

# Digital Transformation and Its Impacts on Sustainable Competitive Advantage: The Moderating Role of Entrepreneurial Innovation

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## Abstract

*This research aims to analyze the effect of dynamic capabilities and market opportunities towards digital innovation and analyze the moderating effect of technological disruption towards the influence of dynamic capabilities and market opportunities on digital innovation. This research will be conducted as quantitative research. The questionnaire will be developed to measure all of the variables and will be distributed to the senior staff of the digital business companies. Four hypotheses will be tested. This research will contribute to the empirical evidence of the effect of dynamic capabilities and market opportunities towards digital innovation and analyze the moderating effect of technological disruption on the influence of dynamic capabilities and market opportunities on digital innovation.*

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## Keywords:

*technological disruption, dynamic capabilities, market opportunities, digital innovation*



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## **INTRODUCTION**

In the last few years, there is an important issue regarding business disruption that is digital transformation. Digital transformation embraces the great alterations happening in this world. Vial (2019:1) define digital transformation as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies”. Industry 4.0 which involve internet of things, artificial intelligent, robotics, AR/VR, cloud computing, data analytics and so on, affects the massive of internet usage in almost all faced of life. Firms have to adapt the way to conduct the business process. Firms have to discover techniques to innovate with these conditions by formulating the strategies that contain the consequences of digital transformation and motivate better working performance (Hess et al., 2016: p. 123).

Current research has contributed to rise thoughtful of specific characteristics of the digital transformation uniqueness. In line with previous findings on IT-enabled transformation, research has shown that technology itself is only part of the complex puzzle that must be solved for organizations to remain competitive in a digital world. Strategy (Bharadwaj et al., 2013; Matt et al., 2015) as well as changes to an organization, including its structure (Selander & Jarvenpaa, 2016 p. 321), processes (Carlo et al., 2012), and culture (Karimi & Walter, 2015) are required to yield the capability to generate new paths for value creation (Svahn et al., 2017). Notwithstanding these contributions, we currently lack a comprehensive understanding of this phenomenon (Gray and Rumpe, 2017; Kane, 2017c; Matt et al., 2015) as well as its implications at multiple levels of analysis. The present work therefore proposes to take stock of current knowledge on the topic by studying the research question: “What do we know about digital transformation?”

To analyze the influence of value creation towards digital transformation, resource leveraging towards digital transformation, dynamic capabilities towards digital transformation, moderating influence of entrepreneurial innovation towards the influence of value creation on digital transformation, moderating influence of entrepreneurial innovation towards the influence of resource leveraging on digital transformation, moderating influence of entrepreneurial innovation towards the influence of dynamic capabilities on digital transformation, and to analyze the influence of digital transformation towards sustainable competitive advantage

## **LITERATURE REVIEW**

### **Entrepreneurial Marketing**

Entrepreneurial marketing is the important construct in managing company resources for creating innovation performance to achieve a competitive advantage. It is an interface between two different management domains. Both management domain are entrepreneurship and marketing. Drucker (1985 p. 389) develops these earlier ideas by defining an entrepreneur as someone who searches for change, but responds to it in an innovative way, exploiting it as an opportunity.

Zahra, Filatotchev, and Wright (2009: p. 343) describe an entrepreneurial characteristics, such as opportunistic, innovative, proactive and restless. Entrepreneurial marketing (Morris, et al., 2002; Bjerke and Hultman, 2002: p. 263) is defined as the proactive identification and

exploitation of opportunities for acquiring and retaining profitable customers through innovative approaches to risk management, resource leveraging and value creation. While Becherer, Haynes and Fletcher (2006 p. 32) describe entrepreneurial marketing is the marketing processes of companies in chasing opportunities in uncertain market and under limited resource conditions. Hills, Hultman, and Miles (2008 p. 56) propose entrepreneurial marketing (EM) is: "...a spirit, an orientation as well as a process of passionately pursuing opportunities and launching and growing ventures that create perceived customer value through relationships by employing innovativeness, creativity, selling, market immersion, networking and flexibility". Becherer, Helms, and McDonald (2012 p. 67) explain the 7 dimensions of entrepreneurial marketing. These are proactiveness, opportunity focus, calculated risk taking, innovativeness, customer intensity, resource leveraging and value creation. Jones and Rowley (2011 p. 98) develop further the concept of EM and suggest a conceptual model of EMO that draws from: MO, customer orientation (CO), entrepreneurial orientation (EO) and innovation orientation (IO).

