery and flexibility which have a positive effect on company performance (Munizu et al., 2017). Innovation as one of competitive advantage sources can improve company performance (Kanapathy et al., 2017; Nosratpour et al., 2018; Octavia et al., 2020). Therefore, the elements that establish the competitive advantage are very important for managers in managing their organisation. Beside external environmental dynamic aspects, competitive advantage elements also can determine company performance (Machmud and Sidharta, 2016; Pérez et al., 2019). Based on the description above, study on the analysis of external environment on competitive advantage and company performance are very important to be conducted, especially in manufacturing industry context.

## **2 Literature review**

### *2.1 External environment dynamics*

The external environment is always changing and its changes are very dynamic (Wheelen and Hunger, 2012). There are two views on the concept of external environment. The first view said that external environment as source of organisational assets. Then, the second view describes the external environment as source of data and information for many organisations in facing uncertain environmental conditions (Tan and Litschert, 1994). Previous research results interpreted the external environment as a variable covering macro and micro aspects. The macro aspects of the external environment include the socio-cultural and economic dimensions, government policies, advances in information technology, financial institutions, industry, and the labour market, while the micro external environment relates to competitors, customers and suppliers (Vrontis and Pavlou, 2008). The external environment also includes suppliers, customers and the global community (Sulistyo, 2016; Sandra and Purwanto, 2017).

### *2.2 Competitive advantage*

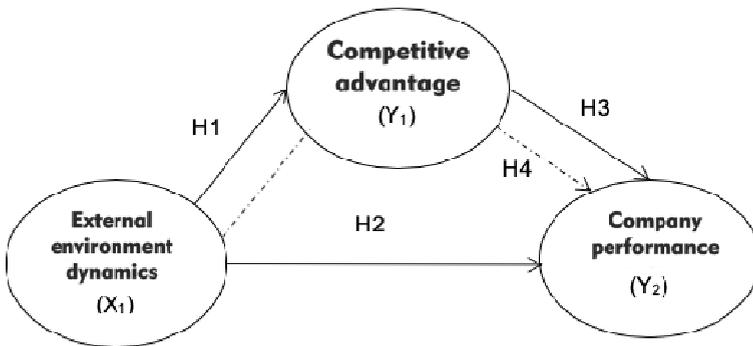
Resource-based view (RBV) theory views that competitive advantage can be created if companies can effectively identify, utilise, and develop organisational resources in supporting company performance (Barney, 1991; Fahy, 2000). The company's performance will differ from one company to another because of its resources and

competencies. Therefore, it can be said that the competitiveness and performance produced by the company are a consequence of optimising the use of resources and the unique competences of each organisation. Competitive advantage will increase if company managers have adequate competence in managing company resources and competencies (Wernerfelt, 1984; Barney, 1991). Conceptually, Porter (1998) states that the competitive advantage of a company is influenced by four main factors, namely: supplier power, market demand, company structure and strategy and competition. Regarding this description, Najib and Kiminami (2011) said that innovation is an important element of competitiveness. The concept of competitive advantage refers to the ability of a company to be superior to its competitors in innovating, especially in the products and services produced (David and David, 2016). Competitive advantage can be measured through several important components such as quality, price, and flexibility (Lakhal, 2009), delivery product, responsiveness and innovation (Kanapathy et al., 2017; Munizu et al., 2019).

### 2.3 Company performance

Company performance refers to the results of the company’s achievements in a certain period. Therefore, company performance measures are designed to assess how well an organisation has carried out activities. In addition, company performance measures must be able to identify whether continuous improvements have been made in business operations. Company performance can be divided into financial performance and non-financial performance (Brah and Lim, 2006). Company performance can be measured through measures of human resource performance, marketing performance, operational performance and financial performance (Sila, 2007). Figure 1 is a conceptual framework model that describes the influence among variables.

**Figure 1** Conceptual model



Therefore, based on the results of review of the relevant literature, we developed four hypotheses in this study as follows:

- Hypothesis 1 The external environment dynamics has a significant effect on competitive advantage.
- Hypothesis 2 The external environment dynamics has a significant effect on company performance.

