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The Role of Digital Leadership, Customer Orientation and Business Model Innovation for IoT Companies

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ABSTRACT

Internet of Things (IoT) is an emerging and promising technology but complex and technologically is in uncertain environment. In order to develop the effective solution and maintain the competitive advantages, companies have to innovate the business model continuously. Business Model Innovation for IoT companies requires to drive the company performance. Despite the need of IoT companies to renew their business model to effectively create value for customers and capture value for the company, the significant factors of business model innovation for IoT companies have remained under-research so far. This study addresses this knowledge gap by exploring the significant factors of business model innovation and ultimate impact towards IoT company performance. This study uses the PLS-SEM method involving samples of 75 IoT companies in Indonesia as developing countries who are still in a nascent stage of digitalization. Digital Leadership, Customer Orientation have been identified as significant factors of business model innovation while IoT company performance as the main expected outcomes.

JEL Classifications: M00, O32, L10

Keywords: IoT, business model innovation, digital leadership, customer orientation, SEM

I. INTRODUCTION

As McKinsey reported, it was suggested that four types of modern technology drove the digital revolution; Internet of Things (IoT), mobile internet, cloud, and big data analytics (Das et al., 2016). IoT can benefit into two main areas; creating new connected product and services and improving operational efficiency (Brenneis, 2020). IoT seems like one of the promising technologies and grabs much attention from practitioners and academics (Eddine et al., 2018).

IoT can be defined as an interconnection object or "thing" for various needs such as data, communication, and sensors (Oriwoh et al., 2013). IoT can be seen in transportation, health, smart city, and others (Atzori et al., 2010; Yang et al., 2013). During covid-19 pandemic, IoT helps to minimize the covid-19 cases such as physical distancing detection, thermal detection, etc.

The significant adoption of emerging technology such as 5G, cloud computing and Wi-Fi access will accelerate IoT growth, while the Covid-19 pandemic which is likely to continue throughout 2022 will continue to force the need for remote work and data access (Brenneis, 2020). The Covid-19 pandemic is creating an unparallel impact on people of the economics of the countries. The pandemic has a varied impact on the IoT market. In the new normal, enterprise and industries are likely to invest in digital technology (McKinsey, 2020). This is expected to accelerate the IoT adoption and market is likely to showcase significant growth post-pandemic.

However, even before covid-19 pandemic, adoption of the Internet of Things is running slower than expected, but technology companies can help accelerate growth through new technologies and business models (Patel et al, 2017). It is because developing IoT business is not simple, Microsoft as one of the biggest IT company has failed when they move toward the cloud and IoT business due to lack of understanding concept and experiences (Fugl, 2015). The understanding of IoT complexity and its business model is mandatory to win the competition in IoT business (Metallo et al., 2018). IoT business model framework should be built based on the dynamics and complexity of IoT concept including organization itself, the industry and the ecosystems (Westerlund et al., 2014)

In managerial literature, business model innovation (BMI) is important to improve company performance (Kim and Min, 2015; Lambert and Davidson, 2013; Visnjic et al, 2016). Business model innovation is intended to unlock the potential value of advanced technology and translating its benefits to the market (Zott et al., 2011).

Previous BMI research in IoT explained that innovating the business model continuously will generate the sustainable competitive advantages (Foltean and Glovatchi, 2021), despite the fact researchers and practitioner need guidance in business model innovation for emerging technology, this phenomenon remains under-explored (Foss and Saebi, 2018).

IoT business model framework showed that the business model has to be innovated to create values for IoT technology that are needed (Dijkman et al., 2015). This is align with previous research that emphasizes the main problem of IoT is how to create IoT value for customers (Metallo et al., 2018). However, the business model of IoT as emerging technology might be influenced by various internal and external factors (Pateli and Giaglis, 2005). Therefore, the organization's ability to create Business Model Innovations (BMI) is essential in IoT business.

In general, there are only a few articles that systematically describe the antecedent of BMI (Foss and Saebi, 2017). They claimed that their research was the first systematic and comprehensive review of business model innovation literature. They argue that the research field of business model innovation has gaps in identifying antecedents, contingencies, and results. Researchers have examined the impact of various causes on the tendency to involve in BMI (De Reuver et al., 2009). They also describe the business model to capture the new opportunity in specific digital technology such as IoT. Yang et al. (2017) also argued current research of business model innovation is not matured yet, there is only a few literatures explored it and lack of consensus on the concept of a sustainable business model and how to achieve it. However, in general, business model innovations can be defined as modifying, reconfiguring and extending existing business models, designing a new fundamental business model or even disrupting existing business model (Cortimiglia et al., 2015; Landau et al., 2016)

Innovating the IoT business model requires leadership (Westerlund et al., 2014). Digital leadership is a combination between digital competence and digital culture. Digital leadership can leverage technology and innovation to drive business model innovation (Mihardjo et al., 2019). The business model has ways to create the value of IoT technology based on customer needs. Gathering customer needs' information requires customer orientation as company culture (Mignon and He, 2005). Digital leadership and customer orientation are expected to drive the business model innovation and company performance.