MO refers to organizational culture (Narver & Slater 1990 p. 78) or a set of activities (Kohli & Jaworski 1990 p. 65). Market-oriented firms gather, share and respond to market intelligence about customers and competitors. One of the advantages for small firms is the easy access to vital, timely and inexpensive market information as they operate close to customers and markets (Zontanos & Anderson 2004 p. 90). This information allows them to make better informed marketing decisions (Zontanos & Anderson 2004 p. 98) and SMEs seem to be interested in it in order to differentiate their products, services and positioning (Keh et al. 2007 p. 100).

Jones and Rowley (2011 p. 109) suggest that customer orientation (CO) should be treated as a distinct component of EMO rather than a cultural element of MO. CO is defined to describe an organization-wide focus on assessing and meeting customer needs and to comprise customer understanding and customer satisfaction focuses (Appiah-Adu & Singh 1998 p. 56). Although marketing concept highlights customer relationships (Grönroos 1989 p. 78) they seem to be missing from the definitions of CO. That is why we modify the conceptual model of Jones and Rowley (2011 p. 89) and propose customer relationship orientation (CRO) in the place of CO and keep CO as the element of MO. Customer relationship oriented firm creates, develops and maintains committed, interactive and profitable relationships with selected customers (Camarero 2007 p. 90). Zontanos and Anderson (2004 p. 15) argue that the conceptual foundations of entrepreneurship and relationship marketing are very similar and that they share theoretical linkages such as value, centrality of individual, customer focus and communication.

EO captures entrepreneurial aspects of decision-making styles, methods and practices that can be described as, innovative, proactive and risk-taking (Wiklund & Shepherd 2005 p. 76). A great part of marketing in SMEs is driven by innovation (O'Dwyer et al. 2009 p. 67). Entrepreneurs are also often seen as specialists in risk-taking (Zontanos & Anderson 2004 p. 88). Furthermore, when successful entrepreneurs identify a way to use marketing to achieve competitive advantage they tend to quickly adapt to new opportunities and are not constrained by previously held strategies (Hills et al. 2008 p. 78). Although innovativeness is recognized as an element of EO, researchers have identified a distinct concept of IO. Sigauw et al. (2006 p. 65) define it to be a knowledge structure that promotes innovative thinking and facilitate successful development, evolution, and execution of innovations. The innovative behavior in SMEs is often demonstrated by the exploitation of an opportunity (O'Dwyer et al. 2009 p. 45) and those firms that practice EM are more opportunity driven than other enterprises (Hills et al. 2008 p. 89). Moreover, innovation has become an important source of competitive advantage for SMEs and they often compete in the markets by using a combination of invention and pioneering (O'Dwyer et al. 2009 p. 67).

### **Digital Transformation**

Since the purpose of any company is to turn a profit by meeting customer demands, it is crucial to understand how digitization affects the customer. Hughes (2016 p. 76) addresses some key changes in this changing customer behaviour. Not only are customers less forgiving of mistakes and less loyal to a single company, they are also more informed, communicate more with other customers and are forming ever higher expectations regarding digital service provision that spans across all channels and industries (Hughes, 2016 p. 89). To add to the increased demands from customers, companies are facing ever tougher competition due to globalisation (McAfee, Ferraris, Bonnet, Calm ejane, & Westerman, 2011 p. 70). Companies in all branches are feeling the pressure to go digital, and know that they need to do so quickly before they are left behind by innovative and digitally-focused competitors and new entrants (EY, 2013 p. 56).

### **Dynamic capabilities**

Dynamic capabilities have become a key topic in management research in recent years (Di Stefano, Peteraf and Verona, 2010; Di Stefano, Peteraf Verona, 2014; Easterby-Smith, Lyles and Peteraf, 2009 p. 54). In general, research on DCs is interested in how firms build and adapt their resource base to maximize organizational fit with the environment. One of the distinctive features of the DC perspective is the notion that such adaptation can be based on organizational routines - learned, repetitious behavioral patterns for interdependent corporate actions (Di Stefano et al., 2014; Helfat and Peteraf, 2003; Pierce, Boerner and Teece, 2002; Winter, 2003 p. 156). But if DCs are reflected by organizational change routines, how do firms build and adapt such routines? Some capabilities scholars have suggested that they do so by employing second-order DCs that operate on the firm's first-order DCs (Collis, 1994; Zollo and Winter, 2003 p. 114). Consequently, a distinction can be made between first-order DCs (routines that reconfigure the organizational resource base) and second-order DCs (routines that reconfigure first-order DCs).

