Is Design Thinking the Bridge to the Success of Product Innovation

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Abstract. Innovation strategy is one of the tools to become a sustainable competitive advantage of a company in an industry. Creating something new is one of the ways to attract more customers. It is not taken into account by itself but there must be prerequisite condition to reach that to avoid new product failure in a market. Design thinking as a developed-tool in problem-based solution can help the business owners to create new products. However, this action does not take for granted for business runner to obtain high performance of their product innovation, if they do not have well understanding of their market-orientation in creating their new offerings. Small Medium Enterprises try to make new products for their market, unfortunately the new innovation products is not always accepted by their market. So that, it becomes a problem for them and needs a solution. To evoke this problem, this study aims to know whether variable of market orientation influence on innovation performance using design thinking as mediating variable. This research used multivariate statistic analysis, using statistical analysis by SEM-PLS with regression and mediation test. Taking a survey by 54 respondents those who have their own business, having different kinds of business such as fashions, culinary, and crafts which are spread in Yogyakarta Province. The result of this study describes that customer orientation has positively direct effect of on design thinking, the stronger the firm has customer oriented the more design thinking applied by them. The second finding revealed that design thinking is positively effect on innovation performance, the better design thinking implemented in a firm the better for innovation performance. Furthermore, design thinking as mediating variable has positively indirect effect which relate between market orientation towards innovation performance.

Keywords: Design Thinking, Innovation Performance, Market Orientation.

1 Introduction

Small Medium Enterprises need to boost economic condition by innovation [1]. To win the market competition, the owners of the business can not solely depend on pricing war, otherwise they need to escape from that tight competition to product innova-

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tion [2]. By using product innovation strategy, company is not only capable in maximizing their profit but also in expanding their market space [3]. In concordance with that, company must orient to its market before making product innovation [4]. This relates with product matching of customers wants. Nevertheless, to create new product and successfully marketed is not a simple matter [5]. This needs design driven process in realizing this product innovation in value creation [6]. So that the products which are offered to market can be absorbed by market. This strategy is said successfully if this product innovation can contribute positively to company and stakeholders as well [7].

One of systematic process in developing product innovation by using 'Design Thinking' approach. Design thinking, defined as a design-based approach to solving human problems are now being used more and more for innovation [8]. This relates with new product development strategy. this strategy is not permanent otherwise it needs to be revised follow the changing of the market consequently the content od design also need to be adapted [9]. Before a company create new product, it is necessary for a company to have proper information about the customer wants. it can be developed by exploring what the problems are. Then those can be defined in a simple question of the matter. Further the company can have a kind of brainstorming among internal stakeholder to some ideas of a solution of the problem faced by target market. These ideas can be synthesized to one proper idea. This idea can be made in a prototype. This prototype needs to be revised, may be more than once, until it is considered as the best before making commercially. Last step, test the new product to target market, in this phase it is possible to have input from market to make the new product more perfect.

Having an adequate information from customer before creating new product is necessary. Information from customer has influence on product innovation [10]. However, it is not enough, information from external can not stand alone to get a successful innovation. The firm need to process the information well to reach a proper product. So, a systematic process in new product development is important [11]. The process in creating new product can through in many types. It collaborates between external and internal factors, like Audretsch et al., (2023) found in his study that collaboration with customer, supplier even with competitor can help innovation process for small medium enterprises. One of the systematic ways is design thinking. This study tried to reveal the influence of design thinking in innovation performance.

2 A Theory and hypothesis

2.1 Market orientation and Innovation performance

According to [13] market orientation is the condition of current market at this moment and company need to keep in touch to get much information that is considered important for company in doing activities in now situation. To relate with market orientation, market sensing is a part that can not be separated in getting information, as it is a input in doing innovation [14]. While [15] mentioned in his paper some indicator of market orientation including: customer orientation, competitor orientation, respon-

siveness and instructional coordination. The finding of research by Kamarulzaman et al., (2021) shows that customer orientation has strong relationship with part of marketing activities like product innovation. Furthermore, Udriyah et al., (2019) in her research also found that market orientation and innovation give contribution to business performance as well. Type of innovation can be various, not only in product or process but also can be in the form of behavior, system business model [18]. However, both market orientation and innovation it is possibly gets a sequential process, that is why this study purpose the hypothesis 1 as below:

H1: Market orientation positively influence towards Innovation performance

2.2 Market orientation and Design thinking

Knowing the situation of the market well, is not for granted that the company will get a success in doing its innovation. On the contrary, it can be fail if it can not catch the information from the market properly and process it in right way.[19] in his book said that listening to market wants is crucial. Meanwhile design thinking is one of systematic ways to create new product offering. This approach has several steps to be conducted, the one which is developed by Stanford d' School has five steps, those are: First, empathize: examining user requirements and problem definition, second, define: the objective is to bring clarity and focus to the task by utilizing all the knowledge and understanding acquired during the prior empathy stage, third, ideate : about coming up with lots of different ideas and possibilities that eventually turn into practical solutions, fourth, prototype: the purpose of prototypes is to provide a tangible object to evaluate, rather than to achieve perfection, and to draw attention to ideas that may otherwise remain in the abstract and the last step is test : the purpose of the testing phase is to continuously receive feedback from users in order to enhance the product as quickly as possible. The goal of the test step is to keep getting to know the user better, see how they use the product, and figure out what could make it better for them [20].

