Customer agility and firm performance in the tourism industry

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Abstract

The growing importance of agility in any business process is universally accepted and extensively investigated in different disciplines. However, lacking empirical pieces of evidence for the suggested theoretical framework of agility hinders its application in the practices. Thus, this study attempts to address this issue by empirically testing a framework of customer agility's antecedents and consequences using the tourism industry context. The framework is tested on data collected from 231 Small and Medium Enterprises (SMEs) in the tourism industry in Vietnam and analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM). Findings suggest that not all attributes of customer agility exert positive impacts on the firm's performance and human factors are posited as the most important antecedents for organizational agility. A number of practical implications are also suggested from the research findings.

Key words: customer agility; customer orientation; firms' performance; knowledge management; IT capabilities; tourism industry; Vietnam

1. Introduction

Constantly changing business environments characterized by intensive rivalry, rapid technological enhancement and shifting customer demands has made sustaining competitive advantages is extremely difficult – if not – impossible (McAfee & Brynjolfsson, 2008). As such, firms are required to be "agile" in order to sense and respond accurately via the appropriate channel to the changes in a cost-effective way for better aligning with the external business environment. Agility was initially a concept that emerged from manufacturing scholars and practices (Gunasekaran, 1998; Yusuf, Sarhadi, & Gunasekaran, 1999). Initially, it was thought that manufacturing flexibility can be achieved by implementing the automation system or a more innovative manufacturing system such as lean manufacturing (Christopher, 2000). However, it was soon realized that this route to manufacturing flexibility can lead to the paradox where a firm can be very effective in their manufacturing systems, yet inventory of finished products can be as high as several months of sales, but customers still must wait for extended long time to get the exact products they want. While lean as a concept can be applied best for firms which operating in an industry where products are generally homogeneous, agility is imperative in changing condition environment which rapid change capabilities to respond to the shifts in market-based threats and opportunities are the top priority (Sharifi & Zhang, 1999; Dubey & Gunasekaran, 2015).

Since then, the agility concept has been widely adopted into many disciplined. Scholars have been intensively focused on the theoretical descriptions of agility and framework for implementation in a specific context (Yusuf, et al., 1999; Yusuf, Gunasekaran, Adeleye, & Sivayoganathan, 2004; Fayezi, Zutshi, & O'Loughlin, 2017; Ravichandran, 2018). However, the empirical shreds of evidence testing these frameworks have not been sufficiently conducted (Sherehiy, Karwowski, & Layer, 2007).

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Notably, though it is one of the requisites for achieving organization agility, until recently, there are very few theoretical and empirical researches investigating the agility in customer services and management (Bernardes & Hanna, 2009; Yang & Liu, 2012; Roberts & Grover, 2012a, b; Chatfield & Reddick, 2018; Zhou, Qiao, Du, Wang, Fan, & Yan, 2018). Moreover, each research adopts different views on customer agility regarding their measures and effects. Thus, the drivers of customer agility, its attributes and its real effects on the firm's performances are still unclear. This study attempts to contribute to filling this gap by proposing a framework of customer agility's attributes, antecedents, and consequences, then providing empirical shreds of evidence for the proposed interrelationships by using the tourism industry as a context.

2. Theoretical framework

2.1. Agility and customer agility

Throughout the development of the topic, two main approaches to achieve enterprise agility have emerged (Yang & Liu, 2012). First, a firm could enhance its agility by seeking for the successful exploration of a number of competitive strategies including cost efficiency, quality improvement, speed of adjustment and flexibility (Fliedner & Vokurka, 1997; Yusuf, et al., 1999; Yusuf et al., 2004; Tallon & Pinsonneault, 2011; Lu & Ramamurthy, 2011). Thus, in this perspective, agility is constructed on inherited capabilities from lean and flexibility strategies to build new firms' capabilities to adapt to sudden changes in the business environment.