Most of IoT research more focus on how IoT will impact the busines model in customers side (e.g. Bresciani et al., 2018; Müller et al., 2018; de Vass et al, 2018, Langley et al, 2021). However, this study offers filled the gap by providing different view which is from the IoT company perspective as IoT technology provider. The unique characteristic of IoT which is must be customized based on customer needs is very challenging for many IoT companies (Metallo et al, 2018).

Despite the need of IoT companies to renew their business model to effectively create value for customers and capture value for the company, the significant factors of business model innovation for IoT companies have remained under-research so far.

This study contributes to the extant literature about IoT business model innovation by investigating how IoT companies build their business model and improve company performance. In particular, the research problem of this study is: whether customer orientation and digital leadership as antecedent factors are impacting company performance positively, either directly or indirectly, through the business model innovation. This is also expected to accelerate the IoT adoption and market is likely to showcase significant growth post-pandemic.

This study is conducted in Indonesia IoT market. Based on the research from McKinsey (2016) and then World Economic Forum and AT Kearney (2018) both showed Indonesia is still in a nascent stage of digitization. This study is critical due to limited empirical study on the impact of digital leadership and customer orientation on business model innovation and IoT company performance, especially in developing countries such as Indonesia.

II. LITERATURE REVIEW

A. Business Model Innovation

Business model is fundamentally about the architecture of the firm's value creation, delivery and capture mechanisms (Teece, 2010). Meanwhile, Business Model Innovation means new changes of such complementary relations and this understanding not only unifies diverse contributions to the literature but is also productive of new insight (Foss and Saebi, 2017). A common mistake that occurs in some companies is that during innovation only focus on one element of the business model and ignore the potential impact of innovation on other elements (Afuah, 2014). Therefore, if the company is going to develop a business model innovation, they have to understand which elements must be changed and which other elements will be impacted by those changes.

Business model innovation deals with a new logic integration on how companies create values for their customers, how it is captured and whether the business model is new for the company (Björkdahl & Magnus, 2013). Business model innovation is transforming how to do business, not what to do and this is not just innovation in technology, products, and processes (Zott et al., 2010). Business model innovation is intended to unlock the potential value of advanced technology and translating its benefits to the market (Zott et al., 2011).

Unlike product and service innovations, business model innovation is not necessary to find new products or services, but model business innovation is finding new ways to sell existing products or services and new ways to capture value from these existing products or services (Yang et al., 2017) Selling the same product with a different business model generate different sales results, so it is imperative for any organization to develop a business model innovation capabilities (Chesbrough, 2010).

This is very relevant with IoT. Despite IoT is usually related with sensor, selling IoT is not necessary to build new products, but finding new ways to sell existing products and services and new ways to capture value from these existing product and services.

IoT business model framework showed that the business model has to be innovated to create values for IoT technology that are needed (Dijkman et al., 2015). This is align with previous research that emphasizes the main problem of IoT is how to create IoT value for customers (Metallo et al., 2018).

BMI is an area of research with a lack of theory and has not reached a mature stage yet and this research is currently dominated by a case study as a research approach (Yang et al., 2017). BMI research is still immature and even unclear about understanding what business model innovations are happening in companies (Schneider and Spieth, 2013).

Figure 1
Typical Business Model Framework in IoT

<table>
<tr><th colspan="2">Value Creation</th><th colspan="2">Value Proposition</th></tr>
<tr><td rowspan="2">Key Partners
Software developers
Launching Customers
Hardware producers</td><td>Key Activities
Product developments</td><td rowspan="2">Key Proposition
Conveniences/usability
Getting the job done
Performance
Possibility for updates
Price
Newness</td><td rowspan="2">Customer Relationship
Dedicated assistance</td></tr>
<tr><td>Key Resources
Software
Employee capabilities</td></tr>
<tr><td colspan="2">Cost Structure
Product development cost</td><td colspan="2">Revenue Streams
Subscription fees
Usage fees
Asset sales
Installation fees</td></tr>
<tr><td colspan="4">Value Capture</td></tr>
</table>

At least 2 studies specifically examined the IoT business model innovation for IoT technology providers. Those researches are conducted by Dijkman et al. (2015) and Metallo et al. (2018). Dijkman et al. (2015) identified which building blocks of business model are the most significantly impactful in IoT business by surveying 300 IoT practitioners and interviewing 11 companies. Metallo et al. (2018) also conducted a study case to identify the most significant building block at 3 IoT companies; Intel, Solair, and Apio. Based on those studies there are some similarities and differences in identifying the most significant element in IoT business model. Then this paper has filtered and tailored it for this context, as report in figure 1.

