Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no3.1009

The Effects of Market Sensing Capability and Information Technology Competency on Innovation and Competitive Advantage*

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Received: November 30, 2020 Revised: February 01, 2021 Accepted: February 16, 2021

Abstract

This study examined the effect of market sensing capability and information technology competency (IT competency) on innovation and competitive advantage in small and medium-sized tour operators (SMTOs). This research was conducted on the SMTOs located in three major cities for a tourism destination, meeting, and exhibition in East Java, Indonesia. 175 directors or managers of SMTOs were sampled using the purposive sampling technique. Data was obtained from directors or managers using a structured questionnaire. The empirical data was then analyzed by using Structural Equation Modeling (SEM). This study showed that market sensing capability positively and significantly affects innovation. Furthermore, competitive advantage was positively and significantly affected by market sensing capability. Although results showed that IT competence positively and significantly affects innovation, in contrast, it did not positively and significantly affect competitive advantage. These research findings suggest that market sensing capability and innovation have a substantial role in creating a competitive advantage for SMTOs facing the Revolution Industry 4.0 and a dynamic environment. Thus, innovation for SMTOs can be achieved by optimizing the role of market sensing capability and IT competency. However, this study also suggests that the capability or competence will not have any impact on competitive advantage if neither is optimized.

Keywords: Competitive Advantage, IT Competency, Innovation, Market Sensing Capability, Tour Operator

JEL Classification Code: L21, L83, M10, O30

1. Introduction

As a part of small and medium-sized enterprises, SMTOs play a crucial role in the growth of national and local scale economics (Antara & Sumaniarsih, 2017). The key role of SMTOs as an economic driver is increasingly significant with higher tourism growth in the future (WTTC, 2020). However, nowadays, SMTOs needs to keep up with the Industrial Revolution 4.0 era marked by easy access to information through digital media. The inexorable shift from simple digitization (the Third Industrial Revolution) to innovation based on combinations of technologies (the Fourth Industrial Revolution) is forcing companies to reexamine the way they do business. More than 30 percent of the global population now uses social media platforms to connect, learn, and share information. The industrial revolution in the tour operator business is also marked by the emergence of Online Travel Agents (OTAs) which operate based on digital platforms. OTAs have been able to attract tourists or customers previously served by SMTOs. In terms of popularity, OTAs are easier to recognize than SMTOs (Januarti & Priantinah, 2018). Rosyidi (2018) informed that 71.4% of Indonesians utilize OTAs to plan their trips. The Industrial Revolution 4.0 also caused changes in tourist and market behavior as a result of the increasing use of digital devices.

*Acknowledgements:
This research has been financially supported by BPPDN Scholarship from the Directorate General of Higher Education, Republic of Indonesia.

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Consumer behavior in the digital era shows that consumers are more reactive and interactive in seeking information and demand high satisfaction (Pujani et al., 2015). Changes in the market and technology environment surely require SMTOs to be able to optimize their capabilities or competencies to innovate and create competitive advantages.

This study explored the idea that SMTOs are optimizing market sensing capability and IT competency as a dynamic capability to create innovation and have a competitive advantage. Market sensing is the capability to sense and respond to changes in consumer tastes, technology, and value that occur in the market environment (Likoum et al., 2020). This capability refers to the company's ability to collect and interpret information and knowledge from the market (Olavarrieta & Friedman, 2008) and utilize it to find opportunities and forecast future markets. Although several studies have examined how market sensing capability affects innovation (Ardyan, 2016; Alshanty & Emeagwali, 2019), their focus is more on the innovations of products and processes (technological innovation) in the manufacturing and service sectors in general. Other than that, in the previous studies, market sensing capability was linked to aspects related to marketing and performance, such as market performance, market penetration, or organization performance (Ardyan, 2016; Ahmed et al., 2017). So far, very few previous studies have explored the relationships between market sensing capability and competitive advantage.