So, for hypothesis 2 of this research is:

H2: Market orientation positively influence towards Design thinking

2.3 Design Thinking and Innovation performance

[21] found in his study that design thinking give impact to project performance. Whereas [8] got the result from their study that discovery, ideation and experimentation which those are parts of design thinking activities influence on new product and service performance. As design thinking in this research follows the concepts which developed initially by Stanford d school that consist of five phases: empathize, define, ideate, prototype and test [22]. Still have similar paradigm in creating new product development that ideas from user of the product gives high impact than from company's idea [23]. Then, the hypothesis 3 as follows:

H3: Design Thinking positively influence towards Innovation Performance

3 Method

3.1 Research type

This study used quantitative approach, data is collected by survey. It is correlational, which elaborate the correlatioan between independent variable and dependent variable., in which the researcher use statistical correlation to discribe and measure the association between two or more variables [24]. this study tried to elaborate the correlation between variable market orientation towards design thinking, correlation between variable design thinking towards innovation performance and market orientation toward innovation performance. This statistical correlation use partial least square-srtuctural equation modeling (PLS-SEM).

3.2 Sample

The growth of Small Medium Entreprises especially in Yogyakarta Province is getting higher recently. Many kinds of business which are conducted by them, in a various products, even some of them has exported to other countries. Some of the SME become the sample of this study. Total sample of this study is 54 business owners. Samples of this study are the owner of the micro as many as 50,9%, small enterprises is 40% and medium enterprises is 9,1%, that spread in Yogyakarta Province from five regencies. Mayority is from Sleman 36,4%, second rank is Bantul is represented by 21,8%, the third Yogyakarta city is 18,2%, Kulonprogo is the forth in number by 16,4% and the last Gunung Kidul is 7,3%. Having many kinds of business, the three biggest number from culinarinary is the most, by 49,1 and then handicraft and fashion have same percentage by18,2%, and the rest are from stalls, farms, laundries, computer and networking.

3.3 Measuring and collecting data

The reseacher use Likert scale to measure items made, having 5 scale with 5 categories, the lowest score 1 for absolutely disagree, score 2 for disagree, score 3 for less disagree, score 4 for agree and the highest score 5 for absolutely agree. For Market orientation variable has 10 items, Design thinking consists of 8 items and for innovation performance are measured with 8 items. The survey is conducted through google form.

3.4 Data Analysis

After data collected, then it was analysed by SEM-PLS. There are two kinds of data analysis in this study, those are outer model and inner model. Outer model is used to test the validity of the measurements. This validity based on the result of outer loadings for each of measurement. Validity determination of each attribute based the the value of outer loadings, if the value of each measurement bigger than 0,7 means that it is valid on the contrary if the value of it less than 0,7 means that the item is not valid

[25]. Meanwhile the reliability of the constructs were tested by Cronbach's Alpha and value of Average Variance Extracted (AVE). The standard determination of the reliability of the construct in this study based on the value of AVE, if the value bigger than 0,5 denote valid and conversely if the value less than 0,5 indicate invalid [26]. Secondly, inner model, this model does not only show the result of influence between independent variable and dependent variable but also the role of mediating variable. It reflects on path coefficient and specific indirect effects. Standard value to decide whether the correlation of the variables positively significant based on P value. Determination of significance based on P value with alpha 0,05% it will be positively significant if P Value <0,05 and conversely if the P Value > 0,05 means the correlation is insignificant.

4 Result

4.1 Outer model

To know the validity of the indicators and reliability of the variable market orientation, design thinking and innovation performance in this study use the result of outer loadings from PLS analysis. The validity of the indicators are based on convergent validity, the result shows that all indicators have score > 0,5 but below 0,7, it means that every item has fullfil validity. As shown in table belows:

Outer Loadings

Matrix

	X	Y	Z
X1	0.697		
X10	0.806		
X2	0.676		
X3	0.805		
X4	0.710		
X5	0.682		
X6	0.786		
X7	0.517		
X8	0.620		
X9	0.813		
Y1		0.648	
Y2		0.681	
Y3		0.790	
Y4		0.560	
Y5		0.723	
Y6		0.812	
Y7		0.768	
Y8		0.797	

