

Analysis of the Effect of Innovation Strategies on Product Innovation Performance and Organizational Learning in SMEs in South Tangerang City

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The objective of this paper is to analyze the impact of innovation strategy on organizational learning and product innovation performance in food and beverage SMEs in Indonesia. Similar investigations of the impact of innovation strategy on organizational learning and product innovation performance have been done in manufacture industry abroad. The prior research carried out has not been able to be generalized, and has been able to determine whether it can be applied in other industries and other countries. Some adaptation of indicators, both number and data construct, is needed. A structural equation modelling analysis was conducted on the survey data collected from medium-scale food and beverage SMEs in South Tangerang, Indonesia. The results reveal that innovation strategy is positively related to product innovation performance and organizational learning in SMEs in South Tangerang.

Key words: *Innovation; Innovation Strategy, Product, New Product Development, Product Innovation; Product Performance, Organizational Learning.*

Introduction

In business, the presence of competitors forces business people to act to ensure their products to remain choice of consumers'. In the current era of globalization, competitors are not only local but are also regional and international. Innovation is a way to build and develop a company's products so as to differentiate them from competitors. In general, innovative business people can create a competitive advantage because they can exploit and enhance their core capabilities in unique and superior ways (David & David, 2017; Ali, Lazim, &

iteng, 2019). Companies need to conduct market research to identify consumer desires and expectations as the first step in their product development. Product innovation is a key ways that business people develop their business (Lundvall & Vinding, 2004; Sari & Wahyuni, 2013).

Small and Medium Enterprises (SMEs) have a strategic function in the national economy, especially in South Tangerang City. For the national economy to continue to grow, Small and Medium Enterprises (SMEs) must also continue to grow and develop. For this reason, Small and Medium Enterprises (SMEs) must be able to stand out in the market and can supply as much product as the market, in other words, Small and Medium Enterprises (SMEs) must implement innovation strategy.

The objects of this research are Food and Beverage SMEs in South Tangerang City, Indonesia and the aim is to analyze whether the innovation strategy (Market Pull and Technology Push) in these SMEs influence Organizational Learning and Product Innovation Performance as well as Organizational Learning influences Product Innovation Performance. The research is expected to convince Food and Beverage SMEs about the need for increasing knowledge, experience and expertise to allow them to then increase company competitiveness through implementing innovation strategies.

Literature Review

Product Innovation Performance

Product innovation performance, according to Menguc & Auh (2010), is sustainable organizational performance as measured by financial performance and overall project performance from the innovation process. Financial performance is related to organizational financial benefits due to the market success of new products and the level of customer satisfaction (Menguc & Auh, 2010; Tohidi & Jabbari, 2012a, 2012b). Project performance, on the other hand, is related to the internal efficiency of the innovation process. Project performance is defined as the total effort invested by the organization in the innovation process and expressed through the speed of innovation, quality of the final product, and efforts to reduce overall costs.

Innovation strategy

Innovation is transformation in organizations. It is an interaction to change the environment or as a process to anticipate environmental influence, reach competitive advantages and improve company performance improvement as well (Gomes & Wojahn, 2017; Hult, Snow, & Kandemir, 2003). Kim & Lee (2009) and Wang & Wang (2012) state that innovation is a knowledge-intensive organizational effort that depends on group learning and individual

activities as a whole. According to Chidamber et al. (1993), the origin of innovation can be a technology push or market pull. According to Lubik et al., (2012) and Nguyen & Pham (2017), technology push and market pull are two distinct types of innovation strategy.

Organizational Learning

According to Daft & Weik (1984), organizational learning is the knowledge between the actions and environment of the organization. Organizational learning is the ability and capacity of an organization to develop and disseminate knowledge in organizations (Hussain & Yazdani, 2013; Maroofi, 2017; Zhang, Yu, & Shen, 2017). Organizational learning is a climate for learning orientation, system orientation, dissemination orientation, knowledge acquisition, and information sharing (Hussain & Yazdani, 2013; Teo & Wang, 2005; Zehir, Karaca, & Başar, 2018). Almost all researchers agree with defining organizational learning as changes that occur in organizations where knowledge is closely related to experience (Aksoy, 2017; Fiol & Lyles, 1985). Knowledge includes facts or declarative knowledge, procedural knowledge or skills, and routines. Similarly, Pentland (1995) and Laforet (2008) define organizational knowledge as organizational competence and capacity.

