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The Effect of Information and Communication Technology on Competitive Advantage of International Business in Indonesia

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Abstract

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Company's uses information and communication technology (ICT) to increase the effectiveness and efficiency of offered services to customers and to enhance the management perspective decision making and also enhancing work group collaborations. It could also help to strength the competitive advantage (CA) in the broadly changes economies. Therefore, the objective of the research is to examine the effect of ICT on CA of international businesses in Indonesia. The data was collected from 300 multinational companies' managers via convenient sampling technique. The study used cross sectional research design, quantitative research approach. Partial Least Square (PLS)-Structural Equation Modeling (SEM) findings designates that ICT has a positive and significant impact on CA. These results show that this study could help to the owners or managers to know about the importance of investment in ICT that could lead to enhance the CA of the organizations. Based on these findings it is also recommended that if the companies have more attention on adoption of ICT within their operations, then the companies could help to wheel their nations' economy. Despite the fact policies which are appropriate should be put in place for ensuring proper monitoring and fortitude of optimum size which is required to gain the competitive advantage.

Introduction

Adapting to the ever-changing world of business means not just decreasing expenses, and yet also introducing innovative tactics, like reorganizing the organization's structure or streamlining its procedures, to ensure success (Qosasi, Maulina, et al., 2019). To this objective, the strategy that an organization has in place for its information and communication technology (ICT) infrastructure is the current standard that is used to evaluate a current commercial firm (Qosasi, Permana, et al., 2019). This demonstrates the significance of ICT for commercial enterprises (Widjaja et al., 2020). Multinational companies particularly used ICT to increase the efficiency of their services supplied to consumers which boost competitive advantage (CA) (Chumaidiyah, 2014). This helps to boost their CA in rapidly changing economies (Sethi et al., 1994). Further Khosroanjom et al. (2011) argued that the incorporation of technical aspects is leading to an extremely competitive business environment wherein clients seem to be the central objective. For this purpose, the utilization of ICT is an extremely important means by which to address these challenges (Zafar et al., 2014). Because the pace of change and the degree of uncertainty in today's competitive climate are accelerating geometrically (Rachapaettayakom et al., 2020) and ICT has a direct impact on every aspect of modern-day business. This is a reason, ICT provides a vital function in every aspect of business, from payroll and order entry to customer acquisition and retention which leads to enhance the company's CA (Hajar, 2015).

As a result, ICT competency is critical for organizations to adapt, incorporate, reorganize, and reinvent their internal and external skills for the purpose of achieving CA in a constantly changing business environment, because ICT utilization has a significant effect on economic growth and development (Parida et al., 2016). Companies from poor nations are able to compete in global international trade marketplaces based on the interaction between connectivity, access, security of the network, capability and skills, market structures and company governance, as well as the regulatory and facilitating environment that is possible through ICT (Qosasi, Permana, et al., 2019). Therefore, utilization of ICT as a competence for international trade is growing significantly in Indonesia. Because Indonesia's economy is so active, it boosts a good mix of indigenous and foreign businesses (Amalia et al., 2019). Many domestic ones are also state-owned or controlled. "There are ten multinational companies in Indonesia which have more market capitalization share like Bank Central Asia (USD 53.06 billion), Bank Rakyat Indonesia. (USD 29.63 billion), Unilever Indonesia (USD 21.27 billion), Telekomunikasi Indonesia (USD 19.81 billion), Bank Mandiri (USD 19.36 billion), Astra International (USD 14.59 billion), Hanjaya Mandala Sampoerna (USD 13.84 billion), Chandra Asri Petrochemical (USD 8.91 billion), Bank Negara Indonesia (USD 6.33 billion)". Sales of these international firms in Indonesia are higher than in Thailand and Singapore, and the Indonesian market is expected to rise further in the future (Munizu, 2015).

This is reinforced by both the country's vast population and the fact that it has the largest GDP in ASEAN. The huge number of online sales in Java and Bali is also driven by the strong internet penetration in their respective regions. Yogyakarta, Jakarta, and Bali have the highest rates of Internet penetration, with 47 percent, 4 percent, and 4 percent, respectively. According to statistics from the Ministry of ICT of the Republic of Indonesia (2019) on the number of products and services purchased, ready-made clothes accounted for 78.3 percent of transactions. This data show that in the digital economy, the process of purchasing and selling products occurs not only in traditional stores but also through ICT, however Indonesia is still in the early phases of CA when compared to other developed economies (Al-Kwafi, Farha, et al., 2020). These examples illustrate unequivocally that Indonesian firms may develop different capabilities and assets in order to form a global network and respond towards the competitive challenges posed by multinational corporations from wealthier nations (Msaed et al., 2017).

