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Impact of Government Support and Competitor Pressure on the Readiness of SMEs in Indonesia in Adopting the Information Technology

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Abstract

The use of information technology to support the business organization's performance is one thing that needs to be done by large-scale industrial sector and small industrial sector (SMEs) to face global competition. As a developing country, the SMES sector in Indonesia is still not fully adopt and utilize information technology (IT) in the business process. Factors of contributors, inhibitors and the effect of the competitive environment and government support will tend to trigger SMEs to adopt IT. This study tries to explore the influence Contributor, Inhibitor, Government Support, and Competitor Pressure, to Technology Readiness (H1, H2, H3, H4), and the Influence of Technology Readiness on Behavioral to Use (H5). The study used 446 valid sample of SMEs of craft industry and being tested using the Partial Least Square (PLS) technique. The testing result shows that the Contributor and Inhibitor have the significant effect on the Technology Readiness with p-value of .000 (<0.05) (H1 and H2 were supported). The testing result of the Technology Readiness on the Behavior to Use also shows the significant result with the p-value 0.00 (<0.05) (H5 was supported). The test of the effect of the Government Support and Competitor Pressure shows the insignificant result with the p-value of 0.81 and 0.53 (>0.05) (H3 and H4 were not supported). Further analysis also found that the Government Support and Competitor Pressure do not affect on the IT users (Behavior to Use) in SMEs. The finding also strengthen the previous claim that the Government Support and the Competitor pressure are not the component which make SMEs ready to adopt and use the IT on their business process.

Keywords: Contributor; Inhibitor; Government Support; Competitor Pressure; Technology Readiness; Adoption (Behavior to Use)

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1. Introduction

As a developing country, majority of Indonesia's economy is supported by the Micro, Small and Medium Enterprises (SMEs). Central Statistics Bureau (BPS) stated that 90% -95% of companies in Indonesia are classified as SMEs. This shows that Indonesia's economic growth is driven and dominated by the activity of SMEs. The business group also has demonstrated the resilience of their business to face the economic crisis because they have a strong market in the country and do not have a dependency on the financial services sector.

In facing the increasingly fierce competition, information technology is one of the tools used to support the competitiveness of the company. It is quite easy to be conducted by the companies which have adequate capital, but for the SMEs, the use of the technology has not been the first priority in developing the business. The adoption of the information technology in SMEs has successfully improved the overall organization's ([6]; [30]), however, only 20% of SMEs in Indonesia that use computers in their business processes [27]. Furthermore, SMEs in Indonesia have not adopted computers because they think that they do not need a computer to run their businesses (82.2%), lack of financial support (41.1%), and lack of ability to operate a computer (4.1%). Beside those three internal factors, external factors also play a significant role [27]. The role of universities and government support will benefit SMEs in an effort to adopt a computer [26]. In addition, it also explains that only 58.6% of SMEs that have adopted the computer and using the computer to support business processes [27].

The readiness of an organization to adopt the information technology to support the organizational operation is affected by some dominant factors. The theories about the technology adoption which have been developed only focus on the organization's internal and external factors. In discussing the acceptance of the new technology information system, the Technology Acceptance Model (TAM) which is developed by Davis [4] gives attention to internal factors from the individual which focuses on the individual perception as the basic for making decision to adopt the information technology for an organization. The individual characteristic also became one of the limelight in determining the factors which affect o someone acceptance to the new technology information system. One of which is the individual readiness in using the technology generally. This readiness is measured using an instrument i.e. the Technology Readiness Index (TRI) developed by Parasuraman ([21], [22]). TRI has two major components which is divided into four dimensions i.e. contributor's component which consist of optimism, and innovativeness, and the inhibitor's component which consists of the discomfort and insecurity dimensions.

