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THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY CAPABILITY ON THE COMPETITIVE ADVANTAGE OF SMALL BUSINESSES

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ABSTRACT

The aim of this paper is to establish how Information and Communication Technology (ICT) capability has no effect on competitive advantage through the entrepreneurial orientation and organizational agility of Indonesian SMEs in the apparel retail sector. The study is based on resources that cannot be directly converted into the competitive advantage of companies but must instead be subjected to an entrepreneurial process and offer new insights into the use of ICT as a valuable corporate resource. The paper is based on a quantitative approach using a population comprising apparel retailers from traditional markets in Jakarta, Indonesia. The sample was obtained using random sampling. The survey was conducted among 462 small businesses across five traditional apparel markets managed by PD. Pasar Jaya. The data were processed using Structural Equation Modeling–Partial Least Squares. The results show that ICT capability has no significant effect on competitive advantage, although it does have a significant effect on entrepreneurial orientation and organizational agility. Organizational agility and entrepreneurial orientation have a significant effect on competitive advantage, thus indicating that ICT capability in small businesses cannot be directly converted into a competitive advantage. The finding of the research is that ICT capability is able to create competitive advantage in small businesses but only when present in conjunction with entrepreneurial orientation and organizational agility.

Keywords: Apparel retail; Competitive advantage; Entrepreneurial orientation; ICT capability; Organizational agility

1. INTRODUCTION

Information and Communication Technology (ICT) capability is one of the approaches by which business organizations can aim to increase their competitive advantage. According to Parida et al. (2016), ICT capability involves a firm's ability to strategically use information and communication technology functions or applications in their business activities and incorporates the use of e-mail, websites, e-commerce, web conferencing, intranets, extranets, and other similar tools. This definition is in accordance with that given by Teece et al. (1997) on capability, namely that it relates to a firm's ability to reconfigure resources

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and routines for the purpose of achieving sustained competitive advantage. Accordingly, ICT capability is required so that companies are able to adjust, integrate, reconfigure, and recreate their internal and external competencies in order to gain a competitive advantage in an ever-changing business environment.

Indonesia is experiencing a high rate of growth in the utilization of ICT as a small business capability. Euromonitor International notes that online sales in Indonesia are higher than those in Thailand and Singapore, while it is believed that the Indonesian *e-commerce market* offers the potential for further growth in the future. This is supported by both the country's large population and by it having the highest gross domestic product (GDP) among the ASEAN. Statista International notes that there was continued growth in the average volume of online sales in Indonesia during the period 2014–2020. Wireless mobile broadband (3G, LTE/4G) is the most widely used network access technology for online transactions for individual buyers, which means that the development of mobile phone technology influences the dynamics of the business.

The high volumes of online sales in Java and Bali are also driven by the high penetration of the Internet across their regions. Yogyakarta, Jakarta, and Bali are the three provinces with the highest Internet penetration rates, standing at 47%, 4%, and 4%, respectively. This penetration is driven mainly by 3G cell phone users. With their large populations and potential for economic growth, these three provinces represent prospective markets for e-commerce players.

According to statistics from the Ministry of Communication and Information Technology of the Republic of Indonesia (2016) pertaining to the volume of goods and services purchased via e-commerce in 2016, a total of 78.3% of purchases were for ready-made apparel. These data indicate that in the digital economy era, the process of buying and selling products occurs not only in conventional stores but also via digital media.

Previous research has shown that ICT capabilities can have a significant effect on competitive advantage (Powell & Micallef, 1997; Maguire et al., 2007; Olatokun & Kebonye, 2010; Cakmak & Tas, 2012; Chibelushi & Trigg, 2012; Harrigan et al., 2012; Higón, 2012; Adeniran & Johnston, 2014; Kadadevaramath et al., 2015; Adeniran & Johnston, 2016; Yunis et al., 2017). Hult and Ketchen (2001) argue that it is the collective contribution of a combination of resources that can determine competitive advantage.

Researchers of the competitive advantages of SMEs such as Bagheri et al. (2014), Budiarto et al. (2017), and Şerbu and Borza, (2014) believe that the current era of the digital economy requires every person and organization to be involved in effective ICT in the context of economic and community development. Hoque et al. (2016) in particular state that the study of the role of ICT in small businesses has become a special challenge. This is due to the fact that it relates to small businesses that have only limited resources and ICT but yet also possess certain distinctive characteristics from which to create a competitive advantage (Tripathy et al., 2016). Small clothing businesses in traditional markets have realized the importance of managing their ICT capability resources.