Methods

Data and Sample Selection

The research was conducted by distributing questionnaires to SMEs in South Tangerang City. The population studied in this research is 12,438 Small and Medium Businesses in South Tangerang City. This study used questionnaires and a Likert scale for measuring the responses. The data obtained was analyzed using SPSS 23 for statistic testing and Amos 23 for SEM models. Distribution of this questionnaire was done by distributing copies of the questionnaire in the form of softcopy or hardcopy. In responding to the questions posed in the questionnaire, the response scale is made from 1 to 5 (Martín-de Castro et al. 2012; Sujarweni, 2014).

There is a minimum requirement for the data points for SEM analysis to make the structural model over identified. According to Byrne (2010), structural model will be over identified if the number of the data point is equal to equation (1)

$$p (p + 1) / 2 . \quad (1)$$

Where p is the total number of observable variable.

Hypothesis

The hypotheses is a temporary answer to the formulation of input to be studied as a demand to solve problems and to find the real answer. The hypotheses must be tested and verified. The research hypotheses are as follows:

- H1: technology-push influences project performance;
- H2: technology-push influences commercial performance;
- H3: market-pull influences project performance;
- H4: market-pull influences commercial performance;
- H5: technology-push influences organizational learning;
- H6: market-pull influences organizational learning;
- H7: organizational learning influences project performance;
- H8: organizational learning influences commercial performance.

Measurement

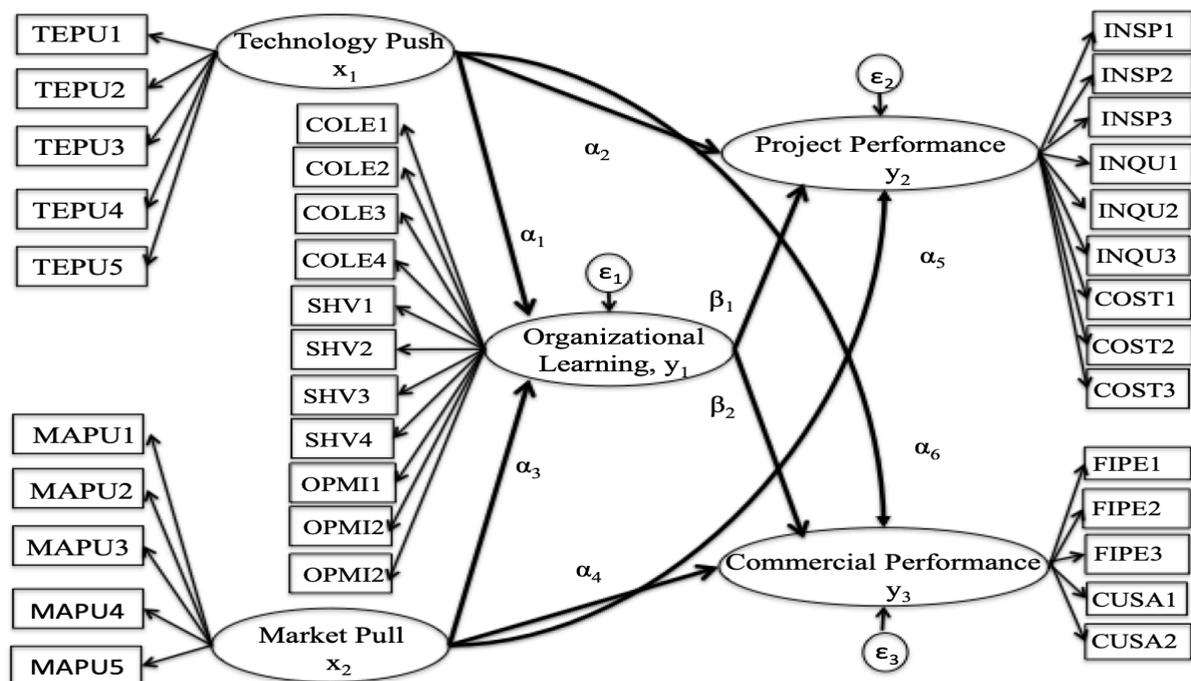


Figure 1. Measurement Model of Research Framework

The author uses complete SEM models as in Figure 1. Technology Push and Market Pull are exogenous variables and are given x_1 and x_2 notations, respectively. Organizational Learning, Project Performance and Commercial Performance are endogenous variables and are given notations y_1 , y_2 , and y_3 , respectively. For each latent variable, the observable variable is also described. α_1 to α_6 are regression coefficients of the exogenous latent variable to endogen, while β_1 and β_2 are regression coefficients of the endogenous latent variable to endogen. These eight coefficients are linear and can be compared to a linear regression equation. Next,

we will see that the relationship between the latent variable of the model can be structured to 3 equations where the coefficient of this equation explains the quantitative relation between the variables in one structured equation and additionally residual (error) of endogenous variables (ϵ_1 to ϵ_3) is included. This also tests the hypotheses of the relations that are being analyzed.