The main drawback of the two models which have been developed (TAM and TRI) is not considering the organization external influences. External pressure can affect an organization to take the decision to innovate or adopt information technology [13]. The pressure may come from the government as the regulator and facilitator as well as a competitor in the form of more advanced innovations owned by a competitor or by the user of the information technology to support its business activities. SMEs in Indonesia have specific characteristic that is highly influenced by the external environment. External factors that affect SMEs are the Government Support and the Competitors Pressure. Government support is realized through the management of technical support and guidance through a special ministry (ministry of SMEs and cooperatives) and through laws and regulations (Act No. 8 of 2008). While the competitor's pressure tends to influence the businessman to imitate the competitor's excellence and apply it on their organization in order to survive in the competition.

SMEs in Indonesia are protected by government trough ministry of SMEs and cooperatives. Thus protection create unique environment which make government support influence SME in IT adoption decision. In line with government support, competitor pressure become significant factor because Indonesian SMEs are significantly influenced by environment. Seeing the fact that the model of the readiness and the adoption of the technology still ignore the external factors that significantly affects

organizational behavior in adopting IT, it needs to develop better models to involve external factors of the organization. External factors that can be used to refer to the Government pressure and pressure Competitor as the determining factor of IT adoption behavior by SMEs. Base on the problem above, this research propose 5 question there are: 1). Does Contributor affects Technology Readiness? 1). Does Inhibitor affects Technology Readiness? 3). Does Government Support affects Technology readiness? 4). Does Competitor Pressure affects Technology Readiness? 5). Does Technology Readiness affects Behavioral to Use?

2. Literature review and hypothesis building

Parasuraman and Colby [23] defines the technology readiness as the people propensity to embrace and use new technologies for accomplishing goals in home and at the workplace, TRI (Technology Readiness Index) is developed by Parasuraman ([21], [23]) to measure someone's beliefs and thoughts in general about technology. Someone's thought about technology can be positive, that is optimism in addressing technology and also the tendency to get discomfort and skeptic toward technology. It causes four dimensions in technology readiness namely optimism, innovativeness, discomfort, and insecurity appear. The first two dimensions from the technology readiness namely optimism and innovativeness are the contributors which can improve the readiness toward the use of the technology, while for the rest namely discomfort and insecurity are considered as the inhibitors which can press the readiness level toward technology [22].

Parasuraman and Colby [22] emphasize that technology readiness is a measurement tools for the perception or thought about the technology, not as the measurement from someone's ability or capacity in technology. Based on the score of the technology readiness, the users is categorized into five segments, namely explorer, pioneers, skeptics, paranoids, and laggards. The explorer type has the highest score in the contributor dimensions (optimism, innovativeness) and the lowest score in the inhibitor dimensions (discomfort, insecurity). The explorers easily get interested in a new technology and become the first group that tries it. On the other hand, laggards are the last group type that adopt the new technology and have the highest score on the inhibitor dimension and the lowest score on the contributor dimension. Another three groups (pioneers, skeptics, paranoids) have the more complex perception about technology. Pioneers have the high optimism and innovation such as explores, but at the same time they will easily stop trying if they get discomfort.. Skeptics have the low motivation to use the technology but they also have the low level of resistor so they need to be reassured about the benefits of the technology. Study of Parasuraman and Colby [22] shows that explorers and pioneers type tend to adopt the new technology earlier than others [16]. For paranoids, technology is quite interesting but they also consider the risk factor, it is shown by the high discomfort level [5].
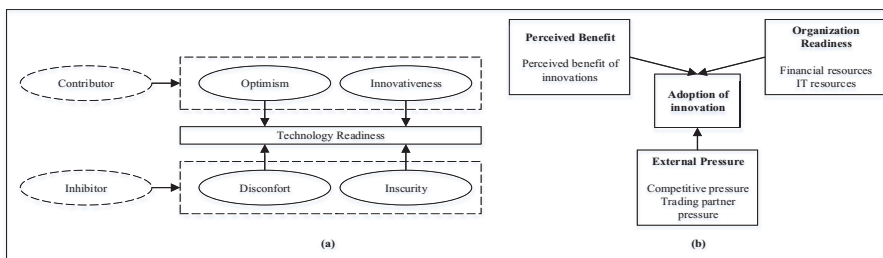

Fig.1 (a). Technology Readiness [23] (b). Iacovou et al model [13]

In developing the model of the technology acceptance, Iacovou et al [13] has tried to consider the organization's internal and external factors. The developing model is based on the three major components namely perceived benefits, organizational readiness, and external pressure. Perceived benefit refers to the organization's belief while the organizational readiness refers to the organization's financial readiness and the IT source readiness as the support for adopting. The external factors which are considered in influencing adoption are competitive pressure and trading partner power. Those two external factors become the external generator in making policies to adopt an innovation.