The originality of this research lies in its bid to test and explain the competitive advantages of small apparel retailers in traditional markets in Jakarta Province based on Resources Based View (RBV). In this case, there are three constructs involved, namely ICT capability, which forms part of the RBV of the firm, entrepreneurial orientation in the process of building organizational capability, and organizational agility in the process of forming competitive advantage. This phenomenon is approached based on the theory of the firm proposed by Barney (1991). A library search for ICT Capabilities, Entrepreneurial Orientation, Organizational Agility, and Competitive Advantages in SMEs revealed there to have been no prior study of the relationships among the constructs as described.

Therefore, the issue to be addressed by this research is the influence of ICT capability on competitive advantage through entrepreneurial orientation and organizational agility in small apparel retail businesses in Jakarta.

2. METHODS

The technique of analysis is Structural Equation Modeling (SEM) with SmartPLS3 software. According to Suwarno (2002), the size of the sample for SEM analysis required to yield a fairly stable result stands at between 200 and 600 respondents. Meanwhile, according to Hair et al. (2006), the sample size should be 5–10 times the expected number of model coefficients. The actual number of respondents who were successfully obtained stood at 462 small-scale business actors, derived from the multiplication of 5–10 times of the model coefficient with 65 research questionnaire items (Hair et al., 2006).

2.1. Size of the Dataset

The unit of analysis in this study is clothing traders who have the following characteristics: (1) registered as clothing traders located in traditional markets in Jakarta, Indonesia; (2) using ICT applications in the management of the company; and (3) meeting the criteria as a small business that sells clothing in accordance with the Law of the Republic of Indonesia No. 20 of 2008 on Micro, Small and Medium Enterprises.

The size of the population that satisfies all three criteria is 12,455 apparel traders in five markets, forming the center of apparel retail in Jakarta, Indonesia, with the population being distributed as follows.

Table 1 Size of total population and research sample

No	Name of Market	Total Population	Total Sample
1	Tanah Abang Market	8878	281
2	Jatinegara Market	800	48
3	Cipulir Market	1926	67
4	Mayestik Market	215	26
5	Blok M Square Market	636	47
	Total	12455	462

Malhotra (2010) stated that a Likert scale used with respondents should comprise a 5-point scale, with the following responses: 5 = Strongly agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly disagree.

2.2. Research Hypotheses

The main objective of this research is to identify and analyze the influence of ICT capability on the competitive advantage of small businesses through entrepreneurial orientation and organizational agility in small business apparel retail in Jakarta. The following hypotheses are considered in order to answer the main objectives of the study:

Research Hypothesis 1 : ICT capability has a significant effect on entrepreneurial orientation.
Research Hypothesis 2 : ICT capability has a significant effect on organizational agility.
Research Hypothesis 3 : Entrepreneurial orientation has a significant effect on organizational agility.
Research Hypothesis 4 : IT capability has a significant effect on competitive advantage.
Research Hypothesis 5 : Entrepreneurial orientation has a significant effect on competitive advantage.
Research Hypothesis 6 : Organizational agility has a significant effect on competitive advantage.

3. RESULTS AND DISCUSSION

This research uses the SEM analysis technique with Partial Least Squares (PLS). SEM analysis with PLS is carried out in three stages, namely outer model analysis, inner model analysis, and hypothesis testing.

3.1. Analysis of the Outer Model

According to Chin (1998) and Imam (2005), construct reliability testing is carried out using the measures of composite reliability and Cronbach's alpha. Constructs are deemed to be reliable if they have a composite reliability value above 0.70 and a Cronbach's alpha exceeding 0.60, while a value of average variance extracted (AVE) of 0.5 is considered adequate to measure validity (Imam, 2005). The following table presents an analysis of the research outer model.

Table 2 Cronbach's alpha, composite reliability, and average variance extracted

	Cut-off Value	Bus_ Agility	Comp_ Advantage	ICT_ Cap	Orientat_ Entre	Explanation
Cronbach's Alpha	>0.6	0.923	0.923	0.919	0.964	
Composite Reliability	>0.7	0.963	0.940	0.949	0.972	All aspects of the Small fashion business meet the required standard
Average Variance Extracted (AVE)	>0.5	0.929	0.723	0.861	0.875	

Based on the criteria laid out in Table 2, the data output reveals that all of the outer model criteria can be fulfilled. It can therefore be concluded that the research data have good validity and reliability, thus indicating it is possible to proceed to the analysis of the inner model.