Meanwhile, IT competency has an important role amidst business competitions, especially in the era that leans toward Industry 4.0 which is marked by the development of digital-based business platforms. IT competency plays a role in utilizing various IT resources to support work processes in the organization and to achieve intangible benefits (Ghobakhloo et al., 2015). In the previous study, IT competency was usually associated with performance and carried out in large companies (Pérez-López & Alegre, 2012). Research conducted by Ong and Hishamuddin (2008) on SMEs showed that IT competency has a significant impact on company competitiveness. Besides, within the global competition and dynamic markets, companies need to encourage innovation to achieve competitive advantage. Aouinait et al. (2019) in their previous study showed that innovation is an important factor for increasing the competitiveness of SMEs.

The following are several theoretical contributions that this study offers to the tourism industry. First, this study proposes an integrated theoretical framework on the importance of market sensing capability and IT competency in creating innovation and competitive advantage for SMTOs. Second, this study aims to investigate the relationships between market sensing capability, IT competency on innovation, and competitive advantage in SMTOs, a relatively under-researched area. Third, this study broadens the existing understanding of the creation of competitive advantage, how market sensing capability, and IT competency affect innovation and competitive advantage in the situation of technological disruption in the Industrial Revolution 4.0 era.

This study utilized SMTOs in Indonesia as the experimental site. For Indonesia, SMTOs have become one of the drivers of the tourism industry. In 2018, Indonesia was designated as the country with the fastest-growing tourism with its position at the ninth place in the world, third in Asia, and first in Southeast Asia (WTTC, 2018). On 6 April 2017, the World Economic Forum (WEF) issued the World's Travel & Tourism Competitive Index (TTCI) for 2016, in which Indonesia was assessed to have jumped a significant 8 rungs from rank no. 50 to no. 42 within one year. This considering that the previous year, in 2015, Indonesia's tourism competitiveness jumped 20 points from the earlier no. 70 status (WEF, 2017) The increase in the average growth of foreign tourists reached 49% in 2017 which is proof that Indonesia has risen in the world's confidence towards the country's tourism, and more importantly, that Indonesians themselves now have more confidence in the Tourism sector, that Indonesia's Tourism is indeed capable to compete among the world's top destinations. Tourism is truly special as it houses SMEs in the fields of transportation, restaurants, tour operators, and hotels. Although tourism growth is very promising in ASEAN countries (Nguyen & Nguyen, 2020), research on SMTOs in Indonesia has not been intensively carried out.

2. Literature Review

Throughout this decade, there has been an increasing number of ideas from strategists and management that dynamic capabilities are key to corporate strategy, value creation, and competitive advantage (Teece, 2009). Conceptually, dynamic capability studies are based on the concept of a resource-based view (Barney, 1991). According to Teece et al. (1997), the dynamic capability is the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Dynamic capabilities can be distinguished from operational capabilities, which pertain to the current operations of an organization. Dynamic capabilities, by contrast, refer to the capacity of an organization to purposefully create, extend, or modify its resource base. The dynamic capability has a perspective that innovation and a firm's competitive advantage is built through tangible and intangible resources (Weerawardena, & Mavondo, 2011). Resources and capabilities that are important and useful strategically and have a competitive edge can be considered an important source of innovation and competitive advantage (Vu, 2020). According to Porter (1985), competitive advantage is the leverage a business has over its competitors. This can be gained by offering clients better and greater value.

An organization is said to have achieved its competitive advantage when it can develop or take a series of actions that allow it to surpass its competitors (Wang, 2014). Ma (2000) defined that competitive advantage is the difference in value that a company has from its competitors to create better value. Ma's definition of competitive advantage seeks to avoid a distinction between a structural approach and a resource-based approach. This definition extends the definition of competitive advantage as proposed by Porter (1985) who defined the two ways in which an organization can achieve competitive advantage over its rivals: cost advantage and differentiation advantage. The cost advantage is when a business provides the same products and services as its competitors, albeit at a lesser cost. Differentiation advantage is when a business provides better products and services than its competitors. In Porter's view, strategic management should be concerned with building and sustaining competitive advantage (Weng-Chen et al., 2011).