External factors such as government support are a key factor in determining the policies of SMEs in adopting IT to support the business processes. The government will hold a significant role in determining the regulation in SMEs through the facilities and the rules governing work patterns and competitive SMEs including readiness, and behavioral patterns of SMEs to adopt IT to support business processes. Government support has been shown to affect the behavior of organization in adopting IT ([25], [24], [6], [9], [30], [14], [8]).

Table 1 Previous research result

Researchers	GS → U	TR → U	Opt. → TR	Inn → TR	Ins. → TR	Dis → TR	CP → TR	CP → U
Aisyah el al [1]		√						
Chong et al. [3]								√
Endraswari [6]	√							
Gibbs and Kraemer [8]	√							
Grandon and Pearson [9]	√	√						
Kuan and Chau [14]	√							√
Lin and Lin [15]								√
Ling dan Moi [16]			√	√	√	√		
Mustikawati et al [17]		√						
Oliveira and Martins [20]								√
Oliveira and Martins [18]		√						√
Oliveira and Martins [19]		√						√
Sarosa et al. [24]	√							
Utomo [25]	√							
Walczuch et al [28]		√	√	√	√	√		
Wang et al., [29]								√
Yulimar [30]	√	√					√	√
Zhu et al. [31]								√

Notes:

√	:	Supported	TR	:	Technology Readiness	Inn :	Innovativeness (Contributor)
GS	:	Government Support	U	:	Use	Ins :	Insecurity (Inhibitor)
CP	:	Competitor (Competitive) Pressure	Opt	:	Optimism (Contributor)	Dis :	Discomfort (Inhibitor)

Another external factor that should be considered is Competitor pressure. Competitor pressure can be technology innovation which is conducted by the competitor and the IT users in the same industrial sector which causes the competitor get the competitive excellence. Competitor Pressure is the key role in adopting the key role for the SME because it is sensitive to the competition they owned. Competitor pressure also has the important role in determining the businessmen's perception in adopting the IT. If the competitors in the same industrial sector can use and apply the IT so the businessman can handle the same thing well. The previous research has proved the relationship among the construct presented in the table 1. Previous research that depict in table 1 explain relationship between construct that is purposed and described in figure 3. Supported sign (√) explain the relationship between construct than can be tested dan explored. To investigate the effect of every construct, so the hypotheses were constructed as below:

H1: Contributor affects Technology Readiness
H2: Inhibitor affects Technology Readiness
H3: Government Support affects Technology readiness
H4: Competitor Pressure affects Technology Readiness
H5: Technology Readiness affects Behavioral to Use

3. Methodology

This study used a sample of SMEs in Yogyakarta Indonesia. The sampling technique applies the simple random sampling technique. As many as 598 researchers distributed questionnaires to SMEs as the members in the National Crafts Council (Dekranas) Yogyakarta, Indonesia. Of the entire questionnaire distributed obtained 446 valid respondents (responds rate of 74.6%) which can then be analyzed in the study. Data were analyzed using the approach of Partial Least Square (PLS) with software Smart PLS 3.2.