3.2. Analysis of the Inner Model

Analysis of the inner model/structural model is conducted to ensure that the structural models are built robustly and accurately. Robust regression was first introduced by Andrews (1972) and is a regression method used when the data contain an abnormal error distribution or there are a number of outliers affecting the model (Azwar, 2009). It is important to use this method when analyzing data influenced by outliers in order that a model that is resistant to outliers can be produced.

Several indicators can form the basis of the inner model evaluation, including the coefficient of determination (R^2), predictive relevance (Q^2), and the goodness of fit index (GoF). The indicators are presented separately in the following section.

a) Coefficient of Determination (R^2)

The following table contains the R^2 values derived as SmartPLS 3 software output.

Table 3 R^2 values from software output

	R-squared	*Adjusted R-squared*
Business agility	0.868	0.867
Competitive advantage	0.726	0.723
Entrepreneurial orientation	0.873	0.873

Chin (1998) categorized R-squared values as 0.67 (strong), 0.33 (moderate), and below 0.19 (weak). The variables analyzed in this research model are deemed to have a strong relationship. The research contains the two endogenous variables of Organizational Agility and Competitive Advantage, along with two exogenous variables. Based on the R-squared and adjusted R-squared values, there is a strong relationship between the exogenous variables, either independently or together.

b) Predictive Relevance (Q^2)

The following formula can be used to calculate Q^2

$$Q^2 = 1-(1-R1^2)\ (1-R2^2)\ldots\ldots(1-Rn^2) \quad (1)$$

$$Q^2 = 1-(1-0.868)\ (1-0.726)\ (1-0.873) \quad (2)$$

$$Q^2 = 0.995$$

This test is conducted to determine the predictive capability using the blindfolding procedure. According to Chin (1998), a value of 0.02 indicates that the model has a low predictive capability; thus, a value of 0.15 indicates a low predictive capability of the model. A value of 0.35 indicates that the model has a high predictive capability; thus, if the Q^2 value is 0.995, then the model has a high predictive capability.

c) Goodness of Fit Index (GoF)

GoF values in SEM with PLS are calculated manually (Tenenhaus et al., 2005) using the following formula:

$$GoF = \sqrt{AVE^2 \text{x } R^2} \quad (3)$$

$$GoF = 0.77$$

According to Tenenhaus et al. (2005), a small GoF value = 0.1, a medium GoF = 0.25, and a large GoF = 0.38. The calculation of the GoF value shows that the model has a large GoF value, which means that the model represents a real phenomenon.

3.3. Hypothesis Testing

Testing of the hypotheses in SEM PLS is carried out using a bootstrapping process that generates t-count values. If the t-count value exceeds the t-statistic value with a 95% confidence level (>1.96), then the hypothesis is significant. The results of the bootstrapping are presented below. In order to identify the extent of the influence among the variables, it is first necessary to determine the value of the loading factor for the original sample output from smartPLS. This can be seen in the following path coefficients table for the smartPLS output.

Table 4 Path coefficients (Mean, STDEV, t-Value)

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ICT capability → *Entrepreneurial orientation*	0.934	0.934	0.007	134.857	0.000
ICT capability → *Business agility*	0.404	0.402	0.061	6.590	0.000
Entrepreneurial orientation → *Business agility*	0.543	0.545	0.061	8.964	0.000
ICT capability → *Competitive advantage*	-0.117	-0.113	0.080	1.458	0.146
Entrepreneurial orientation → *Competitive advantage*	0.493	0.494	0.069	7.149	0.000
Organizational agility → *Competitive advantage*	0.487	0.485	0.074	6.624	0.000

Based on the output displayed in Table 4, a total of five hypotheses had a t-value above 1.96, with one hypothesis having a t-value below 1.96. This means that out of the five research hypotheses, a total of four are proved to have a positive and significant influence, while one of the hypotheses is not significant. The results of the hypothesis testing are summarized and presented in Table 5 below.

Table 5 Summary of research hypothesis test results

No	Hypotheses	Results
H_1	ICT capability has an effect on entrepreneurial orientation	Accepted
H_2	ICT capability affects business agility	Accepted
H_3	*Entrepreneurial orientation affects business agility*	Accepted
H_4	ICT capability affects competitive advantage	Rejected
H_5	*Entrepreneurial orientation influences competitive advantage*	Accepted
H_6	*Organizational agility influences competitive advantage*	Accepted

3.4. Discussion

The results of this research confirm the findings of previous studies that ICT capability is positively related to entrepreneurial orientation. Thus, there is a tendency for entrepreneurial orientation to increase in parallel with an organization's good progress in ICT capability (Lucchetti & Sterlacchini, 2004; Harrigan et al., 2012; Higón, 2012; Adeniran & Johnston, 2014; Parida & Örtqvist, 2015; Parida et al., 2016; Yunis et al., 2017).