2.1. Market Sensing Capability

Market sensing is a knowledge-related capability to monitor market and technological conditions and to respond to market changes appropriately (Day, 1994). Market sensing capability plays a crucial role in gathering and filtering the information the company needs from the business environment (Lin & Wang, 2015). For SMEs, this capability can be a key element in sensing changes occurring in the market and responding to changes, so that SMEs can develop products to suit market tastes (Sołek-Borowska, 2017). This capability plays an important role in the capability to respond to customer's needs and anticipate competitors as a whole (Kubo, 2015). For companies desiring to remain innovative, knowing information about market conditions, customer trends, and technology trends is a must (Rakthin et al., 2016). Empirical evidence shows that SMEs with market sensing capability will create innovative products (Zhang & Wu, 2013). This capability is an important element for organizations to survive, to be competitive, and to create values (Cravens et al., 2009).

Market sensing capability plays an important role in identifying market segments that are under-served by competitors. It is the ability to recognize emerging market requirements, assess customer responses rapidly, and design rapid market-entry strategies. Market sensing is critical for sustainable competitive advantage allowing firms to become aware of opportunities and threats. The company's success in innovation depends on how the company combines various knowledge about the market (Froehlich et al., 2017). By monitoring technological developments, companies can see the emergence of more effective novel marketing and sales techniques through new channels. This encourages companies to innovate in terms of sales and marketing channels for their products or services (Kareem & Alameer, 2019). Market sensing capability can help a company to identify market segments that are under-served by competitors and market niches with unmet expectations. This capability provides opportunities for SMEs to collect information and interpret the information to gain a competitive advantage (Adeniran & Johnson, 2012). Information about consumer or customer experiences can become valuable materials to be analyzed in more depth as a decision-making material to facilitate companies to be more competitive (Nyanga et al., 2019). Hence,

H1: *Market sensing capability positively and significantly affects innovation.*

H2: *Market sensing capability positively and significantly affects competitive advantage.*

2.2. IT Competency

IT facilitates organizations to innovate their products or processes, to develop new markets, and to change business processes to reduce time and costs to market (McDonald, 2012). Buhalis and Law (2008) proposed that IT has an important role in process innovation. This role makes it easier for companies to explore, exploit, and share knowledge to accelerate process innovation. Process innovation is the application or introduction of new technology or method for doing something that helps an organization remain competitive and meet customer demands. IT competency provides the mechanics needed by companies for various activities carried out regularly. This activity provides the possibility for the transfer of information and knowledge that supports creativity and innovation (Pérez-López & Alegre, 2012). IT competency is a collection of explicit and tacit IT knowledge that provides values for the company (Bassellier et al., 2001), hence, IT plays an important role in creating a competitive advantage (Sambamurthy et al., 2003). This competency represents the extent to which the company's IT knowledge can be used to manage information effectively (Aróstegui et al., 2015). IT competency can be a facilitator to collect and process information or knowledge to support innovation (Hosseini et al., 2017). IT also has a strong effect on competitive advantage in cost leadership or differentiation (Porter & Millar, 1985). A prior study conducted by Ong and Hishamuddin (2008) found that a company can achieve its competitive advantage by integrating IT knowledge, IT operations, and IT objects. Based on this explanation, the developed hypotheses are:

H3: *IT competency positively and significantly affects innovation.*

H4: *IT competency positively and significantly affects competitive advantage.*

2.3. Innovation

Innovation can be in the form of the success of a business organization to produce something new and useful (Udimal et al., 2019). Within the rapidly changing market conditions, the survival of the company depends on how the company makes innovations. The successful exploitation of new ideas is crucial to a business being able to improve its processes, bring new and improved products and services to market, increase its efficiency and, most importantly, improve its profitability (Distanont & Khongmalai, 2018). Companies need to develop marketing innovation and organizational innovation to deal with changes in consumer behavior and technological developments. Najib and Kiminami (2011) highlight empirical evidence that marketing innovation has a significant impact on SMEs' growth. Meanwhile, organizational innovation can be carried out through sharing responsibilities, updating the organizational structure, and renewing relationships with parties outside the company (Rajapathirana & Hui, 2018). Various types of innovation are often used by business actors to fulfill the services and desires of consumers (Sigalat-Signes et al., 2020). Moreover, innovation is also used as a tool to enter new markets or to expand markets, and to increase efficiency and profits (Jimenez-Jimenez et al., 2019). Previous empirical evidence shows that innovation is used to gain a competitive advantage (Dewi et al., 2020; Sijabat et al., 2020). Therefore,