Z1			0.732
Z2			0.783
Z3			0.879
Z4			0.853
Z5			0.676
Z6			0.752
Z7			0.814
Z8			0.694

Fig. 1. Outer loading

From data analysis of validity and reliability, the result indicates the value of outer loading of the measurements the highest score is got by item Z3 having value 0,879 and the lowest value of outer loading by X7 getting value 0,517. It means all indicators of market orientation variable, design thinking variable and innovation performance are valid, because the value still > 0,05. Meantime, for reliability of construct variable stated reliable if the value of cronbach's Alpha > 0,70. From the table showed below, all variable market orientation, design thinking and innovation performance are reliable because they have value > 0,70. It were supported by the result of rho_A value, composite reliability value, and also AVE value. From rho_A value showed > 0,07 of all variables, means all variables valid. That is supported with composite reliability and AVE value by > 0,07 and for AVE value > 0,05 that indicates all variables reliable. The result is discribed as follows:

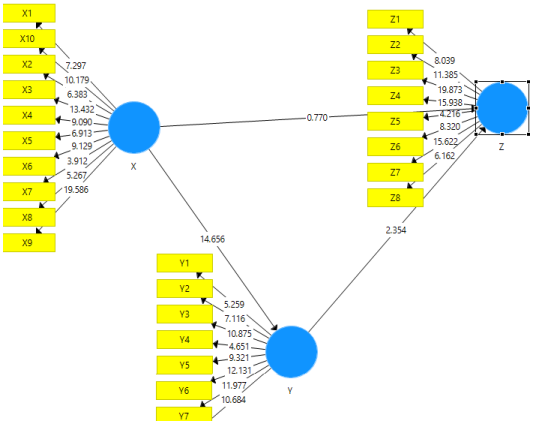
Construct Reliability and Validity

Matrix	Cronbach's Alpha	rho_A	Composite Reliability	Average
	Cronbach's Al...	rho_A	Composite Rel...	Average Varian...
X	0.893	0.908	0.912	0.514
Y	0.869	0.873	0.898	0.528
Z	0.904	0.912	0.923	0.602

Fig. 2. Construct Reliability and Validity

4.2 Inner model

To kow a significancy rate or probability of direct effect, indirect effect and total effect of relationship among variables, will use from bootstrapping of PLS. This model indicate the correlation between market orientation variable toward mediating variable design thinking as Hypothesis 1, correlation between design thinking against innovation performance as hypothesis 2 and correlation between market orientation towards innovation performance as hypothesis 3.



Path Coefficients

Matrix | Path Coefficients

	X	Y	Z
X		0.819	0.193
Y			0.575
Z			

Indirect Effects

Total Indirect Effects | Specific ndirect Effects

	X	Y	Z
X			0.470
Y			
Z			

Total Effects

Matrix

	X	Y	Z
X		0.819	0.663
Y			0.575
Z			

Path Coefficients

Mean, STDEV, T-Values, P-Val... | Confidence Intervals | Confidence Intervals Bias Cor... | Samples

	Original Sampl...	Sample Mean (...	Standard Devia...	T Statistics (|O/...	P Values
X -> Y	0.819	0.826	0.056	14.656	0.000
X -> Z	0.193	0.213	0.250	0.770	0.441
Y -> Z	0.575	0.565	0.244	2.354	0.019

Total Effects

Mean, STDEV, T-Values, P-Val... | Confidence Intervals | Confidence Intervals Bias Cor... | Samples

	Original Sampl...	Sample Mean (...	Standard Devia...	T Statistics (|O/...	P Values
X -> Y	0.819	0.826	0.056	14.656	0.000
X -> Z	0.663	0.677	0.088	7.543	0.000
Y -> Z	0.575	0.565	0.244	2.354	0.019

Fig. 3. Regression output

5 Discussion

From the result of total effects analysis, found that H1 Market orientation positively influence towards Design thinking also having P value 0,000, it means hypothesis supported in this research this support previous study by Canto Primo et al., (2021). From market orientation, the firm will get many information not only just from its customers but also from its competitors, this information then disseminate into internal part of firm functions. So, the information can be useful if the firm use it in decision before making a new product development. For H2 Market orientation positively influence towards Innovation performance is accepted, having P value 0,000 means that it is positively significant, this support the previous study by Taghvaee & Talebi (2022) which stated that the firm that have orientation to market include its customer will get benefit for increasing of innovation performance. Innovation of new product based on the information about what the customer wants, so the firm can make the suitable product like the market wants. H3 Design Thinking positively influence towards Innovation Performance also accepted having P value 0,019 below 0,05, this support the previous research by [8], which proof design thinking has robust correlation with innovation performance, so H3 is supported.

6 Conclusion

From the result of this study can be inferred that market orientation has corelation with innovation performance, so the small medium entreprises need to corcern for information from its target customer to increase the performance of their new offerings. This can be supported by using design thinking process before the firm create new product development. Design thinking can help the firm systematically in making new products, so having this method of thinking the failure of new offerings to target customer can be minimized.

This study can be as an insight for the micro, small and medium in doing innovation strategy. Innovation strategy can be done in a right way by using a proper method, one of them is design thinking.

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