Technology Readiness
Contributor
Optimism
Technology gives people more control over their daily lives.
Products and services that use the newest technologies are much more convenient to use.
You like the idea of doing business via computers because you are not limited to regular business hours.
You prefer to use the most advanced technology available.
You like computer programs that allow you to tailor things to fit your own needs.
Technology makes you more efficient in your occupation.
You find new technologies to be mentally stimulating.
Technology gives you more freedom of mobility.
Learning about technology can be as rewarding as the technology itself.
You feel confident that machines will follow through with what you instructed them to do.
Innovativeness
Other people come to you for advice on new technologies.
It seems your friends are learning more about the newest technologies than you are. [reverse scored]
In general, you are among the first in your circle of friends to acquire new technology when it appears.
You can usually figure out new high-tech products and services without help from others.
You keep up with the latest technological developments in your areas of interest.
You enjoy the challenge of figuring out high-tech gadgets.
You find you have fewer problems than other people in making technology work for you.
Inhibitor
Discomfort
Technical support lines are not helpful because they don't explain things in terms you understand.
Sometimes, you think that technology systems are not designed for use by ordinary people.
There is no such thing as a manual for a high-tech product or service that's written in plain language.
When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do.
If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features.
It is embarrassing when you have trouble with a high-tech gadget while people are watching.
There should be caution in replacing important people-tasks with technology because new technology can breakdown or get disconnected.
Many new technologies have health or safety risks that are not discovered until after people have used them.
New technology makes it too easy for governments and companies to spy on people.
Technology always seems to fail at the worst possible time.
Insecurity
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Technology always seems to fail at the worst possible time.
Behavior to use
I will use computer to help business process in the future
I will use computer more often to help business process in the future

I will suggest others to use computer to help business process
Government Support
Government have program to support your business to use computer to help your business (yes / no)
Competitor Pressure
Your competitor use computer to run their business (yes/no)

Fig. 3. List of questions

This study uses six main variables, namely: contributor, Inhibitor, Government Support, Competitor Pressure, Technology Readiness and Behavior to Use. Contributor is defined as a positive impetus to push the organization's readiness in adopting IT, while Inhibitor an inhibiting factor that led to the adoption of IT preparedness is low. Contributor and inhibitor are the component of Technology Readiness which is defined as a person's tendency to use new technologies to solve problems encountered in the workplace [23]. Questionnaire was developed from research Parasuraman [22]. Government support refers to the perception of the government's support in adopting IT in businesses. Competitor Pressure is defined by the presence or absence of pressure from competitors in the form of the use of IT by competitors in its business processes. Behavior to Use is defined as a person's behavior to use or adopt the technology. Questionnaire was developed from research Davis [4]. The instrument uses a scale of 1-7 except variable Competitor Government support and pressure using dummy variables 1 and 2 (see figure 2).

Validity of the instrument was tested using the convergent validity and discriminant validity. Convergent construct validity is deemed to comply if the Average Variance Extracted (AVE)> 0.5 has a loading factor of at least 0.60, and ideally 0.70 or more [2]. For research that makes the new model, loading of 0.5 is considered sufficient [7] with a value of at least 0.5. Discriminant validity was considered fulfilled if the value of the root of AVE has a greater correlation than the correlation between the construct [7]. Reliability is seen from the results of the composite reliability value of the relationship between variables with dimensions measuring> 0.7 and by using Cronbach's alpha of at least 0.7 [11]. From the test results, it can be seen that all variables passed the test (see Tables 2 and 3).

Table 2. Convergent validity and reliability

Variables	AVE	Composite Reliability	Cronbach's Alpha
Behavior to Use	0.795	0.921	0.870
Contributor	0.610	0.916	0.893
Competitor Pressure	1.000	1.000	1.000
Government Support	1.000	1.000	1.000
Inhibitor	1.000	1.000	1.000
Technology Readiness	0.542	0.900	0.868