H5: *Innovation positively and significantly affects competitive advantage.*

3. Research Methods and Materials

3.1. Population, Sample, and Sampling Technique

This research was conducted on the SMTOs located in Surabaya, Sidoarjo, and Malang as three major cities for tourism destinations, meetings, conferences, and exhibition activities in East Java, Indonesia. In 2019, there were about 309 SMTOs in Surabaya, Sidoarjo, and Malang. The sampling technique used was purposive sampling with several criteria: a) the SMTO has operated for a minimum of 2 years, and b) the SMTO has an official business license from the Indonesian Government. Data was obtained from directors or managers using a structured questionnaire from July to November 2019. There were 175 samples obtained proportionally from the determined population.

3.2. Measurement

The construct measurements in this research were adopted from past studies. For the measurement of all factors in this research, a 5-point Likert scale was used, with a range from "strongly disagree" (1) to "strongly agree" (5) to collect responses. The measurement of market sensing capability used 4 dimensions with 12 items adopted from Olavarrieta and Friedmann (2008). IT competency was measured by using 3 dimensions with 9 items from Tippins and Sohi (2003). Innovation was measured by using 4 dimensions from OECD (2005) with 12 items adopted from Rajapathirana and Hui (2018). Competitive advantage was measured by using the competitive strategy dimension of Porter (1980) with 9 items adopted from Chen and Liu (2019) and Yamin et al. (1999).

3.3. Analysis Method

In this study, a test of the research instrument was carried out for items and descriptive analysis using SPSS 18. The data analysis method and hypothesis testing was done using SEM with the WarpPLS 8.0 software.

4. Results

4.1. Respondent Description

The questionnaire results indicate that the largest number of respondents in this study were male (56.6%). The largest percentage based on the respondents' position was business owners as directors (53.7%). 65.7% of the respondents held undergraduate degrees. The largest percentage of respondents, 42.3%, had 6–15 years of business experience. There were 79.4% of respondents who had fewer than 10 employees. The highest percentage of respondents who had not adopted software (database and online reservation system) was 76%, and 51.4% of respondents had company websites. It is also known that all respondents used the Internet, computer devices, and social media-based applications for their business.

4.2. Validity and Reliability

The measurement instruments' validity and reliability were cross-checked by implementing average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha (Hair et al., 2017). The convergence of the validity and reliability of the first-order factors is shown in Table 1. All AVE values and loading factor of the items were ≥ 0.5. Thus, this fulfilled convergent validity. CR values were > 0.7, and Cronbach's alpha values were ≥ 0.6; hence, it fulfilled reliability (Ghozali & Latan, 2012). Convergent validity for the second-order factors was used to determine whether the indicator was valid in measuring latent variables. Table 2 shows the results of the measurement of convergent validity for the second-order showing that the factor loadings and

Table 1: Validity and Reliability of the First Order

Variables	Dimensions	Items	Loading Factor	AVE	CR	Cronbach's alpha
Market Sensing Capability	Information acquisition activities	3	0.656–0.838	0.559	0.790	0.600
	Information dissemination activities	3	0.869–0.919	0.784	0.916	0.861
	Information interpretation activities	3	0.795–0.870	0.700	0.875	0.783
	Information storage-retrieval	3	0.821–0.893	0.751	0.900	0.834
IT Competency	IT knowledge	3	0.778–0.869	0.683	0.866	0.767
	IT operations	3	0.788–0.871	0.689	0.869	0.774
	IT objects	3	0.708–0.833	0.604	0.820	0.670
Innovation	Product innovation	3	0.872–0.920	0.813	0.929	0.885
	Process innovation	3	0.884–0.931	0.811	0.928	0.883
	Marketing innovation	3	0.869–0.925	0.813	0.929	0.885
	Organizational innovation	3	0.891–0.895	0.798	0.922	0.087
Competitive Advantage	Cost leadership	3	0.721–0.887	0.885	0.866	0.766
	Differentiation	3	0.834–0.907	0.746	0.898	0.829
	Focus	3	0.793–0.904	0.713	0.881	0.797