- Hypothesis 3 Competitive advantage has a significant effect on company performance.
- Hypothesis 4 The external environment dynamics has a significant effect on company performance mediated by competitive advantage.

### 3 Methodology

This study uses a quantitative approach for solving the research questions. This approach emphasises testing theories or concepts based on conceptual model and variable measurement (Sekaran and Bougie, 2016). This study was carried out through a survey of medium and large-scale manufacturing industries in Surabaya and Makassar, Indonesia. Sampling technique used proportional random sampling. The number of samples was determined by Slovin formula at a level  $\alpha = 5\%$ . The results of the calculation of a complete research sample are presented in Table 1.

**Table 1** Proportion calculations and research sample counts

<i>No.</i>	<i>City/district</i>	<i>Population (unit)</i>	<i>Population proportion (%)</i>	<i>Sample (unit)</i>
1	Surabaya	524	65.01	174
2	Makassar	282	34.99	93
	<i>Total</i>	<i>806</i>	<i>100.00</i>	<i>267</i>

Based on Table 1, it can be seen that minimum sample size of this study is 267 company units. The research respondents are managers or supervisors who have adequate knowledge and understanding of the company’s business processes. In accordance with the conceptual model presented in the previous section, the variables research include exogenous variable, namely: the external environment dynamics, and endogenous variables, namely: competitive advantage as endogenous-1, and company performance as endogenous-2. The variable indicator of external environment dynamics consists of aspect of socio-economic, government policy, information technology advanced, competition and stakeholders’ role (Vrontis and Pavlou, 2008; Sandra and Purwanto, 2017). Competitive advantage include aspects of quality, cost/price, flexibility, speed of delivery and innovation (Lakhal, 2009; Najib and Kiminami, 2011; Munizu et al., 2019). Then, company performance indicators consist of human resource performance, marketing performance, operational performance and financial performance (Brah and Lim, 2006; Sila, 2007).

This study uses a Likert scale as a tool in measuring respondents’ perceptions. It has score 1 to 5, where strongly disagree = 1, disagree = 2, neutral = 3, agree = 4 and strongly agree = 5. Likert scale has gradations from very positive to very negative. The research instrument has been through the process of validity and reliability testing before being used in field data collection. The standard correlation value for validity testing is 0.30, while the reliability test uses a Cronbach alpha value of 0.60 (Hair et al., 2014). Table 2 presents the test results of the research instrument.

**Table 2** The result of validity test and questionnaire reliability

<i>Variables</i>	<i>Indicator</i>	<i>Pearson correlation</i>	<i>Alpha Cronbach</i>	<i>Information</i>
External environment dynamics (X <sub>1</sub> )	X <sub>1.1</sub>	0.544	0.763	Valid and reliable
	X <sub>1.2</sub>	0.598		
	X <sub>1.3</sub>	0.731		
	X <sub>1.4</sub>	0.305		
	X <sub>1.5</sub>	0.569		
Competitive advantage (Y <sub>1</sub> )	Y <sub>1.1</sub>	0.662	0.808	Valid and reliable
	Y <sub>1.2</sub>	0.638		
	Y <sub>1.3</sub>	0.642		
	Y <sub>1.4</sub>	0.458		
	Y <sub>1.5</sub>	0.623		
Company performance (Y <sub>2</sub> )	Y <sub>2.1</sub>	0.606	0.790	Valid and reliable
	Y <sub>2.1</sub>	0.503		
	Y <sub>2.3</sub>	0.556		
	Y <sub>2.4</sub>	0.333		
	Y <sub>2.5</sub>	0.486		
	Y <sub>2.6</sub>	0.419		
	Y <sub>2.7</sub>	0.547		
	Y <sub>2.8</sub>	0.538		

Note: Standard r value = 0.30 and standard alpha value = 0.60.

Table 2 shows that correlation value on indicators of external environment dynamics, competitive advantage variable, and company performance is more than 0.30 ( $r > 0.30$ ). Therefore, it can be concluded that indicators of each variable are valid. Furthermore, it can also be known that the alpha Cronbach ( $\alpha$ ) value of the external environment dynamics variable, the competitive advantage variable, and the company's performance variable is greater than 0.60 ( $\alpha > 0.60$ ). Consequently, it can be inferred that the three variables in this study has a high level of reliability.