B. Hypotheses development

In Industry Revolution 4.0, modern technology has led to companies' digitalization, which has led to the birth of business model innovations (Bouwman et al., 2018). For this reason, the leadership ability to utilize digital technology is essential. Digital leadership can be interpreted as a different way of thinking on business strategies, business models, IT functions, platforms, mindset, skill sets, and workplace (El Sawy et al., 2016).

Zhu (2015) explained there are five main characteristics of digital leadership: 1) thinker, ability to compete in the digital era are increasingly competitive, and there is much disruption in business; 2) visionary, the capability to deliver direction and become orchestrators in the digital business transformation; 3) creative, the ability of creativity and innovation patterns of thought to formulate ideas in the future come true; 4) inquisitive, with the existence of VUCA, digital leaders must have the ability to learn and the ability always to understand and implement the results of their learning, and 5) profound, sufficient knowledge and understanding of internet rules and the digital era, access to various information and be able to interpret, assume and synthesize that information for decision making.

Understanding customer needs and identifying how to fulfill them is one of the top critical parts of marketing (Kühl et al., 2019). Customer needs could be interpreted as a need for products or services (Harding et al., 2001). It cannot be denied that leaders'

values impact employee behavior (Kennedy et al., 2003), as well as leadership influences customer orientation (Schwepker and Ingram, 2016). A study conducted by Kirca et al., (2005) indicated managers influence companies' customer-focused processes. If the leader has a customer-oriented character, it will follow his subordinates (Liaw et al., 2010). Based on the above explanation, this study hypothesizes the relationship between customer orientation and digital leadership.

H1: Digital leadership positively influences customer orientation.

IBM stated CEOs had realized the importance to innovate a business model, but then they realized that it was hard to find creative leadership to create such innovations (Taran et al., 2015). In some organizations, it was identified "gap model of business leadership innovation" although the business model innovation requires top management involvement. Unfortunately, in many companies are found there is only a few leader has capability to innovate the business models (Chesbrough, 2007).

The role of leadership in executing business models is exceptionally critical (Doz and Kosonen, 2010). However, digital leadership character is required to generate an optimal business model innovation related to new technologies. For this reason, strong digital leadership capability is required to create business model innovations (Westerman et al., 2014). The development skill of digital leadership will allow the leader to transform the digital business strategy and agile culture through digital talent (Carcary et al., 2016) Based on the explanation above, hypothesis 2 is whether digital leadership influences BMI.

H2: Digital leadership is positively related to business model innovation.

IoT solution provider companies have to be aware that an understanding of business models is urgently required to adopt IoT solutions to make customers interested in adopting IoT technology (Tu, 2018). Business model innovation configures each component of the business model and integrates it to generate an optimal business model (Zott et al., 2011). However, producing the optimal BMI is complicated because it requires an understanding of customer needs through customer orientation. IoT solutions need to be tailored or customized to each customer's needs. In developing the fit IoT solution, an understanding of customers' needs is essential (Von Leipzig et al., 2017). Customer orientation is the ability to understand, analyze, and identify customer needs (Gatignon and Xuereb, 1997). IoT companies should have a customer orientation character to innovate their business models to fit IoT solutions based on customer needs.

Numerous technology companies has extended their portfolio to IoT companies such as Amazon Web Services, Cisco, IBM, etc. They have diversified the business into IoT technology to provide additional revenue and make them always relevant with digital transformation in Industry 4.0 era. The transformation happens in all industrial sectors, directly related to various line of business (LoB) companies such as operations, sales, marketing, and human resources. The widening range of customers from IT people to various LoBs pushes IoT companies to expand their understanding of customer needs; they have to be able to talk "multi-lingual." The research from A.T Kearney and Cisco in 2019 reveal previously IT companies only understood customer IT needs traditionally, but now they have to understand broader customer needs with different "lingual."

Therefore, the business model they had also need to be innovated according to customer needs. Hypothesis 3 is whether customer orientation influences BMI.