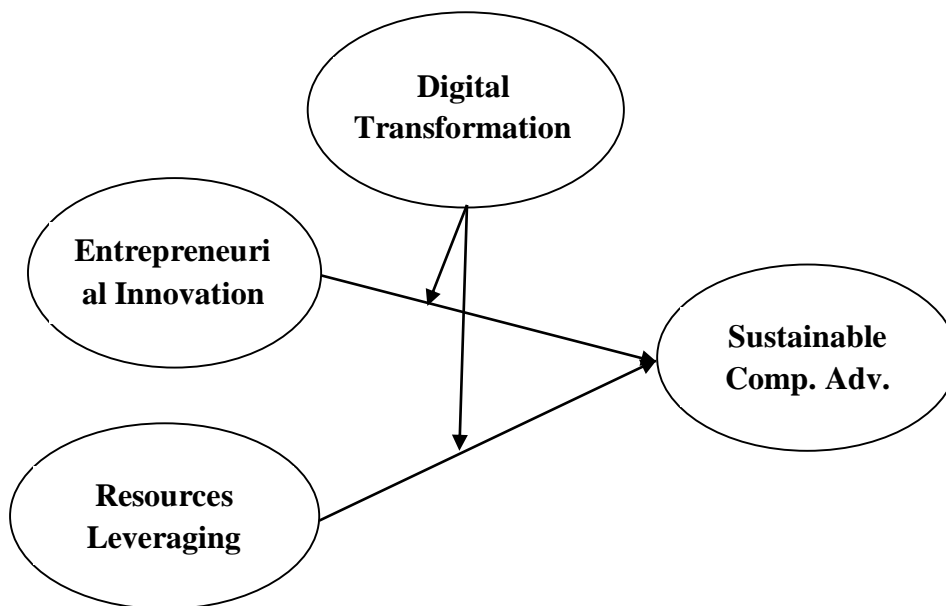
Introducing this distinction enhances theoretical precision by specifying what the organizational routine aims to change. Although this hierarchy of DCs seems to be generally accepted in the literature (e.g., Ambrosini, Bowman and Collier, 2009; Easterby-Smith et al., 2009; Easterby-Smith and Prieto, 2008; Robertson, Casali and Jacobson, 2012 p. 106), detailed knowledge of exactly how first- and second-order DCs are intertwined is still lacking. There is a dearth of empirical work investigating the role of second order DCs in conjunction with first-order DCs (Peteraf et al., 2013 p. 76).

### **Dynamic Capabilities and Competitive Advantage**

Since the seminal works by Teece et al. (1997 p. 89) and Eisenhardt and Martin (2000 p. 65), DCs have become and remained a central research area on knowledge and innovation. Despite the popularity, there are still several shortcomings, in particular the fragmentation of the literature (Arend and Bromiley, 2009 p. 68). A number of authors (e.g. Peteraf et al., 2013; Vogel and G uttel, 2013 p. 57) suggest that various conversations on DCs emerge that, although partly complementary, do not necessarily share a common theoretical grounding. The fragmentation of the field is visible in the diversity of definitions and conceptualizations of DCs (Ambrosini and Bowman, 2009 p. 108). We can usefully divide these conceptualizations into groups by classifying them along the lines of a distinctive desirable outcome, that is, successful adaptation

to environmental changes or the achievement of CA. A recent meta-analysis has shown that the empirical evidence for the relationship between DCs and CA is inconsistent (Pezeshkan, Fainshmidt, Nair, Lance Frazier and Markowski, 2015 p. 54). The initial purpose of Teece et al. (1997 p. 89) was to explore how firms can sustain a CA in highly dynamic environments. Accordingly, they conceptualized DCs as leading to 'sustainable' success. However, only some of the existing research follows this assumption today. The present paper therefore distinguishes between conceptualizations that include a distinct outcome, and those that do not. The group that argues for a distinct outcome consists of two sub-groups, which either argue for sustainability or not. Like Teece et al. (1997 p. 65), Wang and Ahmed's (2007, p. 35) approach belongs to the first group. They define DCs as "a firm's behavioral orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain CA". DCs help the development of "particular capabilities" (p.41), like creativity or innovativeness, which are more likely to improve performance and competitiveness.