Descriptive statistics are used to explain the profile of respondents and variables based on mean and percentage values, while structural equation modelling (SEM) is used to test the effect of exogenous variables on endogenous variables either directly or indirectly. Then, the data and information are performed by using both SPSS and AMOS 24 software.

#### 4 Results and discussion

The results of this study reveal descriptively the characteristics of the respondents based on several important aspects including gender, age, education level and length of service. In brief, description of respondents' characteristics in this study can be seen in Table 3.

**Table 3** Description of respondent characteristics

No.	Description	Frequency	Percentage (%)	Total
1	Gender			
	a Male	221	82.77	
	b Female	46	17.23	267 (100%)
2	Age			
	a 20–30 years	24	8.99	
	b 31–40 years	115	43.07	
	c 41–50 years	86	32.21	
	d > 50 years	42	15.73	267 (100%)
3	Education level			
	a Diploma’s degree	42	15.73	
	b Bachelor’s degree (S1)	158	59.18	
	c Master’s degree (S2)	62	23.22	
	d Doctor’s degree (S3)	5	1.87	267 (100%)
4	Length of service			
	a 5 to 10 years	33	12.36	
	b 11 to 15 years	88	32.96	
	c 16 to 20 years	102	38.20	
	d > 20 years	44	16.48	267 (100%)

Based on Table 3, it can be concluded that the respondents of this research consisted of 221 male (82.77%) and 46 female (17.23%). When observed from the aspect of age, respondents who have 20–30 years of age are 24 people (8.99%), 31–40 years as many as 115 people (43.07%), 41–50 years as many as 86 people (32.21%), and the number of respondents who have age more 50 years are 42 people (15.73%).

The results of analyses also reveal that respondents in this research were mostly between the ages of 30–50 years (75.28%). The age group is theoretically classified as a productive age. Most of respondents were bachelor/S1 (59.18%), followed by respondents with masters/S2 education level (23.22%), and diploma (15.73%), the rest of the respondents is doctoral/S3 (1.87%). Then, based on length of service, the number of dominant respondents is those who have a work period of 16–20 years (38.20%). Then, followed by respondents who have a service work of between 11–15 years (32.96%), and more than 20 years (16.48%). While the rest of respondents are those who have 5–10 years of working (12.36%).

We use descriptive analysis and confirmatory factor analysis to reveal the implementation research variables based on mean value and loading factor on each indicator. The external environment dynamics variable is formed by five indicators, namely: socio-economic aspects, aspects of government policy, aspects of information technology progress, aspects of market competition, and the role of stakeholder’s aspects. Then, the competitive advantage variable is formed by five indicators, namely: quality, cost, flexibility, speed of product delivery and innovation. Furthermore, the company’s performance variable consists of eight indicators, namely: sales growth, market share,

return on investment (ROI), and profitability, the level of product defects, productivity, workforce growth and workforce competence.

The description of respondents' perceptions towards variable indicators on the external environment dynamics, competitive advantage, and company performance completely can be seen in Table 4.

**Table 4** Mean and loading factor of research variables

<i>No.</i>	<i>Variable/indicator</i>	<i>Mean</i>	<i>Loading factor</i>	<i>Description</i>
1	External environment dynamics ( $X_1$ )			
	• Socio-economic aspects ( $X_{1.1}$ )	3.98	0.662	Supportive
	• Aspects of government policy ( $X_{1.2}$ )	4.22	0.744	Very supportive
	• Aspects of info. technology progress ( $X_{1.3}$ )	4.12	0.622	Supportive
	• Market competition aspects ( $X_{1.4}$ )	4.08	0.866	Strict
	• The role of stakeholders aspects ( $X_{1.5}$ )	3.74	0.554	Supportive
2	Competitive advantage ( $Y_1$ )			
	• Quality ( $Y_{1.1}$ )	4.18	0.872	Good
	• Cost ( $Y_{1.2}$ )	3.70	0.584	Low/compete
	• Flexibility ( $Y_{1.3}$ )	4.04	0.650	High
	• Product delivery speed ( $Y_{1.4}$ )	4.13	0.890	Fast
	• Innovation ( $Y_{1.5}$ )	3.81	0.548	High
3	Company performance ( $Y_2$ )			
	• Sales growth ( $Y_{2.1}$ )	4.19	0.754	High
	• Market share ( $Y_{2.2}$ )	4.10	0.742	Wide
	• ROI – return on investment ( $Y_{2.3}$ )	3.93	0.666	Fast
	• Profitability ( $Y_{2.4}$ )	4.16	0.788	High
	• Level of product defects ( $Y_{2.5}$ )	3.82	0.616	Low
	• Productivity level ( $Y_{2.6}$ )	4.14	0.700	High
	• Workforce growth ( $Y_{2.7}$ )	3.37	0.526	High enough
	• Workforce competence ( $Y_{2.8}$ )	3.34	0.512	Good enough