H3: Customer orientation is positively related to business model innovation.

Digital leadership is a combination of leadership and digital capabilities to generate optimal digital technology use to improve company performance (Wasono and Furinto, 2018). However, in some research, digital leadership can improve financial performance more strongly. Leader who proactively utilize digital solution such as Artificial Intelligent and IoT would improve and enhance business performance (AbdelMoneim, 2020). Seventy-six percent of executives in the digital leader bring their companies to earn more income than other executives. In this study, we will examine whether digital leadership can directly influence a company's performance.

H4: Digital leadership positively influences business performance.

Customer orientation (CO) is an essential factor in companies and markets (Frambach et al., 2016). As one of the main elements of market orientation, CO has a vital role in determining company performance (Kirca et al., 2005). Previous studies were revealed if companies focus too much on the customer, they tend to ignore the needs of a new market to reduce the novelty of the product, reduce the level of innovation, and reduce company performance (Voss and Voss, 2000).

Customer orientation is also important as a consideration factor for companies to choose the type of company strategy between being a defender or prospector. Choosing the right kind of approach will impact improving company performance (Frambach et al., 2016). This study will be examined whether customer orientation can directly influence company performance. IoT solutions offered must be based on customer needs. However, in most cases, what customers want might be is not exactly what they need. If the IoT technology adopted can fulfill their needs, it is expected to purchase more IoT products from the same IoT company. Therefore, company business performance is expected to gain.

H5: Customer orientation positively influences business performance.

The business model is a blueprint to describes how companies deliver, create, and capture the values. The business model has three values; value creation, value proposition, and value creation (Clauss, 2017). Furthermore, a value proposition is focused on what values are offered to customers. The value creation emphasizes how the value proposition is created. Value capture is the most essential element because it highlights how companies can generate revenue from the business model (Teece and Linden. 2017)

H6: Business model innovation positively influences business performance.

III. METHOD

Based on the hypotheses, the relationship among potential variables is examined using partial least squares-structural equation modelling (PLS-SEM). The technique used in this analysis is a survey of field data.

This study aims to determine the antecedent of BMI and the impact of digital leadership and customer orientation on IoT companies' performance. The questionnaire is a built-in Survey Monkey premium version then distributed to 153 respondents. However, only 75 valid responses are retrieved to be used and analyzed, its 48 percent response rate.

In this study, digital leadership is measured through 22 items adapted from Zhu (2015). Customer orientation is measured by 17 items improved from Raie et al., (2014), Zeinab et al., (2014), and Narver and Slater (1990). BMI for IoT companies is measured through 10 items improved from Metallo et al., (2018) and Djikman et al., (2015). The last construct, business performance, is measured through 4 items adapted from Ripsas et al., (2018). The main operational variables is explained in table 1.

Table 1
Main Operational Variables

Construct	Definition	Operationalization	Reference
Digital Leadership	The capabilities that could provide the creative environment to leverage the technology and digital capability (Sandel, 2013)	Digital leadership is measured based on his/her five characteristics: thinker leadership, creative leadership, global visionary leadership, inquisitive leadership and profound leadership.	Sandel (2013); Zhu (2016); Wasono and Furinto (2018); El Sawy, Amsinck, Kræmmergaard, & Vinther (2016)
Customer Orientation	The set of behaviours and beliefs that places a priority on customers' interests and continuously creates superior customer value (Rindfleisch & Moorman, 2003)	The customer orientation is measured based on the functional manager's perception of his efforts to always meet the interests of his customers, through service products tailored to customer needs. The high value of this variable shows that the functional manager perceives himself as someone who is oriented to placing customers as a top priority by providing optimal services according to the needs and interests of customers.	Disphande, Farley & Webater (1993); Thomas et.al (2001); Rindfleisch & Moorman (2003); Narver & Slater (1990); Thomas, Soutar and Ryan (2001); Wagenhem (2006)
Business Model Innovation	A configuration of restructuring each element of the business model and integrate it to generate an optimal business model (Zott et al., 2011)	Business Model innovation is measured by their 3 values: value proposition, value captures and value creation. Each of value has elements configuration that must be have by all organizations	Zott (2011); Clauss (2016); Gassmann (2015); Dijkman et al (2015); Metallo et al (2018)

IV. DATA ANALYSIS

Five percent of respondents are female, and 95% are male. Based on the type of IoT company, 31% of end-to-end IoT solutions, 9% of IoT hardware, 4% of IoT software development, and the last is 56% of IoT System Integrator. They are the majority located in Jabodetabek. Three companies are located in Bandung, and the rest are in Cilacap, Magetan, Medan, and Pekalongan. It means that almost 90% of IoT respondents are located in Jabodetabek (Jakarta's surrounding area) as Indonesia's entire economy. The majority of respondents are founder/owner with 33%, 28% as Director, 24% as Managers, and 15% are General Manager/VP. Most of them are related to products (39%), Sales (38%), and the rest is technical sales (23%). Table 2 outlines the profile.