In this context, the analysis shows that ICT capability has the primary effect of enhancing a firm's efficiency. Entrepreneurial Orientation on ICT capability illustrates the potential to generate competitive advantage through new product innovations, proactive actions, and risk-taking in dynamic market conditions.

ICT capability can be defined as the ability of business actors to utilize digital media/information technology to support the running of the business, while information technology comprises a set of technologies used by an organization to produce, process, and disseminate information in every form. As such, information technology provides support for a company's operations and is useful for the purpose of reducing costs in business activities, especially for small businesses that require a budgetary allocation for other uses (Roostika & Muafi, 2014).

Small businesses in both developed and developing countries operate in highly uncertain and dynamic market conditions (Frambach et al., 2003; Laforet, 2008). According to Frambach et al. (2003), when faced with such market conditions, combined with technological turbulence, companies are forced to seek alternative ways to survive and grow. For many people, the use of ICT is considered to be the main source of organizational agility when dealing with both suppliers and consumers.

In line with previous research, Yaghoobi et al. (2014) showed that ICT capability has a positive effect on business agility. ICT capability will affect the agility of small businesses as adequate digital capabilities will enable a firm to identify and deal more effectively with many business opportunities, customer relationships, and resources.

Sambamurthy et al. (2003) argue that IT facilitates agility through external collaboration platforms, supply chain systems, and customer relationship management systems, in turn enabling the fast and up-to-date flow of information between buyers, sellers, partners, and competitors.

Entrepreneurial orientation and organizational agility are connected via a series of complex and multidimensional relationships. An entrepreneurial orientation creates good conditions for organizations to explore and exploit opportunities for the following reasons. First, innovativeness facilitates organizations to explore and exploit new ideas and helps them adjust to change (Lumpkin & Dess, 1996; Rauch et al., 2009). Technological innovation and progress are becoming an increasingly important part of the competitive strategies of many companies (Miller, 1983). Offering the ability to maintain an effective corporate entrepreneurial orientation, innovation can provide an attractive source of competitive advantage if employed to create positive synergy for the company. Similarly, if an innovation process or innovation results are difficult to replicate, an effective company will seek to prioritize innovation as an increasingly important factor in order for them to maintain a competitive advantage.

Unlike the research by Cakmak and Tas (2012) that sought to examine the effect of digital capabilities on competitive advantage, the results of this research indicate that ICT capability has no significant effect on competitive advantage. In contrast, however, the results of previous studies by Powell and Micallef (1997) did demonstrate that information technology has a positive effect on the competitive advantage of an organization.

The difference between this and other studies lies in its use of a sample. This study uses small businesses as its sample, while previous research (Powell & Micallef, 1997; Maguire et al., 2007; Olatokun & Kebonye, 2010; Cakmak & Tas, 2012; Chibelushi & Trigg, 2012; Harrigan et al., 2012; Higón, 2012; Adeniran & Johnston, 2014; Kadadevaramath et al., 2015; Adeniran & Johnston, 2016; Yunis et al., 2017) has tended to focus on large companies. As a result, there are differences in the role of those resources that can create competitive advantage. In a small business, it must be possible for the capability to become a resource capable of inducing the building of corporate excellence. It is possible for such capability to be used to identify highly competitive market opportunities and render small businesses more adaptable to the conditions within their business environment.

This research shows that the creation of ICT capability in the company must be able to be replicated. This is in accordance with the results of research by Pavlou and Sawy (2006), which state that a company's ICT capability will fail to be transformed into competitive advantage if it cannot be replicated. Ever-present market competition requires companies to be able to cope with the continuous internal and external environmental pressures that they face. As such, it must be possible for the capability to be reconfigured and used in conjunction with other resources. Such a process will require the mediation of other variables in order that the capability can become a resource input for achieving competitive advantage. The mediation variables proposed in this research are entrepreneurial orientation and organizational agility.

The results of this research (H_4) show that ICT capability has no significant effect on competitive advantage. This is acceptable because the emphasis in this research is on the capability to use ICT (ICT capability) and not the aspect of information technology; indeed, the Human Research Department is a user of ICT. While the technology in use may already be fully up-to-date with the latest developments, it may not necessarily be encouraging the development of competitive advantage for the company due to the fact that the users do not have the necessary capabilities with regard to its operation.