The data presented in Table 4 shows that government policy aspect has higher mean value of 4.22. This score indicates that government policy is in the 'very supportive' category. Then, indicator of market competition aspects is an important indicator in forming external environment dynamics construct with loading factor value of 0.866. Quality aspect has higher mean value than others in competitive advantage construct with score of 4.18. This value indicates that quality of products is in the 'good' category. However, speed of delivery is a very important indicator in forming competitive advantage construct with loading factor value of 0.890. Moreover, indicator of sales growth has the higher mean value of 4.19. This value is a reflection that the company's sales growth is in the 'high' category. Nevertheless, profitability indicator is a very important indicator in forming company performance construct with loading factor value of 0.788.

We used a structural equation model to test the research hypothesis. The model suitability test is based on cut-off value standard. Completely, the results of testing the level of suitability of the model of the influence of external environmental dynamics on competitive advantage and company performance are presented in Table 5.

**Table 5** Result of testing of *goodness of fit indices overall model*

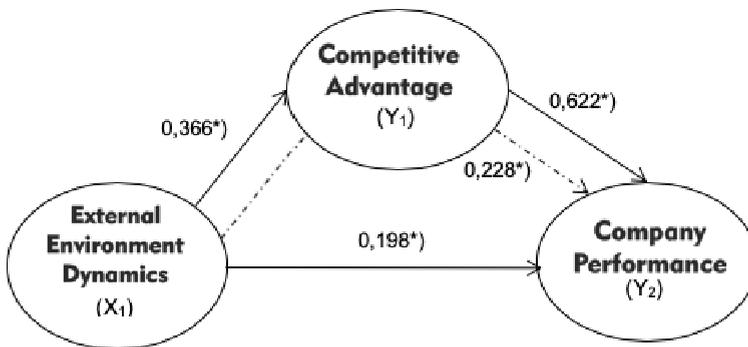
Criteria	Cut-off value	Model result	Model evaluation
Chi-square	Small expected	122.160	Good
CMIN/DF	≤ 2.00	2.218	Marginal
GFI	≥ 0.90	0.833	Marginal
AGFI	≥ 0.90	0.808	Marginal
RMSEA	≤ 0.08	0.056	Good
CFI	≥ 0.95	0.979	Good
TLI	≥ 0.95	0.975	Good

**Table 6** Hypothesis testing result of the effect external environment dynamics toward competitive advantage and company performance

Exogenous variable	Endogenous variable	Mediation variable	Path coefficient (standardised)	Prob.	Description*
External environment dynamics	Competitive advantage	-	0.366	0.002	Significant; H1, supported
External environment dynamics	Company performance	-	0.198	0.041	Significant; H2, supported
Competitive advantage	Company performance	-	0.622	0.000	Significant; H3, supported
External environment dynamics	Company performance	Competitive advantage	0.228	-	Significant; H4, supported

Note: \*Significance level  $\alpha = 5\%$ .

**Figure 2** The influence environment dynamics testing result toward competitive advantage and company performance



Result of analyses showed that from seven criteria for goodness of fit indices models, there are four criteria that have fixed to the requirements while three other criteria includes GFI, AGFI, and CMIN/DF have not met the requirements. However, based on

parsimony theory, this model has been accepted and no needed to make some modifications to the model (Hair et al., 2014). Therefore, it can be concluded that the model has fitted with standard criteria of a best model. This means the model can be used to carry out estimations and further explanation of the results of research. Structural equation model testing results briefly can be presented sequentially in Table 6 and Figure 2.