Four variables are included in this research: Digital Leadership, Customer Orientation, Business Model Innovation, and Business Performance. Table 3 shows the standard deviation and means of the variables.

It can be noted that Customer Orientation scores the highest mean (M = 5.478) while Business Performance has the lowest mean (M = 4.243). Customer Orientation has the lowest variation, while Business Performance scores the highest variation among the data. The data indicate that respondents have positive responses above 5 for all variables, except for business performance.

Table 2
Respondent's Profile

Demographic Variables	Categories	Frequency	Percentage
Gender	Female	4	5.3
	Male	71	94.7
Location	Jakarta and the surrounding area	69	92.0
	Outside Jakarta	9	12.0
Job functions	Sales	29	38.7
	Technical Sales	17	22.7
	Product	29	38.7
Job title	Founder	25	33.3
	Director	21	28.0
	General Manager/VP	11	14.7
	Manager	18	24.0
Type of company	End to end IoT solution	23	30.7
	IoT hardware	7	9.3
	IoT system Integrator	42	56.0
	IoT software development	3	4.0

Table 3
Descriptive Analysis of Variables

Variable	Mean	Standard Deviation
Digital Leadership	5.316	0.670
Customer Orientation	5.478	0.525
Business Model Innovation	5.156	0.618
Business Performance	4.243	1.069

Then, a measurement model encompassing all the variables of interest is evaluated. Two psychometric tests, the convergent validity and the discriminant validity, are performed. Convergent validity is calculated using CR, outer loadings, and AVE. Table 4 displays the breakdown.

Table 4
Measurement Model

Constructs	Items	Loadings	AVE	CR	Cronbach's Alpha
Digital Leadership	Thinker1	0.778	0.672	0.978	0.977
	Thinker2	0.767			
	Thinker3	0.791			
	Thinker4	0.799			
	Thinker5	0.819			
	Visioner1	0.806			
	Visioner2	0.842			
	Visioner3	0.829			
	Visioner4	0.798			
	Creative1	0.869			
	Creative2	0.777			
	Creative3	0.858			
	Creative4	0.845			
	Inquisitive1	0.840			
	Inquisitive2	0.884			
	Inquisitive3	0.869			
	Inquisitive4	0.752			
	Profound1	0.773			
	Profound2	0.857			
	Profound3	0.861			
	Profound4	0.847			
	Profound5	0.760			
Customer Orientation	Satisfaction1	0.693	0.605	0.963	0.958
	Satisfaction2	0.774			
	Satisfaction3	0.810			
	Needs1	0.871			
	Needs2	0.827			
	Needs3	0.694			
	Needs4	0.823			
	Needs5	0.609			
	Commit1	0.854			
	Commit2	0.835			
	Commit3	0.837			
	Commit4	0.756			
	Commit5	0.689			
	Sales1	0.796			
	Sales2	0.836			
	Sales3	0.802			
	Sales4	0.652			
Business Model Innovation	Proposition1	0.732	0.511	0.912	0.892
	Proposition2	0.813			
	Proposition3	0.665			
	Capture1	0.671			

Constructs	Items	Loadings	AVE	CR	Cronbach's Alpha
	Capture2	0.670			
	Capture3	0.616			
	Creation1	0.793			
	Creation2	0.791			
	Creation3	0.656			
	Creation4	0.715			
Business Performance	Financial1	0.932	0.882	0.968	0.955
	Financial2	0.951			
	Financial3	0.962			
	Financial4	0.911			

The path analysis is examined for digital leadership, customer orientation and business model constructs which Digital Leadership is a formative and customer orientation and business model are both reflective constructs. P-Values of each path from constructs to respective dimensions are 0.000 (<0.05), it means all is significant as shown in Table 5.

As can be noted from the above analysis, all the outer loadings ranging from 0.609 to 0.962 exceed the suggested value of 0.5 (Hair et al., 2011). The Composite Reliability (CR) for all items is higher than a suggested minimum value of 0.70 (Hair et al., 2016), which varied from 0.912 to 0.978. Average Variance Extracted (AVE) varied from 0.511 to 0.882; it is higher than the suggested value of 0.5 (Hair et al., 2016; Fornell and Larcker, 1981). All the Cronbach's Alpha coefficients also higher than the suggested value of 0.70 (Nunnally, 1978), which varied from 0.892 to 0.977. These figures indicate that the measurement model satisfies the convergent validity.