Conceptual Model on this research consist three constructs. These are entrepreneurial marketing orientation and Resources Leveraging as independent variables. Sustainable Competitive Advantage is the dependent variable. While Digital Transformation is a mediating variable.



**Figure 1.**

*Conceptual Model of the Research*

Source: SmartPLS, 2020, Processed by Researchers

Resources are the company's assets either the tangible, intangible things and dynamic capabilities which is used to produce innovatively a product and/or a service that has value for its customers. Klingebiel and Rammerb (2011 p. 67) suggest a policy of allocating resources to a broader range of innovation projects increases sales of new products, especially if these are truly novel, i.e. new to the market. Managing resources consist managing human resources, financial resources, company reputation, business network, physical resources such as building, machineries and raw materials; capabilities and skill.

Entrepreneurial marketing is defined as Proactive identification and exploitation of opportunities for acquiring and retaining profitable customers through innovative approaches to risk management, resource leveraging and value creation (Morris, et al., 2002 p. 189). In this research, indicators of entrepreneurial marketing orientation are proactiveness, opportunity focus, risk taking, customer intensity, innovativeness, resources leveraging and value creation (Becherer, et al., 2012 p. 90). Previous research conducted by Hacıoglu G., Erenb S.S., Eren M. S., and Hale Celikkan H. (2012 p. 54) explain the finding about elements of entrepreneurial marketing that proactiveness, innovativeness, customer intensity, resource leveraging dimensions of entrepreneurial marketing are positively related with company performance. In this research, entrepreneurial marketing orientation have three dimensions. These are market orientation (MO), entrepreneurial orientation (EO) and innovation orientation (IO) (Jones and Rowley, 2011 p. 89).

## **METHODS**

### **Measurement**

In this research, author aim to test the influence of entrepreneurial innovation towards the effect of value creation, resource leveraging and dynamic capabilities on digital transformation and also its impact on sustainable competitive advantage. A field survey using questionnaires was conducted to collect data. This research develop the constructs by using measurement scales which is adopted from prior research. All constructs are measured using five-point Likert scales ranging from 1=strongly disagree to 5=strongly agree.

### **Sample and Data Collection**

The hypothesized relationships will be tested with data collected through structured questionnaires distributed to managers of companies located in Jakarta, Tangerang, Bekasi, Karawang, Depok, and Bogor. Data were collected through questionnaire to managerial level of the firms. Sample size of this research will be about 70.

## **RESULTS AND DISCUSSION**

Data is processed by using SmartPLS (v. 3.2.8) is one of the leading software tools for partial least squares structural equation modeling (PLS-SEM). Tenenhaus et. al. (2005 p. 322) introduced three measures to define the overall quality of the model. First level, Measurement model, second level, Structural model and third level separately structural regression equation used in the structural model. Scale reliability and measuring the separate sub-factors tested in measurement module tracked by the convergent and discriminate validity of construction measures. The measurement model was tested by measuring the separate sub-factors and scale reliability tracked by the convergent and discriminate validity of constructs' measures. Primarily the associations were displayed among commitment of the management, communication, training & education, policies, health care and workers' behavior. As per Henderson, Sheetz, and Trinkle (2012 p. 234), validity tests were carried to validate discriminate validity, convergent validity, and the measurement model reliability. Smart PLS algorithm was pragmatic, and the subsequent associations, coefficients, and values of loadings were shown in Initial path model.

### Measurement Model

In the first level, reliability and validity of the measurement module is analyzed and assessed in Smart PLS. To valuation separate sub-factors reliability, the identical factor loadings were evaluated with Smart PLS software. As recommended by Comrey (1973 p. 342), a value of 0.45 was used as the minimum factor loading for sub-factors, while Hulland (1999 p. 221) suggested loading measurements of above 0.50. In this study, the subfactors loading measurements of above 0.45 as suggested by Comrey (1973 p. 243) was accepted. The dimension sub-factors that subsidized smallest to the latent constructs were then detached from the dimension model to improve the model fit. All the factor loading are higher than 0.45 as the minimum factor loading for sub-factors. There is no sub-factor that are lower than 0.45; There is no sub-factor have to be dropout from the model.