The second approach considers agility as some sets of specific business processes that detect environmental changes then respond rapidly and effectively. As such, two main dimensions of enterprise agility comprise sensing capabilities and responding capabilities (Dove, 2001; Weill, Subramani, & Broadbent, 2002). For example, Yang and Liu (2012) defined enterprise agility as the ability to sense and respond to changes in customers, competitors and suppliers' landscapes. Yang and Liu (2012) is among the few studies which include and investigate the effects of direct business process for dealing with customer changes on firm's performance (Roberts & Grover, 2012a, b; Chatfield & Reddick, 2018). Most of the researches on the agility topic devote to more broaden agility concepts as strategic agility, organizational agility or supply chain agility (Lin, Chiu, & Chu, 2006; Agarwal, Shankar, & Tiwari, 2007; Swafford, Ghosh, & Murthy, 2008; Chan, Ngai, & Moon, 2017). It is understandable concerning the starting point of the agility concept was form manufacturing and industrial engineering fields. As such, it is imperative to investigate the direct effects of business processes for dealing with customer changes on the firm's performance in the topic of agility.

This study fills this gap in the literature of agility in the management and marketing disciplines by exploring the antecedents of customer agility and providing empirical shreds of evidence of its effects on the firm's performance as well. More specifically, customer agility is constructed based on the second approach of the enterprise agility and consists of two dimensions, which are "sensing capability" and "responding capability" (Roberts & Grover, 2012a, b). Also, as suggested in Roberts and Grover (2012b), this study is interested in empirically investigating the interactions between the two attributes of customer agility: sensing and responding capabilities. It is argued that for positively impacting the firm's performance, the sensing capability and responding need to work together and sensing capability need to accurately and promptly provide sufficient information for effective and in-time responsiveness to customers.

In the context of the tourism sector, customer satisfaction has been one of the key drivers of customers' intention to return and repurchasing behaviors for any tourism services and destinations (Marcussen,

2011; Nakatova, 2014). However, the specific factors of satisfaction in tourism services are widely variant and context-dependent. Therefore, firms' customer agility to sense and respond to customers' demands is crucial for surviving and thriving in the tourism sector. Marcussen (2011) studied 22 motives and 19 activities from customers' perspectives to form 13 holiday themes which can result in customers' satisfaction related to issues such as nature, friendly-people, activities for children, shopping, meeting-new-people, etc. Then, the study also studied the effects of tourism activity characteristics (e.g. destination, length of stay, seasons, distance to destination, etc.) and guests' demographic backgrounds (e.g. age, household income level, gender, nationality, etc.) on service satisfaction. The results found that there are no common sets of factors that determine the level of guests' satisfaction. Instead, the guests' specific interests and characteristics are the keys to identifying customers' criteria for being satisfied with the services and intention to returns. Thus, being sensitive to customers' needs and demands and responding flexibly and timely to these needs is crucial for achieving customer satisfaction, then improving firms' performance significantly.

It is surprising that the customer agility concept as a whole is quite new and that it has not received sufficient attention in the context of tourism and hospitality. Part of the reasons lie in the fact that most of the studies focused more on the specific characteristics of customer agility such as innovative capabilities (Grissemann, Pikkemaat, & Weger, 2013), customer responsiveness and transformation capabilities (Lam & Law, 2019); or related agility such as supply chain agility (García-Alcaraz et al., 2017), organizational agility (Mihardjo, Sasmoko, & Rukmana, 2019), social media agility (Chuang, 2020), and website agility (Mandal, Roy, & Raju, 2017). The common theme arising from these studies about firms' agility in hospitality contexts highlights the imperative needs to create a learning relationship with customers and promote the co-creation values that benefit both customers and firms in the hospitality sector. Within this context, three hypotheses are proposed as presented in Figure 1:

H1: *Customer-Sensing capability is positively associated with tourism SMEs' performance.*

H2: *Customer-Responding capability is positively associated with tourism SMEs' performance.*

H3: *Customer-Sensing capability is positively associated with Customer-Responding capability in tourism SME.*

2.2. Customer agility antecedents

Adopting the conceptual model of agile manufacturing proposed by Sharifi and Zhang (1999), this study assumed that the antecedents of the customer agility should be consistent with the two agility processes suggested in the model, which might include specific factors such as customer-orientation organizational factors, knowledge management, and technology infrastructure.

2.2.1. Customer-orientation organizational factors

The customer-orientation organizational factors concern about the fundamental changes in the organization's goal and objective, people's mindset, and the conductions of business processes (Ryals & Knox, 2001; Hoffman & Kashmeri, 2000). On top of all, the first step in creating customer agility should start from the alignment between the business strategy and customer strategy. The critical idea by Olson, Slater, and Hult (2005) suggested that each business strategy (i.e. low-cost defender or differentiated defender) will have their own marketing organization's structural characteristics (i.e. formalization, centralization, and specialization) and strategic behavioral focus (i.e., customers, competitors, innovation) which are fit together. Notably, Olson et al. (2005) confirmed that the highest-performing firms which follow the differentiated and prospective strategy primarily focus on decentralized systems of authorities and focus on customer-orientation in their marketing strategy as well.