Table 3. Discriminant validity

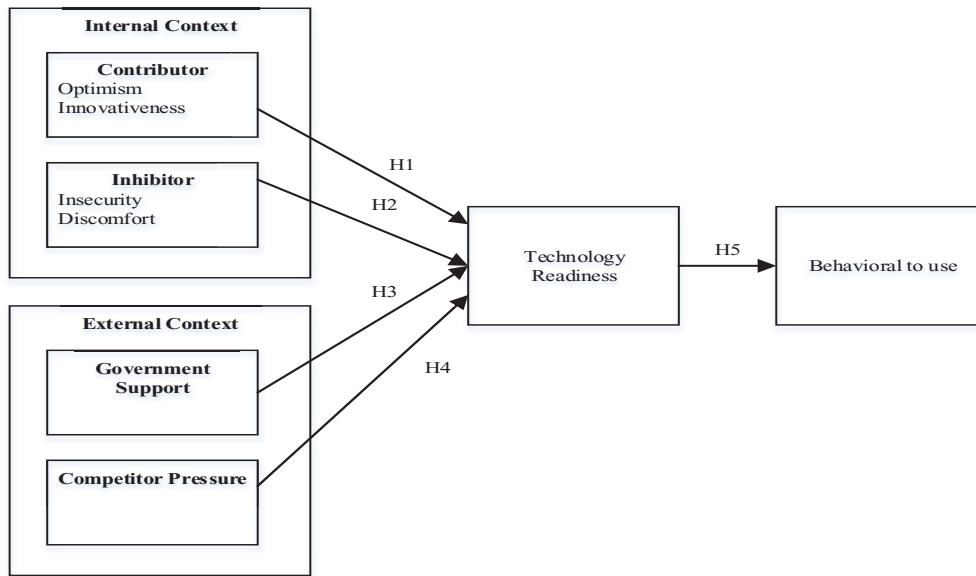| Variables	Behaviour to Use	Contributor	Competitor Pressure	Government Support	Inhibitor	Technology Readiness
Behaviour to Use	0.891					
Contributor	0.584	0.781				
Competitor Pressure	0.138	0.183	1.000			
Government Support	0.057	0.037	0.146	1.000		
Inhibitor	0.299	0.227	0.019	0.037	1.000	
Technology Readiness	0.596	0.997	0.181	0.039	0.305	0.736

Fig. 3. Research model

The hypotheses were tested by using the Partial-Least-Square (PLS) model. The use of PLS is suitable for prediction and theory building, and it takes a relatively small sample size; a minimum of 10 times construct the most complex item [2]. Another advantage of the use of PLS are: (1) PLS estimates the size of the model on the validity and reliability of measurement, and (2) by using an indicator of latent constructs, PLS generates the parameters of structural models that test the strength of the hypothesized relationship [12]. This study used a second order approach of PLS. To test the hypothesis, the model used in this research is presented in figure 3.

5. Results

Hypothesis acceptance decision is based on the P-value from the results of the analysis using the PLS approach. If the p-value > 0.05 then the hypothesis can be supported, but on the contrary if the p-value> 0.05 then the hypothesis cannot be supported. From the test results can be seen that the Contributor and inhibitors affecting the Technology Readiness significant with p-value 0.00 (<0.05). The same value influence the technology readiness to the Behavior to Use with the p-value 0.00 (<0.05). Nevertheless, the opposite occurs in the relationship between the influence of Government Support and Competitor Pressure on the Technology Readiness with p-value 0.81 and 0:25 respectively (> 0.05). From all these results it can be concluded that the H1, H2, H5 are supported while the H3, and H4 is not supported (see table 4).

Table 4. Results of hypothesis test

		P Values	Conclusion
H1	Contributor -> Technology Readiness	0.000	Supported
H2	Inhibitor -> Technology Readiness	0.000	Supported
H3	Government Support -> Technology Readiness	0.811	Not Supported
H4	Competitor Pressure -> Technology Readiness	0.253	Not Supported
H5	Technology Readiness -> Behavior to Use	0.000	Supported