There is a difference in meaning between ICT capability and ICT itself. While ICT capability is the ability of a business actor to utilize digital media/information technology to support the business, ICT comprises a set of technologies used by an organization to produce, process, and disseminate information in every form. As such, ICT provides support for company operations.

The results confirm the assertion made in an OECD (2004) publication that a weakness of small businesses lies in the limited capability and aggressiveness of either their owners or workers to maximize business opportunities by utilizing digital media. Indeed, a number of factors can hinder Internet usage in small businesses, including the incompatibility of business processes, limited knowledge in terms of Internet use, limited managerial skills in Internet use, a limited number of computers and Internet connections, a lack of trust and security in Internet usage, and the high costs associated with computer development and maintenance (OECD, 2004).

Referring to the obtained data, it can be seen that social media is dominant in terms of its use by traders in their relationships with employees, suppliers, consumers, and customers. The following table displays the data pertaining to the respondents' use of information technology and telecommunications.

Table 6 Data on the respondents' use of ICT

Types of ICT	With Employees	With Suppliers	With Consumers	With Customers
Website	68	68	68	68
Social media (IG, WA, Line, FB, etc.)	267	267	267	267
Phone/SMS	127	127	127	127
Total	462	462	462	462

These results reinforce previous findings and are in line with the opinions of previous researchers. Previous studies conducted both locally and abroad have proven that an entrepreneurial orientation influences competitive advantage. Sirivanh et al. (2014) examined the factors that are directly and indirectly related to the growth of SMEs. They looked at entrepreneurial orientation and competitive advantage, with the results showing that entrepreneurial orientation has a significant effect on competitive advantage.

Mahmood and Hanafi (2013) examined the mediating role of competitive advantage in the construction of entrepreneurial orientation relationships against the performance of SMEs owned by women entrepreneurs. The results showed that entrepreneurial orientation had a significant effect on the performance of SMEs owned by women, while competitive advantage was identified as the medium that maintained the relationship between entrepreneurial orientation and the performance of SMEs owned by women.

In general, all dimensions of entrepreneurial orientation in small apparel retail businesses in Jakarta have high dimensional values. This can be understood based on the fact that small businesses are highly likely to take aggressive steps to innovate. According to Porter (2008), businesses with low-cost operations tend to take aggressive business decisions. For example, trading business with cash on delivery order is a very suitable condition for small businesses. A low-cost operation increases the potential for the business owner to be more proactive and dare to take risks independently, without the involvement of other parties.

Based on the results of the research, it is proven that the variable of organizational agility influences competitive advantage. Small businesses nowadays must be able to respond quickly, have short product cycles, and remain adaptable to changes in consumer demand (Uden, 2006). Faced with such conditions, small businesses need to be faster, more flexible, and participatory (Sussan & Johnson 2003), in addition to being more nimble, sharper, and tenacious (Yang & Wang 2014). Baker (1996) states that from the perspective of dynamic capability, speed and flexibility in responding to market changes offers a means of achieving organizational agility. Speed and flexibility in responding to market changes can form the heart of dynamic capability (Wang & Ahmed, 2007). Finally, organizational agility can become a source of competitive advantage when it makes it difficult for competitors to compete and imitate (Yaghoobi et al., 2014). Organizational agility is therefore a way to achieve competitive advantage (Wang & Ahmed, 2007).

4. CONCLUSION

The results of this research prove empirically that ICT capability does not directly affect the competitive advantage of small businesses. ICT capability in small businesses will affect competitive advantage only if present and executed in conjunction with organizational agility and or through an entrepreneurial orientation. Thus, organizational agility does have a direct effect on competitive advantage.

Small-scale retail apparel businesses need to improve their ICT capabilities, notably with regard to improving their ICT infrastructure so that they can reach a wider market, not only locally but also abroad. In addition, ICT capability helps companies to improve the efficiency and effectiveness of their business operations, which in turn can bolster the competitive advantage of small businesses. This research confirms the results of research by Nowacki and Staniewski (2012), Lee et al. (2016), and Qosasi and Permana (2017) that innovation is critical when seeking to deal with various situations in the market and in order to maintain a competitive advantage.

The results of this study could be further strengthened by conducting research in different places and with an expanded population, such as the population in Indonesia. In order to

strengthen and confirm the relationship between the variables in order to become a well-established theoretical concept, it is recommended that future research uses a different choice of dimensions, even if the locus and emphasis of the research remain the same.

5. ACKNOWLEDGEMENT

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