The model can be described using three mathematical notations. See equation (2) for Structural Model 1, equation (3) for Structural Model 2 and equation (4) for Structural Model 3.

$$y_1 = \alpha_1 x_1 + \alpha_3 x_2 + \epsilon_1 . \quad (2)$$

Where y_1 is *Organizational Learning*, x_1 is *Technology-Push* and x_2 is *Market-Pull*.

$$y_2 = \alpha_2 x_1 + \alpha_5 x_2 + \beta_1 y_1 + \epsilon_2 . \quad (3)$$

Where y_2 is *Project Performance*, x_1 is *Technology-Push*, x_2 is *Market-Pull* and y_1 is *Organizational Learning*.

$$y_3 = \alpha_6 x_1 + \alpha_4 x_2 + \beta_2 y_1 + \epsilon_3 . \quad (4)$$

Where y_3 is *Commercial Performance*, x_1 is *Technology-Push*, x_2 is *Market-Pull* and y_1 is *Organizational Learning*. $\alpha_1 \dots \alpha_6$ and $\beta_1 \dots \beta_2$ are coefficients, $\epsilon_1 \dots \epsilon_3$ are residual error.

Results and Discussions

Statistical Analysis

Statistical Data Test

Before conducting the SEM analysis, the collected respondent data is tested statistically. Testing is done using a small sample data (50) at first and then proceeds to use larger sample data (300)(Adam, 2018). The first step of the small data test is to ensure that the raw data is reliable and meets the requirement of basic assumption (Kok & Biemans, 2009; Tabachnick & Fidell, 2001). The second small data test is a validity test, and the third small data test is reliability test.

The validity test finds that some of the indicators of the latent variable have a disability. This shows that not all indicators used are suitable for measuring the latent variable. In this research, invalid indicators are taken out from the construct data based on discussion with some respondents. All data constructs have $KMO > 0.5$, $MSA > 0.5$, Factor Loading > 0.7 , and Communalities > 0.5 . All indicators are now relevant to measure the latent variable

(Adam, 2018). Tests will be conducted on all latent variables using Cronbach's Alpha. All indicators belonging to one latent variable are tested one by one. All latent variables have Cronbach's alpha greater than 0.7. This means that all latent variables are reliable and the corresponding indicators can be used to measure the latent variable with similar results and under consistent conditions (Adam, 2018).

A Multicollinearity test calculates the total score of each latent variable for each respondent. The total score (sum of Likert score of each indicator from the questionnaire) of latent variable Market Pull is named MAPUTOT. The total score of latent variable Technology Push is called TEPUTOT. The total score of latent variable Organizational Learning is named ORLEARNTOT. The total score of the latent variable Commercial Performance is named COMPERTOT. The overall rating of the latent variable Project Performance is called PROPERTOT.

Referring to the 3 Structural Equations introduced before, it is found that Commercial Performance (COMPERTOT) depends on Market Pull (MAPUTOT), Technology Push (TEPUTOT), and Organizational Learning (ORLEARNTOT). So verification needs to be undertaken to confirm that all independent variables of Commercial Performance do not correlate with each other.

Table 1. Multicollinearity test for Project Performance with its Independence variable

Coefficients for dependend variable COMPERTOT ^a			Coefficients for dependend variable PROPERTOT ^a		
Model	Collinearity Statistics		Model	Collinearity Statistics	
	Tolerance	VIF		Tolerance	VIF
1 (Constant)			1 (Constant)		
MAPUTOT	.608	1.646	MAPUTOT	.608	1.646
TEPUTOT	.603	1.657	TEPUTOT	.603	1.657
ORLEARNTOT	.639	1.565	ORLEARNTOT	.639	1.565

Coefficients for dependend variable ORLEARNTOT ^a	
Model	Collinearity Statistics
	VIF
1 (Constant)	
MAPUTOT	1.471
TEPUTOT	1.471

SEM Test

This test is conducted to determine whether the indicators can reflect the latent variables or not. The construct validity and convergence validity tests measure the model fit. Each indicator has SLF > 0.7, P < 0.05 and CR-Score > 1.96. Statistical tests and SEM tests have similarities.

To examine how reliable and consistent the data is, the formula of Construct Reliability, see equation (6), is applied.

$$\frac{(\sum \text{Standard Loading})^2}{(\sum \text{Standard Loading})^2 + \sum e_j} \quad (6)$$

Each CR-Score of Latent Variable is between 0.6 and 0.8. This means that the reliability of data is acceptable. Statistical tests and SEM tests have similarities (Adam, 2018).