All the indicators loaded are found to be greater than other latent variables. The loadings value is exceeded all other latent variables. Table 6 highlights the details.

The table shows the AVE's square roots exceeded the squared correlations between the latent variable and others. A threshold value of 0.90 has been suggested for HTMT (Henseler et al., 2015), where a reading of above 0.90 indicates a lack of discriminant validity.

Table 5
P-Coefficients and P-value of Dimensions

Constructs	Dimensions	Path Coefficients
Digital Leadership	Thinker	0.229
	Global Visionary	0.196
	Creative	0.202
	Inquisitive	0.196
	Profound	0.242
Customer Orientation	Customer Satisfaction	0.883
	Understand customers	0.909
	Committed to Customers	0.941
	After-sales services	0.924
	Value Proposition	0.877
Business Model Innovation	Value Capture	0.805
	Value Creation	0.899

Table 6
Discriminant Validity: Fornell-Larcker's Criterion

	Business Model Innovation	Business Performance	Customer Orientation	Digital Leadership
Business Model Innovation	**0.715**			
Business Performance	0.529	**0.939**		
Customer Orientation	0.632	0.407	**0.778**	
Digital Leadership	0.538	0.388	0.776	**0.820**

Table 7 indicates the HTMT criterion has been achieved. It can be summarized that the measurement model in this study exhibited satisfactory evidence of overall convergent validity, reliability, and discriminant validity.

Table 7
Discriminant Validity : HTMT

	Business Model Innovation	Business Performance	Customer Orientation	Digital Leadership
Business Model Innovation	-			
Business Performance	0.567	-		
Customer Orientation	0.664	0.423	-	
Digital Leadership	0.568	0.396	0.785	-

The lateral collinearity problem can be described as a concern that has to be presented before estimating the structural model. While the discriminant validity parameter is achieved, the lateral collinearity problem may delude the outcomes since it could cover the model's robust pivotal effect (Osborne and Costello, 2005). In the analysis provided, all the Inner VIF values for the variables range between 1 to 1.897. It means lateral multicollinearity is not indicated as a problem in this study.

Assuming the measurement model is parsimonious, the structural model was analysed by using the Bootstrapping function. As indicated in Table 6, the effect size mas calculated according to the guideline-recommended by Cohen (1988) whereby the value of 0.01 is very small, the value of 0.20 is small, the value of 0.50 is medium, and the value of 0.80 is representing large effects.

Research model can be seen in figure 2. From table 8, it can be noted that Digital Leadership positively significant to Customer Orientation ($t = 12.558$, $p < 0.05$, $f2 = 0.038$) hence H1 is supported. Digital Leadership is not positively significant to Business Model Innovation ($t = 0.669$, $p > 0.05$, $f2 = 0.852$), hence H2 is not supported. Customer Orientation is positively significant to Business Model Innovation ($t = 3.129$, $p < 0.05$, $f2 = 0.251$) hence H3 is supported. Digital Leadership is not positively significant to Business Performance ($t = 0.861$, $p > 0.05$, $f2 = 0.719$) hence H4 is not supported. Customer Orientation is not positively significant to Business Performance ($t = 0.182$, $p > 0.05$, $f2 = 0.982$) hence H5 is not supported. BMI is positively significant to Business Performance ($t = 3.632$, $p < 0.05$, $f2 = 0.168$) hence H6 is supported.