Table 2: Validity and Reliability of the Second Order

Variables	Dimensions	Loading Factor	AVE	CR	Cronbach's alpha	R^2
Market Sensing Capability	4	0.740–0.896	0.684	0.896	0.873	–
IT Competency	3	0.822–0.864	0.705	0.877	0.790	–
Innovation	4	0.840–0.918	0.767	0.929	0.898	0.433
Competitive Advantage	3	0.725–0.875	0.671	0.859	0.751	0.697

the AVE of all indicators exceeded 0.6. Construct reliability was calculated by using CR and Cronbach's alpha. Construct reliability is declared reliable if CR is ≥ 0.7 and Cronbach's alpha is ≥ 0.6.

4.3. Evaluation Model

Model fit and quality indices for evaluating the structural model are indicated by the relationship among variables. Before interpreting the results of hypotheses testing, the model should have valid goodness of fit as the index. The goodness of fit of a statistical model describes how well it fits a set of observations. Measures of goodness of fit typically summarize the discrepancy between observed values and the values expected under the model in question (Solimun et al., 2017). The evaluation of the model by using model fit and quality indices shows that the model is supported by good data and has quality indicators that comply with all the requirements in WarpPLS. The results of the model evaluation are shown in Table 3.

4.4. Hypotheses Testing

Based on the results of the WarpPLS analysis, hypotheses testing indicated the results of the path coefficient and its level of significance. There were 5 kinds of relationships between variables tested in this study. The relationship between variables was declared significant with a *p*-value limit of 0.05 (5%). Table 4 presents the summary of the results from the WarpPLS analysis.

5. Discussion

The research findings show that market sensing capability positively and significantly affects innovation. From the theoretical perspective, this study results affirm the dynamic

Table 3: Model Fit and Quality Indices

Model Fit and Quality Indices	Fit Criteria	Analysis Result	Information
Average path coefficient (APC)	$p < 0.05$	0.322	Good
Average *R*-squared (ARS)	$p < 0.05$	0.565	Good
Average adjusted *R*-squared (AARS)	$p < 0.05$	0.559	Good
Average block VIF (AVIF)	acceptable if ≤ 5, ideally ≤ 3.3	2.217	Ideal
Average full collinearity VIF (AFVIF)	acceptable if ≤ 5, ideally ≤ 3.3	2.458	Ideal
Tenenhaus GoF (GoF)	small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36	0.632	Ideal
Sympson's paradox ratio (SPR)	acceptable if ≥ 0.7, ideally = 1	1.000	Ideal
R-squared contribution ratio (RSCR)	acceptable if ≥ 0.9, ideally = 1	1.000	Ideal
Statistical suppression ratio (SSR)	acceptable if ≥ 0.7	1.000	Ideal
Nonlinear bi-variate causality direction ratio (NLBCDR)	acceptable if ≥ 0.7	1.000	Ideal

Table 4: Results of Hypotheses Testing

Hypotheses	Relationship	Coefficients	*p*-value	Conclusion	Decision
H1	Market Sensing Capability → Innovation	0.308	< 0.001*	Significant	Supported
H2	Market Sensing Capability → Competitive Advantage	0.147	0.024*	Significant	Supported
H3	IT Competency → Innovation	0.404	< 0.001*	Significant	Supported
H4	IT Competency → Competitive Advantage	0.105	0.079	Not significant	Not supported
H5	Innovation → Competitive Advantage	0.645	< 0.001*	Significant	Supported

Note: *indicates significant at 0.05 (5%).

capability theory as a key factor in innovation (Teece et al., 1997; Eisenhardt & Martin, 2000). These results prove that market sensing capability is not just data collection and reporting, but is a process of building management's understanding of market conditions, competition, and how the market will tend to change in the future. Based on the information obtained by SMTOs from markets, competitors and customers, it can help SMTOs understand changes in the environment to be recognized as market opportunities and implement innovation actions. These results indicate that innovation at SMTOs can be improved through information acquisition, information dissemination, information interpretation, and information storage. SMTOs are actively seeking and collecting information that allows them to gain knowledge about developments or trends that occur in the world of tourism, especially information on new tourist destinations and of the main tourist destinations or those destinations that tourists are interested in. This information is disseminated to work units so that there is a similar understanding among all organizational lines of market developments.