Another critical activity to consider is organizational structures. Customer agility requires the inter-functional integration in organizational structure to collectively gather employees' efforts and interests together toward the common goal of identifying and responding effectively to the customer (Sharifi, Colquhoun, Barclay, & Dann, 2001; Jackson & Johansson, 2003. As such, it is essential to establish the customer-focus teams, cross-discipline and cross-functional teams (Sheth & Sisodia, 2002). Especially, human resources play the most vital roles in achieving customer agility success. Particularly, the strong commitment and support of the top manager are the most essential (Finnegan & Currie, 2010). In addition, Wihuda, Kurniawan, Kusumah, and Adawiyah (2017) found that empowering leadership among employees can significantly improve employee service innovative behaviors using the Indonesian tourism context. This linkage is specifically strong when there are the mediating effects of improvisation self-efficacy and employee engagement. Thus, it is argued that organizational factors, especially human factors, play a key role in improving the ability of tourism firms to define changes in guests' demands and preferences, and then to develop new products/services to respond to them actively. As such, a set of hypotheses is posited for testing as presented in Figure 1:

H4a: *Customer-orientation organizational factors are positively associated with the customer-sensing capability.*

H4b: *Customer-orientation organizational factors are positively associated with the customer-responding capability.*

2.2.2. Knowledge management

In the context of business, knowledge is a firm's valuable asset that needs to be managed and developed over time (Kakabadse, Kakabadse, & Kouzmin, 2003). Knowledge management plays an extremely important role in the antecedents of customer agility, but it is usually overlooked by managers in practice. Organizational learning is the prerequisite for any firm to survive in the current fast-paced changing environment which usually referred to as the knowledge-based economy (Garrido-Moreno & Padilla-Meléndez, 2011). The learning capability is also the source of firms' performance differentials in the theories such as the Schumpeter view in organization economics theory or the competence-based view in strategic management theory.

Interestingly, innovation capability enabled by learning is assumed to explain the valuable resources which drive the competitive advantage for any firm (Stoelhorst & Van Raaij, 2004). Therefore, having the learning organization culture and processes, a firm can able to affect, change, and reconfigure resources proactively. As customer agility is crucially dependent on accurate customer knowledge and market knowledge to identify and respond to customers' changing preferences, the most crucial role of knowledge management in customer agility is to develop the "learning relationship" with customer so that firm can be able to develop the "360-degree" view about customers (Zahay & Griffin, 2004; Cohen & Olsen, 2015). In addition, knowledge sharing in knowledge management is the condition for boosting the organizational-wide learning cultures, and it is the real mechanism that can translate the knowledge into a real benefit by providing the customer data and knowledge to the end-users in an organization (Schulz, 2001; Salmador & Bueno, 2007). As a result, a hypothesis is proposed as presented in Figure 1:

H5a: *Knowledge management factors are positively associated with the customer-sensing capability in tourism SMEs.*

H5b: *Knowledge management factors are positively associated with the customer- responding capability in tourism SMEs.*

2.2.3. Technology capability

First, technology capabilities help the firm to collect and store data and information from customers on an unprecedented scale and in many more new channels such as through the internet or social network applications. Second, technology also can assist firms to intelligently and empirically analyze the data collected to support and continuously inform the decision making with more relevant insights form customers and the market (Dove, 2001; Roberts & Grover, 2012 b). This capability enables firms to achieve effective customized communications and efficiently deliver personalized value offerings to individual customers (Vrechopoulos, 2004). Besides, new communication technologies, especially the internet and mobile devices have dramatically changed the way how a firm communicates and does business with customers (Bharadwaj, 2000; Sambamurthy, Bharadwaj, & Grover, 2003). For example, Tallon and Pinsonneault (2011) found that Information Technology (IT) flexibility can help to moderate the relationship between the alignment of IT and the firm's performance. Moreover, the positive link between IT alignment and firm performance applies to all firms, regardless of market volatility. Lu and Ramamurthy (2011) conceptualized IT capabilities into three separate constructs as IT infrastructure, IT business spanning, IT proactive stance for empirically testing their effects on organizational agility. They found that all three constructs have significant positive impacts on organizational agility in terms of both external market agility and internal operational agility. Thus, IT capabilities are proposed to be one of the main antecedents of customer agility capabilities.