Figure 2
Research Model

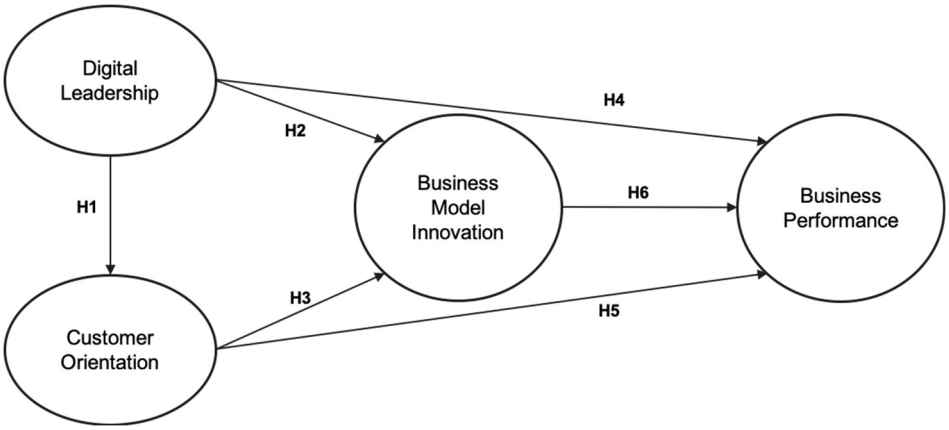

Table 8
Discriminant Validity : HTMT

		t-value	p-value	Decision	f^2	Effect size
H1	DL →CO	12.558	0.000	Support	0.038	Very small
H2	DL → BMI	0.669	0.504	Not Support	0.852	Large
H3	CO → BMI	3.129	0.002	Support	0.251	Small
H4	DL → BMI	0.861	0.401	Not Support	0.719	Medium
H5	CO → BP	0.182	0.858	Not Support	0.982	Large
H6	BMI → BP	3.632	0.000	Support	0.168	Very small

V. DISCUSSION

Several interesting findings are derived from the current study. First, this study confirms the significant relationship between digital leadership and customer orientation. Digital leadership is a critical character of a leader in the digital era. Digital leadership in this study has five characters, global visionary, thought leader, creative leader, profound leader, and inquisitive leader (Zhu, 2015).

This finding shows that company is encouraged to be more focused on developing digital leadership to trigger customer orientation cultures (Cinquini et al., 2013; Ravichandran et al, 2016; Yoong, 2009) to generate the business model innovation (Kreutzer et al., 2018). This finding also emphasises the importance of personalization in the emerging technology (Henfridsson et al., 2014; Parise et al., 2016).

Second, one of the hypotheses in this research is digital leadership is not influencing BMI directly. However, this result is not surprising as IoT is a complex solution (Fugl, 2015; Dobbs et al, 2015), and there are so many surrounding areas of IoT that a leader must understand (Lee, 2016; Dash, 2019) The leaders are expected to understand how to explain the business dynamics in the digital world era with sufficient understanding of other factors in the IR 4.0 surrounding area (Rocha and Sousa, 2018). The in-depth knowledge and good experience can inspire the team to develop themselves to make them more relevant to the business trend changes (El Sawy et al., 2016). Those

characters must take wisely in decision-making due to the swift changes and need to take action immediately. In IoT as a context of this study, business model innovation is driven by customer needs instead of digital leaders. Digital leadership alone is not strong enough to innovate the business model due to they are not really understand what the best fit of business model for customer is.

Despite Digital Leadership is not significantly impacting Business Model Innovation, Customer orientation is moderating relationship between Digital Leadership and Business Model Innovation. It means digital leadership is not influencing he business model innovation directly but through Customer Orientation.

Third, the relationship between customer orientation and BMI is significant. The finding confirms previous literature that identifies customer orientation as an essential factor relates to companies and markets (Frambach et al., 2016). This finding indicates the company is encouraged to be more adaptive and responsive to the market changes and reflect it in a business model (Mihardjo and Rukmana, 2019; Narver and Slater, 1990). In industry revolution 4.0, the business model's focus will be shifted to the end customer (Burmeister et al., 2016).

Fourth, digital leadership does not influence business performance. It reveals digital leadership is not considered as a determining factor in generating business performance directly. Digital leadership is character of digital leaders (Abbu et al, 2020). The digital leadership character could not directly impacting the business performance but it will drive new business transformation in an organisation (Peter et al., 2020). The role of digital leader in digital transformation process is significant (Junior, 2020). The leaders have to transform the business process (Adrodegari et al., 2017) prior generate the business performance as outcome.

Fifth, customer orientation was predicted to be positively correlated to business performance. However, it is not revealed in this study. Previous researches had studied the correlation between customer orientation and business performance. It indicated market orientation positively influences business performance (Kohli and Jaworski, 1990; Raju et al., 2011) and sales growth (Pelham and Wilson, 1996). Market orientation is positively related to overall company performance (Kohli and Jaworski, 1990). They argued market orientation offers a superior understanding of its business atmosphere and customers can lead to more customer satisfaction. However, customer orientation still plays a crucial role in a company's market orientation dynamics (Matsuo, 2006; Narver and Slater, 1990).

Lastly, previous literature studies imply the significance of BMI as a source of performance benefit, particularly in rising industries (Futterer et al., 2017) such as IoT. Comparable to the previous study, this study supports the view that BMI is key to firm performance (Zott et al., 2011) has gained momentum. The study verifies the postulated positive outcome of BMI on business performance. This conclusion is in line with past empirical results about the influence of innovation on business performance (Bacinello et al., 2020; Rosenbusch et al., 2011) and verifies the previously expected significance of BMI for company performance (Zott et al., 2011). In short, BMI is one of the keys to firm performance.