A firm's market sensing capability is the firm's capacity to accumulate knowledge from the market (i.e., customers, competitors, and technologies), interpret it, and accumulate it in the form of knowledge accessible from organizational memory. The market-sensing capability will influence knowledge creation and process as well as product innovation. The knowledge creation process has also maintained a positive effect on the process and product innovation. The knowledge creation process mediated the link between market-sensing capability and process and product innovation. Market sensing abilities of an enterprise are important for SME's improvement which requires learning-positioning for firm effectiveness. Besides, managers need to harmonize their procedures concerning market sensing and learning. Market sensing is critical for sustainable competitive advantage allowing firms to become aware of opportunities and threats. If they recognize the environment of the market

well, they will be able to recognize market needs and market trends so that they can facilitate innovation. The findings of this study do not support Zhou et al. (2017) who discovered that market sensing capability has no significant effect on innovation. They argued that executives in manufacturing companies tend to be unfamiliar with the market sensing activities that have to be carried out regularly. For them, the market is something complex; hence, it takes a long sensing time to be able to create innovation. Executives are more inclined to technical innovation, because of its simple work rules (Bingham et al., 2007).

The results of this current study confirm that market sensing capability positively and significantly affects competitive advantage. The findings in this study confirm the theory that dynamic capability is a source of competitive advantage (Teece et al., 1997). Therefore, dynamic capability can respond to changes that will heighten the competitive advantage. This indicates that through intensive market information search activities, SMTOs will get various types of current information about the market such as changes in prices, potential and prospective markets, and information about new routes or newly discovered or developed destinations. This information will be something to be discussed in internal SMTOs to make a product or service that is different from competitors and is more competitive in cost. Furthermore, the results of this current study also show that market sensing is one of the main sources of competitive advantage, as a company's ability to study competitors, customers, and the business environment. With this capability, companies can anticipate and predict changes in customer behavior, and respond quickly to customers' need and want. These results indicate that all market sensing activities may lead the company to have competitiveness because the company is capable of knowing market conditions well. Through market sensing, SMTO owners or managers know which market segments they have a competitive advantage. For example, the corporate market segment is the focus of SMTOs. Corporate usually tends to ask for a variety of specific administrative or service requirements, such as payment delays and proof of payment for activity reports. These cannot be served by OTAs. Besides, companies can pay attention to consumers or potential tourists who tend to be less familiar with information technology. Moreover, market sensing provides an advantage for companies to create products or services that are different from competitors.

The results confirm that IT competence positively and significantly affects innovation. The results of this study are in line with the view of dynamic capabilities that as strategic assets, technology plays a fundamental role in the continuity and growth of a company (Teece et al., 1997; Bharadwaj, 2000), and companies need to encourage innovation (Mata et al., 1995). In the context of this research, IT knowledge, IT operations, and IT objects as dimensions of IT competencies contribute to increased innovation. Knowledge of hardware and IT developments owned by employees can be used by directors or managers to drive innovation. Various types of social media-based applications, computer devices, and the Internet are proven to support SMTOs to create product innovation and process innovation. These provide benefits for SMTOs for hotel room bookings, airline ticket reservations, and other types of services. Empirically, the results of this study indicate that IT knowledge, IT operations, and IT objects provide incentives to create innovation. Jimenez-Jimenez et al. (2019) argued that the activities generated by IT devices can produce various kinds of analyzes that play an important role in the innovation process. Human resources who understand IT also contribute to the innovation process. They will be able to utilize customer data and market information to develop new products and analyze them according to market demands.