Besides, in this study, because of its powers and influences on many aspects of organizational operations, IT capabilities are also posited to be the supporter for other antecedents of customer agility for investigating the interaction between antecedents of customer agility (Tallon & Pinsonneault, 2011; Roberts & Grover, 2012b). In the hospitality context, Sigala (2006) posited that IT capabilities can be integrated with the Customer relationship management (CRM) systems to create the innovative e-CRM system for substantially improving hotels' performance in customer service. By using the Internet and the e-CRM system, guests are able to participate in the service creation processes (e.g. service design or service customization) and so improve guests' cognitive and emotional evaluations of service quality performance. The e-CRM system allows hotels to create feedback learning loops and learning relationships with customers to effectively sense and respond to changes in customers' tastes and preferences (Sigala, 2006). Shiranifar, Rahmati, and Jafari (2019) also found that IT capabilities positively affect knowledge management in small and medium enterprises (SME) contexts. Especially, the IT capabilities and knowledge management interact with each other to produce positive impacts on the SMEs' supply chain agility. As such, hypotheses are proposed as presented:

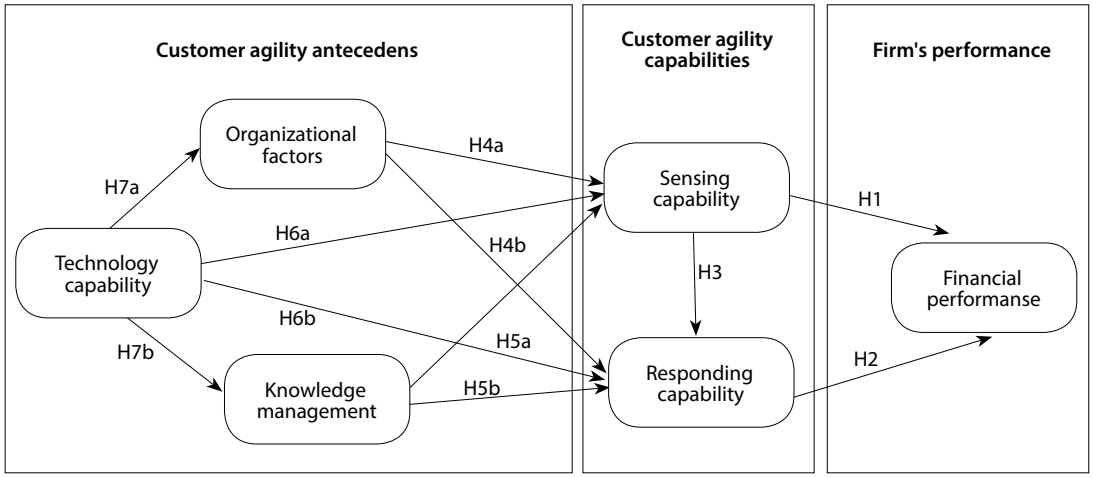
H6a: *IT capabilities are positively associated with the customer-sensing capability in tourism SMEs.*

H6b: *IT capabilities are positively associated with the customer-responding capability in tourism SMEs.*

H7a: *IT capabilities are positively associated with Customer-orientation organizational factors in tourism SMEs.*

H7b: *IT capabilities are positively associated with Knowledge management in tourism SMEs.*

Figure 1
Research model for customer agility implementation framework



Source: Own research.