Therefore, it is interesting to investigate how multinational corporations from Indonesia can outperform multinational corporations from developed nations. It is widely accepted that international firms adopting emerging markets have better managerial skills, advanced technologies, greater access to resources, and higher brand management abilities than enterprises with limited information technology resources (Gonzalez-Perez et al., 2014; Sharma et al., 2020). However, accumulating evidence

suggests that many multinational corporations in Indonesia are able to build distinctive competencies over time and become formidable competitors on the global market, while many are still in their (Al-Kwafi, Farha, et al., 2020). Consequently, competitive dynamics exist among such corporations, as each wants to expand its worldwide market position and become the industry's dominant competitor (Pereira et al., 2020) which could lead to their CA (Powell et al., 1997).

Empirically, previous studies have demonstrated that ICT could have a significant impact on CA (Chege et al., 2020; Qosasi, Maulina, et al., 2019). According to Jahanshahi et al. (2015), the information and communication technology resources may influence CA. However, other research revealed that the effect on CA was not significant (Dilver, 2015). In other words, previous research has mostly focused on the impact of ICT on CA in local businesses (Mihalic et al., 2013) but the current study has mainly focused on multinational companies. Moreover, the previous studies were conducted on developed economies because they have more focused on ICT infrastructure (Mihalic et al., 2013) and has little attention on developing economies likely Indonesia. Therefore, based on previous gaps, the study's research purpose is described below. The study might assist policymakers and other regulators recognize the significance of ICT, which could considerably improve firms' CA. In addition, the research findings could also help to the researchers to conduct their research in future.

Literature Review

The research literature review has been conducted on both of theoretical and empirical perspectives which are discussed below.

Theoretical Review

Trade between areas, countries, and nations that lie outside a country's political boundaries is referred to as "international business (Daniels et al., 2007). Sales, investments, logistics, and transportation are all examples of transactions that could be either private or government-sponsored. Private corporations typically engage in these transactions for financial gain, whereas governments do so for both financial gain and political gain. For the international production of tangible goods and services, such as financial products and banking, insurance and building, the exchange of economic resources includes all of these. International companies that have operations in more than one country and have a global perspective on markets and production. Most of the international companies operate in multinational marketplaces therefore; there is a need of proper CA. The international or multinational companies have more competition in the market because they have more competitors on international level. The resource-based view (RBV) theory of the company CA by various resources (J. B. Barney, 2001). This hypothesis explains a company's CA and superior performance by its unique resources (Johnson et al., 2008). As per RBV, CA

of a company is determined by the firm's utilization of both tangible and intangible resources (Wernerfelt, 1984; Winter, 1995). To sustain a short-term CA, resources must be diversified and not perfectly transportable. This means valuable resources are neither easily imitated nor replaced (J. Barney, 1991). Information communication technology (ICT) is the process through which an organization brings together its internal resources to sustain CA. A RBV of a company defines its ability to establish a lasting CA at that time when its resources are administered in such a way in which its outputs cannot be replicated by competitors, hence creating a barrier to entry for newcomers (Mahoney et al., 1992). RBV places an emphasis on the fact that a company's persistent CA originates through resources that are exceptional, valuable, unique, non-tradable, or non-substitutable (J. B. Barney, 1999). This shows that ICT is an important factor enhances the CA of the business.

Competitive advantage becomes a greater topic in these but Ismail et al. (2010) Despite the large quantity of conceptual and empirical study on the notion of CA, some say that there is no clear definition of CA that is relevant in general terms, meaning that it is applicable in any dimension or criteria. This is despite the fact that there has been conducted research on the subject. According to Mihalic et al. (2013), in order for researchers to begin conducting research on CA, They must first validate the research topic and structure, as well as choose the dependent and independent variables that will be utilized in the study. Therefore, in the previous literature, it has been found that ICT is an important indicator that could help to enhance the CA of the organization (Rohrbeck, 2010). In many ways, new ICT are transforming the economy and helps to achieve CA. ICT forces businesses to develop new ways to extend their markets, attract and retain consumers through tailoring products and services, and rearrange their business plan to achieve CA (Garrido Azevedo et al., 2007). This previous discussion shown that ICT becomes integral topic for enhancing the CA of the organizations. Therefore, the research model of the study is formulated below,