Based on Table 6, it can be revealed that statistically the four hypotheses built are supported by empirical data. The value of probability (prob.) the relationship among variables are smaller than standard requirement (prob.  $< 0.05$ ), then it is followed by t-value which is bigger than t-table (t-value  $> 1.960$ ). The level impact of external environmental dynamics variable on competitive advantage can be seen from its path coefficient of 0.366, and probability value (prob.) that is smaller than  $\alpha$  standard ( $0.002 < 0.05$ ). These results prove that first hypothesis (H1) proposed is accepted and supported by empirical data. Then, the direction of influence that has a positive (+) and significant value implies that any increase in the dynamics variable score in the external environment can have implications for the increasing score of the competitive advantage variable. Therefore, the support of external environment dynamics which includes socio-economic aspects, aspects of government policy, aspects of information technology progress, aspects of market competition, the role of stakeholder aspects such as public, private parties, universities, and other communities directly affected the company's competitive advantage. This finding consistent with some previous studies that conducting by Ismail et al. (2012), Sandra and Purwanto (2017) and Asad et al. (2020) that external environment dynamics factors will be improved company competitiveness. The findings of this study also support the findings of previous studies which state that the dynamics of the external environment and advances in information technology and innovation can affect the level of organisational competitiveness (Vrontis and Pavlou, 2008; Machuki and Aosa, 2011; Wu et al., 2017)

The level impact of external environmental dynamics variable on company performance also can be known from its path coefficient of 0.198, and probability value (prob.) that is smaller than  $\alpha$  standard ( $0.041 < 0.05$ ). These results prove that first hypothesis (H2) proposed is accepted and supported by empirical data. Then, the direction of influence that has a positive (+) and significant value implies that any increase in the dynamics variable score in the external environment can have implications for increasing the score of the company performance. Therefore, the support of the external environment dynamics directly influences the company performance. The findings of this study are in line with some previous researches such as Wong et al. (2014), Njoroge et al. (2016), Janković et al. (2016) and Octavia et al. (2020) that focused on the important role of external environment in increasing company efficiency. The success of an organisation depends on the ability of management to interact with external environment changing (Kuznetsova, 2015; Asad et al., 2020). The advanced in information technology and production technology system have been supported companies to build strategic partnerships with suppliers and customers effectively and efficiently. Advances in information technology are one of the important factors derived from the company's external environment, which can be used to support company operations (Munizu et al., 2019; Phan et al., 2020).

The level impact of competitive advantage variable on company performance can be seen from its path coefficient of 0.622, and probability value (prob.) that is smaller than  $\alpha$  standard ( $0.000 < 0.05$ ). These results prove that first hypothesis (H3) proposed is

accepted and supported by empirical data. These results indicate that the third hypothesis developed is accepted or supported by empirical facts. Then, the direction of influence that has a positive (+) and significant value implies that any increase in the score of the competitive advantage variable have implications for increasing the score of the company performance variable. Therefore, competitive advantage directly affected company performance. This findings show that higher competitiveness can produce better company performance. Innovation as an important element of competitive advantage has an impact on business performance in terms of profitability relative to competitors, market share and company growth (Najib and Kiminami, 2011; Munizu et al., 2017; Khan et al., 2019; Anil and Satish, 2019).

Furthermore, this study also found that company performance is indirectly influenced by the dynamics of the external environment through the mediating role of the competitive advantage variable (H4, accepted). Therefore, it can be concluded that the fourth hypothesis built in this study is supported by empirical facts. The value of indirect effect the external environment dynamics variable on company performance is the multiplication between the path coefficients of external environment dynamics variable on competitive advantage (0.366) with the path coefficient of competitive advantage variable on company performance (0.622). In order to obtain the path coefficient value from the indirect effect of external environment variables on company performance, which is mediated by the competitive advantage variable (0.228).