### Reliability and Validity

**Reliability:** Inner consistency of measurement model was analyzed by using Cronbach's alpha and composite reliability. Valuation of construct reliability and prediction of inner constancy was focused on composite reliability. As per Hair et al., (2011 p. 343), in PLS-SEM, composite reliability was more appropriate compared to Cronbach's Alfa since it did not undertake that all indicators were similarly consistent. The cut-off score for composite reliability is 0.7 as suggested by Gefen, Straub and Boudreau (2000 p. 290) and least score should be above 0.6 for Cronbach's Alfa as suggested by (Hair et al., 2010 p. 313). The factor loadings, composite reliability and Cronbach's alpha values intended by PLS algorithms were charted in Table1 .As shown in Table 1, the Cronbach's alpha value is above 0.702, and composite reliability score is more than 0.768. Hence, the model can be said as reliable and trustworthy.

**Convergence:** Convergent validity of dignified constructs was assessed using Average Variance Extracted (AVE) tests, composite reliability scores and Cronbach's alpha, (Fornell and Larcker, 1981 p. 212) which were achieved using Smart PLS software, and the consequences are stated in Table 1. The consequences display that Litwin (1995 p. 232), which validates that the dimension sub-factor was suitable for their individual constructs, above the 0.7 thresholds propose all of the considered. Cronbach's alpha standards and composite reliability scores. Also, as per Fornell and Larcker, (1981 p. 321) AVE actions the amount of variance that a construct detentions from its displays comparative to the amount due to dimension errors. The consequences of the AVE test Table 1 confirmation that the AVE scores constructs are greater than 0.602.

**Discriminant:** As per Hulland (1999 p. 213), Discriminant validity mentions to the degree to which any single construct is diverse from the additional constructs in the model. In the model, the sub-factors of every construct should be diverse from those of other constructs.

**Table 1.**

*Discriminant Validity Results*

|                      | Dynamic Capabilities | Market Opportunities | Technological Disruption | Digital Innovation |
|----------------------|----------------------|----------------------|--------------------------|--------------------|
| Dynamic Capabilities | 0.589                |                      |                          |                    |
| Market Opportunities | 0.546                | 0.802                |                          |                    |

|                          |       |       |       |       |
|--------------------------|-------|-------|-------|-------|
| Technological Disruption | 0.876 | 0.845 | 0.749 |       |
| Digital Innovation       | 0.909 | 0.844 | 0.861 | 0.841 |

Source: SmartPLS, 2020, Processed by Researchers

The values recorded in Table 2 expressions the diagonal line of standards covering the AVE square root and constructs correlations. Discriminant validity is conventional by confirming that the diagonal line standards are greater related to their columns and rows as endorsed by Fornell and Larcker (1981 p. 323). The discriminant validity assessment has the goal to ensure that a reflective construct has the strongest relationships with its own indicators such as in comparison with than any other construct, in the PLS path model (Hair et al., 2017 p. 123).

### **Bootstrapping**

Structural Model Analysis Smart PLS software was used to observe the structural model as confirmed in the research. Path coefficient assessment is included in the structural model indicating the power of the relations among the R-square value, independent variable, and dependent variable. To define the consequence level of the paths definite within the structural model, a bootstrapping resampling technique (Efron and Tibshirani, 1993 p. 232) of two hundred and fifty-two sample was used. A five percent significance level ( $p < 0.05$ ) is used as a statistical conclusion measure. The level of significance using the extent of the identical factor estimates between the constructs is indicated in the resultant t-value. Table 2 briefs the result of the structural model.