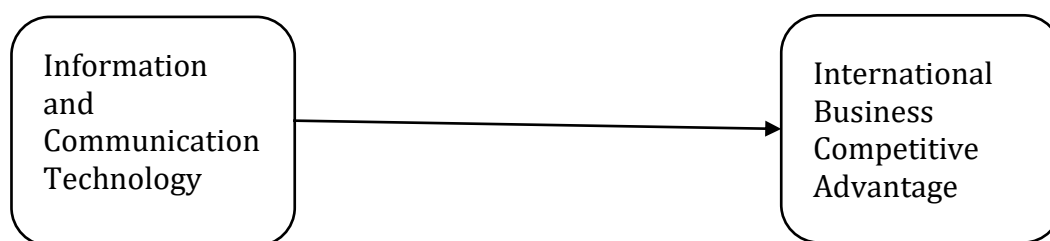


Figure 1: Conceptual Framework

Information and Communication Technology and Competitive Advantage

Empirically, literature contends that enterprises are more likely to improve their CA in ICT through increased internationalization because they benefit from economies of scale, competitiveness, improved resource

utilization, and a variety of government incentives (Parida et al., 2016). Furthermore, a lot of research have found that ICT has a favorable impact on CA (Sethi et al., 1994). This finding is consistent with prior research that revealed organizations gain a CA by implementing innovativeness (ICT) to capitalize on possibilities. For example, more ambidextrous firms are those that could use current expertise while also exploring new information and ideas boosting the company's CA (Abdelkader et al., 2016; Porter et al., 1985).

Recent research has indicated that when the correct ICT mechanisms are enabled, then ICT systems have a major influence on CA (Daneshvar et al., 2010). There are various studies has been conducted on the relationship of ICT and CA which shows the different nature of relationship between these two factors. Various scholars examined the impacts of ICT on CA and discovered that technology innovations enhance CA (Nicodemus et al., 2019; Wanaswa et al., 2019). Nicodemus et al. (2019) further found the correlation between innovation adoption and CA. The findings of Barba-Sanchez et al. (2018) validated the findings of Rahimli (2012), since both research demonstrate a substantial positive association between ICT and CA in the telecoms business. Barba-Sanchez et al. (2018) further originate substantial positive association between ICT and in the manufacturing sector. Platero Jaime et al. (2017) also found the positive correlation between ICT and CA. The following research hypothesis is based on the prior discussion.

H1: Information and communication technology has positive and significant impact on international trade competitive advantage.

Research Methodology

The foundation of methodology is associated with the quantitative research strategy utilized in the study, which outlines where data was collected, analyzed, and assessed. The structure of research is defined by a research design. It serves as the glue that holds all of the components of a research process project together (Creswell et al., 2003). Using a design, you may show how each of the major components of your research project work together to try and answer the project's most fundamental research questions (Berman et al., 2000). According to Otieno (2010), it is the strategy blueprint or plan utilized to generate responses to research problems. It is the setting of the conditions during gathering and analyzing data in order to integrate relevance with research purpose. This study used an explanatory research design and a cross-sectional research design. This explanatory research approach was employed since the study examined the effect of information and communication technology (ICT) on multinational CA in Indonesia. Population is an important part of data collecting since it is defined as the whole collection of elements about which inferences are drawn and refers to all conceivable cases that are of interest for a study (Sekaran et al., 2016). A population thus includes all of

the cases or individuals who are explicitly qualified to be data sources for solving the research challenge (Sekaran et al., 2016).

The study's findings should be generalized to a certain group of people known as the target population. This study's target population is 10 multinational corporations based in Indonesia. This group was chosen because it is the population that the study believes has appropriate knowledge and correct information on the effect of ICT as a CA of multinational corporations in Indonesia. A good sampling technique is required. The convenient sampling technique was utilized to collect data from the population, which was obtained through a self-administered survey questionnaire with all questions being closed-ended and adapted from well-established and authenticated sources. Furthermore, based on past research, the result was being applied as reflective model of the study (Jiang et al., 2017). The sample size was calculated based on data received from 500 Indonesian managers of international corporations. 300 research questionnaires were returned among those. The research questionnaire was adopted from the previous studies. The ICT questionnaire was measured by 19 items which were taken from the study of (Kamau, 2013) and CA was measured by 4 items which was taken from the (Lee et al., 2016). All of these items were measured on five-point Likert Scale which was ranged from 1 strongly disagree to 5 strongly agree.