The result of this study provides empirical evidences that external environment dynamics is an important element that affected company performance either direct or indirect. Related to this fact, manufacturing companies must be considered this variable to improve competitive advantage. Better competitive advantage can generate better company performance. Meanwhile, the company's performance can be seen from the level of sales growth, market share growth, profitability growth, productivity and other measurements (Wong et al., 2014; Janković et al., 2016). Related to these findings, Wheelen and Hunger (2012) asserted that external environment dynamics will be give a big influence to competitive advantage and organisational performance include manufacturing industry and other industries.

## **5 Conclusions, limitations and future research**

Based on some findings of this study, it can be inferred that external environment dynamics has a direct and significant effect on competitive advantage. The external environment dynamics also has a direct and significant effect on company performance. Then, competitive advantage has a direct and significant effect on company performance. In addition, the external environment dynamics has a significant indirect effect on company performance mediated by competitive advantage. The results of this study found that company performance is more influenced by elements of competitive advantage compared to external environment dynamics elements. The findings of this study indicate that improvements effort to elements of competitive advantage variable in the terms of quality, cost, flexibility, speed of product delivery, and innovation are very important to be done for generating better company performance. The external environment dynamics which include dimension of socio-economic, government policy, market competition, information technology advanced, and stakeholders's role are

important factors in increasing both competitive advantage and company performance, especially in manufacturing industries in Indonesia.

There are some practical implications of this study that should be considered by managers of manufacturing companies. The results of this study can be input for manager in making the right strategies, policies and activities based on external environment dynamics factors for getting best results. Management of manufacturing industries should continuously improve the elements of competitive advantage because these elements are important in getting company's goal. Additionally, managers' ability in facing the dynamics of external environment will be a key success factor to generate the best performance of manufacturing companies in the future.

This study has several limitations that are it was only conducted at manufacturing industry, and only in two industrial locations/areas. In addition, this study only examines the interaction of three variables in a conceptual model. Therefore, the future research is recommended to add more variables, research locations, and focused on the service industry so that the generalisation of the results is broader and it can be filled the limitation of this study.

## References

- Anil, A.P. and Satish, K.P. (2019) 'An empirical investigation of the relationship between TQM practices, quality performance, and customer satisfaction level', *International Journal of Productivity and Quality Management*, Vol. 26, No. 1, pp.96–117, DOI: 10.1504/IJPM.2019.096993.
- Asad, M., Chethiyar, S.D. and Ali, A. (2020) 'Total quality management, entrepreneurial orientation, and market orientation: moderating effect of environment on performance of SMEs', *Paradigms; A Research Journal of Commerce, Economics, and Social Sciences*, Vol. 14, No. 1, pp.102–108.
- Barney, J. (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, Vol. 17, No. 1, pp.99–120.
- Brah, S. and Lim, H. (2006) 'The effects of technology and TQM on the performance of logistics companies', *International Journal of Physical Distribution and Logistics Management* [online] <https://doi.org/10.1108/09600030610661796>.
- Commander, S., Svejnar, J. and Tinn, K. (2008) 'Explaining the performance of firms and countries: what role does the business environment play?', *International Conference of UN-DESA and UNECE on "Strengthening Integration of the Economies in Transition into the World Economy Through Economic Diversification*, pp.2–4.
- David, F. and David, F. (2016) *Strategic Management: A Competitive Advantage Approach, Concepts and Cases*, Pearson-Prentice Hall, USA.
- Fahy, J. (2000) 'The resource-based view of the firm: some stumbling-blocks on the road to understanding sustainable competitive advantage', *Journal of European Industrial Training* [online] <https://doi.org/10.1108/03090590010321061>.
- Hair, J., Black, W., Babin, B. and Anderson, R. (2014) *Multivariate Data Analysis*, 7th ed., Pearson New International, USA [online] [https://doi.org/10.1007/978-3-319-01517-0\\_3](https://doi.org/10.1007/978-3-319-01517-0_3).
- Han, S., Chen, S. and Ebrahimpour, M. (2007) 'The impact of ISO 9000 on TQM and business performance', *Journal of Business and Economic Studies*, Vol. 3, No. 2 [online] <https://doi.org/10.1017/CBO9781107415324.004>.
- Ismail, A., Rose, R., Uli, J. and Abdullah, H. (2012) 'The relationship between organisational resources, capabilities, systems and competitive advantage', *Asian Academy of Management Journal*, Vol. 7, No. 1, pp.151–173.