The results demonstrate that IT competency does not significantly affect competitive advantage. The findings in this study do not confirm the dynamic capability view that core competencies can be used to create competitive advantage (Teece et al., 1997). The results of this current study contradict previous studies (Ong & Hishamuddin, 2008; Shbiei & Olimat, 2016). However, these findings support the opinion of Carr (2003) that not all IT owned by companies can contribute to creating competitive advantage. He argued that in reality, the IT investment is far greater than the profits received by the company. In this case, this insignificant effect can be caused by first, based on the respondent's description, it is known that almost all SMTOs adopt IT that are similar, such as Internet networks, computer devices, and android applications or social media platforms. This indicates that IT competency among SMTOs does not have significantly different values; hence, it does not have an impact on competitiveness. Besides, IT will have a significant competitive advantage impact if it has specifications that other companies find it difficult to copy (Bharadwaj, 2000). Second, there are technical problems in IT operations that are used to manage various market information obtained by the company. This argument is supported by the descriptions of respondents that most of the SMTOs are still not fully supported by software aided work and database management system to manage information in the company. This condition indicates that the process of managing the flow of information received by the company tends to be managed simply and improperly. If IT operations run optimally, the company will able to properly process and manage information from consumers, customers, and the market.

Research findings also prove that innovation positively and significantly affects competitive advantage. These results confirm the dynamic capability theory that innovation

represents a company's ability to successfully respond to conditions that occur in the environment (Teece et al., 1997). These results indicate that innovation is a vital element and an intangible asset in a company that can offer a competitive advantage if it is managed in the right way. These results also affirm the opinion of Alpkan et al. (2010) that innovation is an essential component of competitive advantage that can be carried out in organizational structures, production process activities, product launches, and company marketing strategies. In this case, through innovation, SMTOs can create and offer various types of new tour packages, private trips, educational tours, or offer new and unique services to the market to avoid the potential tourists or consumers from becoming bored and may have alternative options to enjoy products and services. SMTOs can also carry out marketing innovation through interactive online marketing and sales activities through the Internet or social media platforms to create a competitive advantage.

6. Conclusion

Theoretically, the results of this current study support the dynamic capability perspective that an organization's capability or competence is a source of competitive advantage. However, it is also important to note that the capability or competence will not have any impact on competitive advantage if neither is optimized. In the context of this research, the IT competency of SMTOs has not proven to match the digital platforms based on new technology. This research also proves that there is a dominant technological shift in the tourism travel business sector. IT resources owned by SMTOs may have played a very significant role before the Industrial Revolution 4.0 era. However, when businesses using digital platforms are increasing along with changes in consumer or tourist behavior, IT resources among SMTOs urgently require to be improved. Furthermore, this study is one of the few studies on SMTOs in developing countries in Southeast Asia and especially in Indonesia in the Industrial Revolution 4.0 era.

Three managerial implications can be offered based on this study. First, the directors or managers of SMTOs need to maintain the role of market sensing capability and IT competency to continue to increase innovation. In this study, innovation is proven to have a vital role in dealing with a business environment that tends to change rapidly. SMTOs that have high innovation power will be able to survive in business competition. Second, SMTOs need to make efforts to redesign their business models to suit changes in market behavior and the Industry 4.0 era. Besides, SMTOs should make improvements in IT competence to support directors or managers with regard to information processing and technical work, such as using database systems. In the digital and the 4.0 Industrial Revolution eras, the role of leaders and leadership attitudes in guiding and implementing IT transformation in organizations is crucial. The commitment of the leader to facilitate IT success is manifested by providing resources and integrating IT to provide significant benefits to business processes. Third, SMTOs should continue maintaining various services in the corporate, community, and government agencies segments, because for now, these services are the advantages that OTAs do not have.

The research sample was taken from SMTOs in three big cities in East Java, Indonesia; thus, the results cannot be generalized. Besides, this research was conducted several months before the Covid-19 pandemic. Therefore, future research needs to be carried out to determine the conditions of SMTOs in the 4.0 Industrial Revolution era at the time of the pandemic. Future research should be carried out in other tourism industries, such as hotels or industries that have IT resources, more diverse marketing channels, and more specific types of products or services.

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