Data Analysis

The analysis the study is consists of from both of descriptive and inferential statistics. The descriptive analysis was done by using a SPSS and inferential analysis was done by using a Smart PLS through Partial Least Square (PLS)-Structural Equation Modeling (SEM) technique.

Descriptive Statistics

The respondents' profile is depicted in Table 1 which reveals that a total of 300 respondents participated in current research, with 215 of them were male and remaining 90 were female. The first age category is under 30, second 30-35 years old, third 36-40 years old, fourth 41-45 years old, and the fifth above 45 years old. 145 of 300 people who responded were under 30 age. All of the above outcomes are anticipated in Table 1 below.

Table 1. Demographics

Factors		Valid No.	Percentage (%)
Gender	Female	90	31
	Male	210	69
Age	Below 30 years	145	48
	31-35	82	27
	36-40	50	17
	41-45	17	6
	More than 45 years	6	2

Source: Researcher own Illustration

Measurement Model

The measurement model was measured from two specific criteria's which are "convergent validity and discriminant validity" which are discussed below. The "Partial Least Square (PLS)-Structural Equation Modeling (SEM)" was being used for the measurement model."

Table :2 Reliability and Validity Results

Constructs	Items	Loadings	Alpha	CR	AVE
Information Communication Technology	ICT1	0.572	0.807	0.863	0.561
	ICT2	0.687			
	ICT3	0.812			
	ICT4	0.846			
	ICT1	0.723			
	ICT5	0.864			
	ICT6	0.853			
	ICT7	0.790			
	ICT8	0.745			
	ICT9	0.812			
	ICT10	0.831			
	ICT11	0.703			
	ICT12	0.881			
	ICT12	0.826			
	ICT13	0.889			
	ICT13	0.805			
	ICT14	0.709			
	ICT15	0.745			
	ICT16	0.705			
	ICT17	0.901			
	1CT18	0.835			
Competitive Advantage	CA1	0.735	0.815	0.863	0.516
	CA2	0.925			
	CA3	0.755			
	CA4	0.775			

Note: ICT-Information Communication technology, CA-competitive advantage

Convergent Validity

All measured objects must be evaluated for concept consistency, individual consistency, merging consistency, and discriminant consistency. The convergent validity was evaluated using four criteria: factor loadings, Cronbach alpha, composite reliability, and extracted average variance. For this reason, each development's Cronbach's alpha value should be at least 0.70 or higher which is recommended from the research of [J. Hair et](#)

al., 2017). In addition, the average extracted value (AVE) for the normal fluctuation (AVE) must be at least 0.50, which indicating that the build accounts for more than half of the indicator's fluctuation (Hair et al., 2012). The composite reliability (CR) values should be greater than 0.7 which is recommended by (J. Hair et al., 2017). In this regard, the Table 2 anticipated the convergent validity and reliability values which shows that all of the construct values are greater than above recommended values which shows that all constructs are vital for internal consistency. The Table 2 predicted values have shown that construct fulfill the criteria for the convergent validity.

Discriminant Validity

The discriminant demonstrated that there is a substantial link between the reflective construct and its indicators in the path model (Joseph F Hair Jr et al., 2016). The discriminant validity could be assessed from three criteria's, Fornell Larker, cross loadings and Hetrotrait-Monotrait (HTMT) correlation ration (Henseler et al., 2015). Among these three criterias, the Fornell-Larcker criterion value, which assured that AVE squared root in diagonal values should always be greater from each of the construct correlations (Ahmad et al., 2019). Also, if the HTMT of the construct should be less than 0.85 or 0.90, then discriminant validity across the construct is exist (J. F. Hair et al., 2017; Henseler et al., 2015). Table 3 and Table 4 show the values of Fornell-Lacker and HTMT which shows that construct has the discriminant validity.