- Jain, A. (2013) 'Learning by doing and the locus of innovative capability in biotechnology research', *Organization Science*, Vol. 24, No. 6, pp.1683–1700 [online] <https://doi.org/10.1287/orsc.2013.0821>.
- Janković, M., Mihajlović, M. and Cvetković, T. (2016) 'Influence of external factors on business of companies in Serbia', *Ekonomika*, Vol. 62, No. 4, pp.31–38.
- Kanapathy, K., Bin, C.S., Zailani, S. and Aghapour, A.H. (2017) 'The impact of soft TQM and hard TQM on innovation performance: the moderating effect of organisational culture', *International Journal of Productivity and Quality Management*, Vol. 20, No. 4, pp.429–461, DOI: 10.1504/IJPQM.2017.082831.
- Khan, S.Z., Yang, Q. and Waheed, A. (2019) 'Investment in intangible resources and capabilities spurs sustainable competitive advantage and firm performance', *Corporate Social Responsibility and Environmental Management*, Vol. 26, No. 2, pp.285–295.
- Kleynhans, E. and Swart, A. (2012) 'Spillover effects enhancing sales, production and competitiveness of South African manufacturers', *African Journal of Business Management* [online] <https://doi.org/10.5897/ajbm11.2836>.
- Krajewski, L., Ritzman, L. and Malhotra, M. (2013) *Operations Management*, Pearson Education Inc., UK.
- Kuznetsova, N.V. (2015) 'Tools for assessing the external environment of public catering enterprises: PEST analysis', *Socio-Sphere*, Vol. 3, No. 4, pp.25–31.
- Lakhal, L. (2009) 'Impact of quality on competitive advantage and organizational performance', *Journal of the Operational Research Society*, Vol. 60, No. 5, pp.637–645 [online] <https://doi.org/10.1057/palgrave.jors.2602601>.
- Machmud, S. and Sidharta, I. (2016) 'Entrepreneurial motivation and business performance of SMEs in the SUCI clothing center, Bandung, Indonesia', *DLSU Business & Economics Review*, Vol. 25, No. 2, pp.63–78.
- Machuki, V.N. and Aosa, E. (2011) 'The influence of the external environment on the performance of publicly quoted companies in Kenya', *Business Administration and Management (BAM)*, Vol. 1, No. 7, pp.205–218.
- Motohashi, K. and Yuan, Y. (2018) 'Corrigendum to "productivity impact of technology spillover from multinationals to local firms: comparing China's automobile and electronics industries"', *Research Policy*. Vol. 39, No. 6, pp.790–798 [online] <https://doi.org/10.1016/j.respol.2018.07.011>.
- Munizu, M., Damang, K., Hamid, N. and Sumardi, J. (2017) 'Improvement of firm performance, competitiveness, and quality culture through SCM practices and TQM practices at manufacturing industry in South Sulawesi, Indonesia', *International Journal of Economic Research*, Vol. 14, No. 15, pp.529–538.
- Munizu, M., Pono, M. and Alam, S. (2019) 'The impact of information technology application on supply chain integration and competitive advantage: Indonesian fishery industry context', *Quality – Access to Success*, Vol. 20, No. 169, pp.151–156.
- Najib, M. and Kiminami, A. (2011) 'Innovation, cooperation and business performance: some evidence from Indonesian small food processing cluster', *Journal of Agribusiness in Developing and Emerging Economies* [online] <https://doi.org/10.1108/20440831111131523>.
- Nguyen, M.H., Phan, A.C. and Matsui, Y. (2018) 'Supply chain management in developing countries: empirical evidence from Vietnamese manufacturing companies', *International Journal of Productivity and Quality Management*, Vol. 24, No. 4, pp.566–584, DOI: 10.1504/IJPQM.2018.093455.
- Njoroge, J., Ongeti, W., Kinuu, D. and Kasomi, F. (2016) 'Does external environment influence organizational performance? The case of Kenyan State Corporations', *Management and Organizational Studies*, Vol. 3, No. 3, pp.41–51.