VI. CONCLUSION

The path analysis showed that digital leadership has an indirect path in developing business model innovation. This is aligned with previous study where companies have to have in-depth knowledge of customers to build the business model innovation (Mihardjo and Sasmoko, 2019). This finding brings the implication for IoT company to leverage digital leadership to build business model innovation through customer orientation strategy (Von Leipzig et al, 2017)

This study found that customer orientation and digital leadership are not directly impacting company performance. However, they are impacting company performance indirectly through business model innovation. It is indicated that customer orientation and digital leadership are antecedent factors of business model innovation.

This study reveals that digital leadership is positively impacting customer orientation to drive the business model innovation. It is also consistent with previous studies stating that digital leadership can indirectly influence business model innovation (Wasono et al., 2018; Kreutzer et al., 2018). One of the critical skills of digital leaders is to visualize existing business purposes and innovation initiatives within business models. However, they might not stop there, digital leaders need to communicate iteratively test it and ultimately verifying the economic value (Sabau, 2016). In this digitalization era, innovative solutions are usually connected to new business models.

In 2020, the outbreak not only a threat for public health, but also for economic and business growth in all countries. 2021 is the year of transition, business can start to look forward to shaping their futures. In recovering the business with embracing the technology as accelerator. The research found that during pandemic, IoT is instrumentals for maintaining business continuity and it's expected be a key technology for improving business performance in post pandemic (Brenneis, 2020).

A. Practical implications

This study encourage IoT company to focus on innovating the business model through digital leadership and customer orientation to deliver the optimal value of IoT for all industries in Indonesia. Providing the optimal value of IoT is also expected to recover the business and economy during and post covid-19.

A digital leader is encouraged to has inquisitive character which is curiosity of customer needs. IoT customers are in broad range of various Line of Business and industries. Then digital leader is encouraged to go deeper to understand more customer need deeply (Zhu, 2015) to build the optimal IoT solution. It is creating value of IoT as value creation and then create the value capture to generate revenue from customer (Teece and Linden. 2017).

Digital leaders are suggested to have the capabilities to create or innovate the new business model. However, a company requires to identify the customer needs prior create an optimal new business model. Three different approaches have been suggested to make a firm getting closer to industry 4.0, i.e., service orientation, networked orientation, and customer orientation (Ibarra et al., 2018). The customer orientation approach made the company more responsive to user-driven design and align it better with customer value creation processes and contexts (Ehret and Wirtz, 2017). In this approach, companies are encouraged to develop new capabilities in learning more about their customers.

Build the customer orientation will help to find new markets, assess the competition, and decide to enter markets when the rewards outweigh the risk. Company is encouraged provide the use cases to the team to make them easier to understand how the technology can be implemented based on the customer segmentation or similar business. Company is encouraged to have knowledge management to share the customer experiences & use cases.

BMI, as part of the company's strategy, contingency theory said that no single strategy is fit for all companies due to many dependency variables (Du and Kim, 2021). The company is encouraged to rejuvenate the business model continuously based on customer needs. Sustainability in innovating the business model will gain the business performance (Sousa-Zomer and Miguel, 2018). It is expected to encourage IoT companies to improve their digital leadership and customer orientation culture.

B. Limitations and direction for future research

This research uses SEM PLS as it includes a formative construct. SEM PLS's significance test uses bootstrapping; hence, it might not be as vigorous as covariance-based (CB) SEM. The context of this research is in the IoT industry. Hypothesis, construct, and variables applied in this study are those deemed most relevant. Perhaps there are relevant variables that have not yet to be included.

The research is conducted in Indonesia as emerging countries with their characteristics. Generalization with other emerging or developed countries may not apply. The correlation between digital leadership and BMI is still inconsistent. It might be due to the context of industry, country digitalization index level, or technology-related. Future research can explore the different industries, county, or technology maturity levels. Industry Revolution 4.0 related research is still limited. Future research can take part in other IR 4.0 technology such as cloud, big data analytics, AI/AM. It might be on the technical or management side in helping the digital transformation from Industry Revolution 3.0 to 4.0 in Indonesia.

This study conduct during first 6 months of outbreak. The coverage is minimal, with only 75 respondents due to time constraints and the researcher's lack of visibility to reach more respondents. Future research is expected can be done with broader respondents and in post covid-19.

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