4. Discussion and Findings

The analysis result shows that the contributor and the inhibitor significantly support the technology readiness. The finding is in line with the previous researches (e.g.: [28], [17], [1]) which also found that inhibitor and contributor have a significant role on technology readiness. Another significant effect also happened in the relationship of the technology readiness on the computer technology in the business process. This finding is suitable with many previous researches which also found the same thing. On the contrary, the competitor pressure and the government support as the major issue in this research did not significantly support the technology readiness, contradict the previous researches (e.g.:[25], [24], [6], [9], [20], [15], [3]). Those results explain the model is supported partially. To get better picture, further analysis using categorization and indirect effect are needed. To find the explanation about the effect of the competitor pressure and the government support on the technology readiness, so the deeper exploration about the respondents' perception on technology for supporting the business process was conducted. The exploration which is conducted is an exploration about the utility of computer technology (perceived usefulness). Construct perceived usefulness examines the utility of the perception toward the computer technology which is developed by Davis [4]. The result of the exploration, then, being categorized using the developed technique by Hadi [10] into five categories of the main very high, high, moderate, low, and very low. The categorization of the results can be seen that the majority of respondents (66%) perceive computer technology is useless (in the category of Low and very low). In contrast, a category perceived usefulness of high and very high only reached 18% (see table 5). The exploration findings explain the respondent argued that computer technology is not useful enough to support their business processes. These perceptions are likely to be the case because respondents surveyed a craft industry is still very small scale.

Table 5. Perceived usefulness categorization

Categories	Ranges criteria		Range		Total	%
Very High	$X \geq Mi + 1,5 Sdi$	33	$\geq X$		35	8%
High	$Mi + 0,5 Sdi \leq X < Mi + 1,5 Sdi$	27	$\leq X <$	33	44	10%
Moderate	$Mi - 0,5 Sdi \leq X < Mi + 0,5 Sdi$	21	$\leq X <$	27	73	16%
Low	$Mi - 1,5 Sdi \leq X < Mi - 0,5 Sdi$	15	$\leq X <$	21	84	19%
Very Low	$X < Mi - 1,5 Sdi$		$X <$	15	210	47%

Furthermore, the small industry is in the same cluster with the industries which have the characteristic which tend to low adopt e-business. Low Technology density is with medium Technology readiness [19]. Under these conditions, the competitive environment among industries has a tendency to not collateralize the technology as a base. In other words, the competitive environment does not require the use of computer technology so that Computer pressure has no significant effect on the Technology Readiness.

Table 6. Indirect effect

	P Values	Conclusion
Contributor -> Behavior to Use	0.000	Significant
Competitor Pressure -> Behavior to Use	0.256	Not Significant
Government Support -> Behavior to Use	0.810	Not Significant
Inhibitor -> Behavior to Use	0.000	Significant

One interesting finding from this study is the effect of the construct Government Support and Competitor pressure on the Technology Readiness was unsuccessful in substantiated (see table 4). Further analysis was conducted to determine the effect of each construct which were not hypothesized on the use of computers (Behavior to Use). The main purpose of this analysis is to give proper explanation on unsupported hypothesis and can explain the causes of unsupported hypothesis. Results of the analysis

which were taken from the total output effect PLS analysis has been done. Results of the analysis showed that indirect effect of Contributor and inhibitors against Behavior to Use have significant value with p-value 0.00 (<0.05), while the Competitor Pressure and Government support has no significant effect on the Behavior to Use with the p-value 0.811 and 0.256 (> 0.05) respectively (see table 6). The findings showed that the use of technology is more likely in favor by a factor Contributor (optimism and innovativeness) and inhibitors (Discomfort and Insecurity) than external factors (Competitor Pressure and Government Support). Thus, it can be concluded that the effect occurs between the Technology Readiness for Behavior to Use (H5) is the contribution of the construct Contributor and inhibitors.

5. Limitation and future research

This study used a sampling technique assisted by questionnaire. The main drawback of the questionnaire is control over the honesty of respondents to a given field that could lead to biased data. Despite of having the representative respondents, this study still has weaknesses in the SME sector restrictions as respondents namely craft industry sector. Different conditions can be encountered with different industry sectors or use varied industry sectors. In addition, this research model is only predictive model which can be redeveloped and retested by further researchers.

Small industrial sector which is more varied can be used for further research so that it can give more complete description. Nevertheless, the next research will be more interesting if it is explored further interesting findings of this study. Exploring and constructing government support for SMEs will be more interesting and complete the puzzle concepts that have been found in this study. Involving more detailed variables and details can also help the development of concepts and findings of this study.

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