- Nosratpour, M., Nazeri, A. and Soofifard, R. (2018) 'Study on the relationship between supply chain quality management practices and performance in the Iranian automotive industry', *International Journal of Productivity and Quality Management*, Vol. 23, No. 4, pp.492–523, DOI: 10.1504/IJPQM.2018.090262.
- Octavia, A., Sriayudha, Y. and Ali, H. (2020) 'Innovation capability and supply chain management: empirical study of Indonesian traditional herbal medicine product', *International of Journal Supply Chain Management*, Vol. 9, No. 1, pp.601–608.
- Pearce, J. and Robinson, R. (2013) *Strategic Management: Planning for Domestic & Global Competition*, McGraw-Hill/Irwin, New York, USA.
- Pérez, J.A.H., Geldes, C., Kunc, M.H. and Flores, A. (2019) 'New approach to the innovation process in emerging economies: the manufacturing sector case in Chile and Peru', *Technovation*, Vol. 79, No. 1, pp.35–55.
- Phan, A.C., Nguyen, H.T., Nguyen, K.B., Le, A.T.T. and Matsui, Y. (2020) 'Relationship between customer collaboration in supply chain management and operational performance of manufacturing companies', *International Journal of Productivity and Quality Management*, Vol. 29, No. 3, pp.372–396, DOI: 10.1504/IJPQM.2020.106009.
- Pono, M. and Munizu, M. (2020) 'The role of company competitiveness as mediation variable the impact of supply chain practices on operational performance', *Uncertain Supply Chain Management*, Vol. 9, No. 1, pp.125–132.
- Porter, M. (1998) 'The competitive advantage of nations: with a new introduction', *Harvard Business Review* [online] <https://doi.org/10.1016/j.technovation.2007.06.002>.
- Sandra, A. and Purwanto, E. (2017) 'The effect of external and internal factors on the performance of small and medium enterprises in Jakarta', *Business Management Journal* [online] <https://doi.org/10.30813/bmj.v11i1.623>.
- Sekaran, U. and Bougie, R. (2016) *Research Method for Business: A Skill Building Approach*, 7th ed., John Wiley & Sons Inc., USA.
- Sila, I. (2007) 'Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: an empirical study', *Journal of Operations Management*, Vol. 25, No. 1, pp.83–109 [online] <https://doi.org/10.1016/j.jom.2006.02.003>.
- Sulistyo, H. (2016) 'Innovation capability of SMEs through entrepreneurship, marketing capability, relational capital and empowerment', *Asia Pacific Management Review*, Vol. 21, No. 4, pp.196–203.
- Tan, J.J. and Litsschert, R.J. (1994) 'Environment-strategy relationship and its performance implications: an empirical study of the Chinese electronics industry', *Strategic Management Journal*, Vol. 15, No. 1, pp.1–20 [online] <https://doi.org/10.1002/smj.4250150102>.
- Vrontis, D. and Pavlou, P. (2008) 'The external environment and its effect on strategic marketing planning: a case study for McDonald's', *J. for International Business and Entrepreneurship Development*, Vol. 3, Nos. 3–4, pp.289–307 [online] <https://doi.org/10.1504/jibed.2008.019163>.
- Wernerfelt, B. (1984) 'A resource-based view of the firm', *Strategic Management Journal*, Vol. 5, No. 2, pp.171–180 [online] <https://doi.org/10.1002/smj.4250050207>.
- Wheelen, T. and Hunger, J. (2012) *Strategic Management and Business Policy Toward Global Sustainability*, 13th ed., John Wiley & Sons Inc., USA.
- Wong, W.P., Ahmad, N.H., Nasurdin, A.M. and Mohamad, M.N. (2014) 'The impact of external environmental on business process management and organizational performance', *Service Business*, Vol. 8, No. 4, pp.559–586.
- Wu, K.J., Tseng, M.L., Chiu, A.S. and Lim, M.K. (2017) 'Achieving competitive advantage through supply chain agility under uncertainty: a novel multi-criteria decision-making structure', *International Journal of Production Economics*, Vol. 190, No. 3, pp.96–107.