The critical decision in structural model fit, or hypothesis testing is checking the P-value with significant level (alpha) at 0.05 or comparing the critical ratio (CR) score with t-table = 1.96 (Adam, 2018). The result of structural model testing is in table 2. Each hypothesis, as shown in table 2, has SLF < 1, P-Value < 0.05 and CR Score > 1.96. All null hypotheses are rejected. It is proved that all hypotheses are significant (Adam, 2018).

Table 2. Result of Structural Model Testing

Hypothesis	SLF	P-Value	CR-Score	Hypothesis Conclusion
H1	.302	0.000	3.334	Significant
H2	.458	0.000	2.974	Significant
H3	.308	0.000	3.419	Significant
H4	.633	0.000	5.109	Significant
H5	.958	0,000	3.107	Significant
H6	.356	0.000	3.912	Significant
H7	.358	0.000	4.488	Significant
H8	.541	0.000	6.926	Significant

Hypothesis Testing

Hypothesis Result H1

Based on questionnaire data, SMEs that carry out innovation strategies with technology push have excellent project performance. SMEs that realize the importance of R & D and always want to use new technology have excellent product quality. For example, SMEs that use the latest technology in food production and packaging processes have better product quality than other SMEs, and the product is also healthier and more environmentally friendly.

Hypothesis Result H2

Based on questionnaire data, SMEs that carry out a strategy of innovation with technology push have excellent commercial performance. SMEs that realize the importance of R & D and always want to use new technology excel in achieving product sales targets and

ultimately achieve profit targets. For example, SMEs that use the latest technology in food production and packaging processes tend to be more in demand by customers because of their quality and competitive prices which then leads to more purchases of the products and ultimately allows product sales target and profits to be achieved.

Hypothesis Result H3

Based on questionnaire data, SMEs that carry out innovation strategies with market pull have excellent project performance. SMEs that realize the importance of meeting changing customer needs based on occurring trends excel in terms of time to make new products and market targets. For example, SMEs that always see market trends and use them as an opportunity to be able to meet customer needs that are not currently met in the market are more prone to target the making of new products and thus meet market targets and demands in time.

Hypothesis Result H4

Based on questionnaire data, SMEs that carry out innovation strategies with market pull influence commercial performance. SMEs that realize the importance of meeting customer needs that change based on occurring trends excel in terms of product sales and also have decreased complaints about products sold. For example, SMEs that always see market trends and use them as an opportunity to be able to meet customer needs that are currently not met in the market then achieve more product sales and profits and have reduced complaints about their products.

Hypothesis Result H5

Based on questionnaire data, SMEs that carry out a strategy of innovation with technology push influence organizational learning. SMEs that realize the importance of using technology in making new products commit to the continuation of learning. For example, SMEs that always use technology to improve product quality and reduce production prices are able to learn new techniques and apply them in the production process so as to add organizational capabilities.

Hypothesis Result H6

Based on questionnaire data, SMEs that carry out innovation strategies with market pull influence organizational learning. SMEs that realize the importance of meeting changing customer needs, based on occurring trends, influence the ability of organizations to learn new things and receive input from customers. For example, SMEs that always see market trends and use them as opportunities to be able to meet customer needs that have not yet been



fulfilled in the market, continue to try to look for data and translate market needs so that the organization's knowledge increases and their organizational commitment to continue learning also increases.

Hypothesis Result H7

Based on questionnaire data, SMEs that conduct organizational learning influence project performance. SMEs that commit to the continuation of learning are able to finish their products on time, with good quality, and at affordable prices. For example, SMEs that have knowledge and learn new things are always trying to find new ways to respond to customer needs on time and at low cost but whilst continuing to maintain excellent product quality.

Hypothesis Result H8

Based on questionnaire data, SMEs that carry out organizational learning influence commercial performance. SMEs that commit to the continuation of learning are able to read trends and translate customer needs to allow their customers to be more satisfied and increase product purchases by customers. For example, SMEs that have the knowledge and ability to see trends will make products that are driven by customer need so that then these customers are satisfied with their products purchased, make fewer complaints about the products and increase their product purchases.

Conclusions

Data was collected from 300 medium-scale food and beverage SMEs in South Tangerang City, who employ more than two people in their business as respondents, and the data was analyzed using the SEM method for all variables. It is concluded that those food and beverage SMEs in South Tangerang City who are applying innovation strategies and are continuing learning have high commercial and project performance. With this result, food and beverage SMEs in South Tangerang City can be convinced to innovate and continue their learning so as to allow them to stand out amongst their competitors.



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