Table 3: Fornell-larcker

Constructs	ICT	CA
ICT	0.841	
CA	0.548	0.812

Note: ICT-Information Communication technology, CA-competitive advantage

Table 4: Hetrorait-Monotrait Correlation

Constructs	ICT	CA
ICT		
CA	0.841	

Note: ICT-Information Communication technology, CA-competitive advantage.

Multi-Collinearity

The presence of multicollinearity influenced the regression model's results. The capacity to anticipate the dependent variable and determine the various effect of explanatory variables is hampered by multicollinearity (Joe F Hair Jr et al., 2017). Joe F Hair Jr et al. (2017) discovered multicollinearity by measuring the "Variance of Inflation Factor (VIF)." It is necessary to determine the collinearity value of VIF. According to (Joe F

Hair Jr et al., 2017), the VIF cutoff value should be less than 5.0. Table 5 shows the results of VIF which are less than 5 value.

Table 5: Collinearity Assessment

Independent Variable	Statistics VIF
ICT	1.268

Note: ICT-Information Communication technology

In the structural model the research hypothesis of the study was tested. In the hypothesis testing, the PLS-SEM results shows that information and communication technology (ICT) has positive and significant impact on competitive advantage of multinational companies in Indonesia that supports to proposed hypothesis. These findings indicate that multinational companies in Indonesia played an important role to invest on ICT to enhance their competitive advantage. This is a reason, ICT considered to be important predictor for the Indonesian multinational companies.

Table 6: Hypothesis Testing

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
ICT -> CA	0.439	0.448	0.046	9.526	0.000