**Table 2.**

*Path Coefficients Along With Their Bootstrap Values and 'T' Values*

| <b>Factors</b> | <b>Original Sample (O)</b> | <b>Sample Mean (M)</b> | <b>Standard Deviation (STDEV)</b> | <b>T Statistics</b> | <b>Sig. Values</b> |
|----------------|----------------------------|------------------------|-----------------------------------|---------------------|--------------------|
| DC->DI         | 0.588                      | 0.595                  | 0.139                             | 4.097               | 0.000              |
| MO-> DI        | 0.421                      | 0.389                  | 0.141                             | 1.587               | 0.104              |
| TD -> DI       | 0.310                      | 0.311                  | 0.143                             | 3.462               | 0.000              |
| ME1 -> DI      | 0.367                      | 0.365                  | 0.144                             | 2.899               | 0.001              |
| ME2 -> DI      | 0.343                      | 0.336                  | 0.137                             | 2.386               | 0.003              |

Using sample size of 70 respondents, the influence relationship of dynamic capabilities (DC) towards digital innovation (DI) was supported and significant with the original sample ( $\beta$ ) = 0.588, statistics (t) = 4.242 and significant value ( $p$ ) = 0.000 indicates that digital innovation (DI) is influenced directly and positively by dynamic capabilities (DC). While the influence relationship of market opportunities (MO) towards digital innovation (DI) was not supported, and significant



with the original sample ( $\beta$ ) = 0.421, statistics (t) = 1.587 and significant value ( $p$ ) = 0.104 indicates that digital innovation (DI) is not directly influenced by market opportunities (MO).

The influence relationship of technological disruption (TD) towards digital innovation (DI) was supported, and significant with the original sample ( $\beta$ ) = 0.310, statistics (t) = 3.462 and significant value ( $p$ ) = 0.000 indicates that digital innovation (DI) is directly influenced by technological disruption (TD).

The influence relationship of moderating effect 1 (ME1) of technological disruption (TD) towards the influence of dynamic capabilities (DC) on digital innovation (DI) was supported, and significant with the original sample ( $\beta$ ) = 0.367, statistics (t) = 2.899 and significant value ( $p$ ) = 0.001 indicates that digital innovation (DI) is directly influenced by the moderating effect 1 (ME1).

While influence relationship of moderating effect 2 (ME2) of technological disruption (TD) towards the influence of market opportunities (MO) on digital innovation (DI) was supported, and significant with the original sample ( $\beta$ ) = 0.343, statistics (t) = 2.386 and significant value ( $p$ ) = 0.003 indicates that digital innovation (DI) is directly influenced by moderating effect 2 (ME2).

### Assessment of fit

For PLS path modeling, Goodness-of-fit (GoF) is recommended as a worldwide fit measure. In this research, evaluation of PLS path modeling accompanies the goodness-of-fit (GoF) measure. GoF ( $0 < \text{GoF} < 1$ ) is definite as the geometric mean of the average community/ AVE and average R2 (for endogenous construct).

**Table 4.**

*Model Evaluation Results*

| Factors                       | R <sup>2</sup> | Communality |
|-------------------------------|----------------|-------------|
| Dynamic Capabilities (DC)     |                | 0.951       |
| Market Opportunities (MO)     |                | 0.915       |
| Technological Disruption (TD) | 0.870          | 0.893       |
| Digital Innovation (DI)       | 0.789          | 0.884       |
| Average                       | 0.829          | 0.911       |

Source: SmartPLS, 2020, Processed by Researchers

$\text{GoF} = \sqrt{\text{average R}^2 * \text{average communality}} = \sqrt{0.829 * 0.911} = 0.869$ . The GoF value has been calculated for this research model and was 0.869 (Table 4). The baseline values for validating the PLS model worldwide are  $\text{GoF}_{\text{large}} = 0.36$ ,  $\text{GoF}_{\text{small}} = 0.1$  and  $\text{GoF}_{\text{medium}} = 0.25$  (Akter, D'Ambra and Ray, 2011).

### CONCLUSION

The finding of this research are: (1) dynamic capabilities has a significant influence on digital innovation; (2) market opportunities has no significant influence on the digital innovation.; (3) technological Disruption has a significant influence on towards firm digital innovation; (4) Technological Disruption has significant influence on the effect of dynamic capabilities towards digital innovation; and (5) technological Disruption **has significant** influence on the effect of market opportunities towards digital innovation.

## **Recommendation**

Future research would be conducted for large sample of companies. By considering the recent situation of global competition, the future research has to take into account the several elements of dynamic capabilities, market opportunities, technological disruption and digital innovation which are not included in this research. Sample can be enlarge coverage.

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