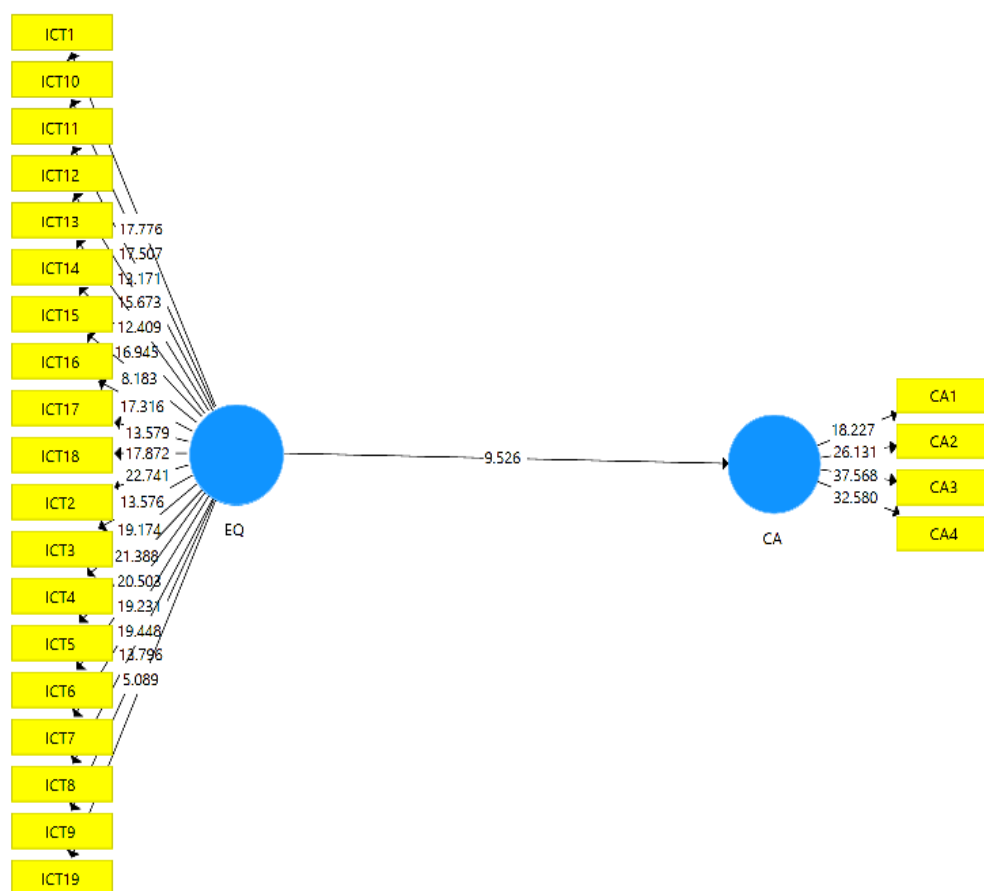


Figure.2: Structural Model

Discussion of Findings

The competitive advantage of organization is considered to be important factor for the organization that could help to the organization in enhancing their sustainability in the international market (O'Connor et al., 2011). The information communication technology (ICT) played an important role to enhance the competitive advantage of the organization (Barlow et al., 2004). Therefore, the present study aim was to examine the effect of ICT on multinational company's competitive advantage (CA) of Indonesia. The data was collected from managers of multinational companies of Indonesia. The key findings indicates that ICT has positive and significant impact on CA. The findings shown that the respondents fall within age ranges that are generally regarded as being ICT oriented, which boosts the application of ICT in the multinational companies of Indonesia. Furthermore, the respondents have worked for the company for a sufficient amount of time, which provides them with a better understanding of the company's policies regarding the use of ICT. As per research results each department has incorporated some form of ICT into their daily operations. The staffs working at the multinational companies are literate, and they are able to adopt and implement ICT operations. Milgrom et al. (1990) and Ukeje (2019) stated that in order for businesses to be successful, they often need to use ICT as part of a "system" or "cluster" of organizational techniques that mutually reinforce one another. As per findings, the implementation of ICT has impacted both the nature and the standard of multinational companies of Indonesia. This coincides with the findings of (DeYOUNG et al., 2005) who said that the Internet delivery channel may generate scale economies that are greater than those that are available through traditional distribution methods. In addition, Agbolade (2011) and Nwakoby et al. (2019) came to the conclusion that the implementation of ICT would increase competitive advantage.

Research Implication and Recommendations

The study added a theoretical and practical implications. Theoretical, the previous studies were mainly focused on the impact of ICT on CA of specific sector but this study is being conducted on the multinational companies of Indonesia. Therefore, this study has been conducted on the multinational companies of Indonesia. In this regard, the current study could add a body of literature in previous literature which could become a new area of research in future. The research could also help to take collaboration between the academicians and corporate that could help to explore new area in future and future alliances. Practically, it could be deduced that ICT is a tool that could give multinational companies in Indonesia a competitive advantage in business. The study is beneficial to multinational companies that operate in the Indonesian environment because it highlights the factors that determine achievement of effective utilization of ICT for a variety of purposes, including marketing, operations, and the delivery of customer service. This conclusion may be used by the regulators of

multinational companies of Indonesia, and investments authorities to write suggestions on how to make the most use of information and communication technology. Lastly, the study contributes to the ideas of competitive advantage that are generated from the use of ICT by providing information and reference material to academics and researchers working in the multinational companies in Indonesia.

In addition, in the late 1980s, concerns were expressed regarding the role that ICT would play in achieving effectiveness, efficiency, and productivity. Since then, a huge number of studies, both at the industry and business level have been conducted that have significantly increased our understanding of the connection between ICT and CA. At the moment, ICT is receiving a lot of thoughtful consideration across a variety of industries, and it is having a substantial positive effect on the CA of multinational company's customer services. Therefore, it is recommended that more attention has to be directed towards the use of ICT in multinational companies' operations because the industry serves as a lubricant to the cog of the wheel of the nation's economy. Furthermore, it is recommended that appropriate policies be put into place to ensure proper monitoring and the determination of the optimal size required to achieve organizational efficiency. Our research makes it abundantly clear that improving ICT in the multinational companies is an absolute necessity in a market that is undergoing rapid transformation. This is because the ICT revolution has paved the way for an extraordinary rise in financial activity all over the world. In addition, it is also recommended that companies should take the decision regarding whether they will implement new technologies independently or in collaboration with other service providers. Nevertheless, technological advancement by itself will neither resolve problems nor produce benefits. Therefore, it is recommended that it is necessary for an organization to implement technology, and the challenges associated with change management stem from the fact that people are resistant to new thoughts and ideas.

The current study with the significance of practical and theoretical has some important limitations that could extend the new research area in future. Firstly, the study was limited on Indonesia that is a developing nation which has some contextual changes as compare to other developing and developed nations which could enhance research in future. Therefore, future research could be done on other countries where various multinational companies are working like Pakistan, Thailand, Malaysia and developed countries like Japan, America etc. to enhance the research generalizability. Secondly, the research was limited on direct effect while there are several moderating and mediating variables that could help to enhance the predictive relevance. Therefore, future research could be done with moderating or mediating variable.

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