3. Methodology

3.1. Measures

A multi-item measure for two customer agility attributes is developed by adopting items from Roberts and Grover (2012b). Customer-sensing capabilities are measured via six items gauging the abilities of firms to anticipate customers' needs even before they are aware of them. On the other hand, customer-responding capabilities are measured the degree at which firms react to customer changes, new customer needs and modifies their products/services for specific customer demand. A multi-item measure for Customer-orientation organizational factors is also developed by adopting items from Chang, Park, and Chaiy (2010). According to Chang et al. (2010), six items are designed to evaluate the firm's competences to structure and design incentives for promoting the customer-orientation in the organization. Knowledge management capabilities are evaluated via eight items measuring three aspects of knowledge management: Knowledge codification practices, knowledge sharing, human capital development and retention which are adopted from Cohen and Olsen (2015). IT capabilities also include three aspects: IT support for knowledge management, IT infrastructure capability and customer-orientation technology capability measured by eight items adapted from Bharadwaj (2000). Finally, four items are used to measure the superior financial performances comparing with critical competitors as well including the overall performance, attaining market share, revenue growth, and current profitability. The reflective measurement model is used in this study because the items are assumed to be the manifestations of their underlying latent variables (Bagozzi & Baumgartner, 1994). The formative measurement model is only used when indicators are independent causes of the constructs being measured and they need to be relatively uncorrelated (Jarvis, Mackenzie & Podsakoff, 2003). It seemed that the reflective measurement model has been adopted more frequently in social research because of its conveniences for running the SEM technique in popular software such as Amos or LISREL (Baxter, 2009). However, it depends on the conceptualization of the constructs and the underlying theory to decide whether they are formative or reflective ones. Because this study only attempted to quantify the value of constructs for studying the interrelationships between constructs, the indicators chosen are mainly the manifestations of the constructs rather than the cause of the constructs. Therefore, the reflective measure model was used in this study. The final questionnaire consists of 38 items distributing to 6 constructs in the research model presented in Appendix A.

3.2. Sampling

Based on the measures developed for capturing the study's phenomena, a questionnaire was developed and administered to managers in small and medium enterprises (SMEs) in the tourism industry in Vietnam. Respondents give their assessments for each statement through a 7-point Liker scale with "1" to indicate "strongly disagree" to "7" to indicate "strongly agree". The survey was conducted from June to September to February 2018. Wherever possible, we followed up with phone calls to increase the response rate. The reminder emails were also sent four weeks after the initial mailing. Out of the database of approximately 1600 tourism SMEs in the South of Vietnam, a total of 238 firms participated in the survey. Out of those questionnaires received, there are seven questionnaires with missing data and thus eliminated. A profile of the sample shows a reasonable spread in term of the size of the firms which participated in the survey. There are 121 firms (52%) which have from 50 to 200 employees which are classified as medium-sized firms. There are 80 firms (35%) small-size firms that have from 10 to 50 employees and 30 micro-size firms (13%) which have less than ten employees in the sample. The medium-sized firms in our sample serve approximately 25,000 customers per year on averages and earn average revenue of about 26 billion Vietnamese Dong (about 1.2 million USD). The according numbers for small-sized firms in our sample are about 7000 customers and 7 billion Vietnamese Dong in revenue (about 0.3 million USD).

4. Analysis and results

Structural Equation Modeling (SEM) is employed in this study for hypotheses testing purposes. In particular, the Partial Least Square approach (PLS - SEM) was used , whereas model estimations were conducted using SmartPLS 3.0. For evaluating the hypotheses this study followed the recommendations from Chin (1998).

4.1. Measurement model

Table 1 presents the results of Confirmatory Factor Analysis (CFA) for evaluating the reliability and validity of the measurement model. All the six construct's Composite Reliability coefficients are substantially larger than .70, and all the Average Variance Extracted measures (AVE) are also above .05 as presented in Table 1. These results show that the measurement items are reliable and the latent constructs account for more than 50% of the variances of the indicators.

The Convergent Validity defining the level of agreement between the items in a group which measure an underlying construct is also examined. The results show that the average loading for each block of items is high (from 0.8 to 0.9) and the range in which the loadings in each block vary is narrow (see Appendix A). Furthermore, the t-values indicate that all the loadings of the items on their underlying constructs are significant. These results suggest that all the items in each block help in estimating the underlying construct. For assessing the Discriminant Validity, we follow the criterion of Fornell and Larcker (1981) which stated that if the square root of the AVE is larger than the correlation between constructs, the discriminant validity can be achieved. The results in Table 1 show that this criterion is satisfied by all the constructs which prove the discriminant validity for our model. The results support that our measurement model has adequate convergent and discriminant validity.

In addition, the proposed measurement model achieved a good fit with the estimated model according to the goodness of fit indices presented in Table 1 (SRMR < 0.05 and NFI > 0.8). In general, these two measures of goodness of fit give a relative assurance that the model is not misspecification and further steps can be conducted with the proposed research model.

Table 1
Correlations among latent constructs and its squared AVE, Composite reliability coefficients, and Fit indices

Constructs	Composite reliability	CO	FP	KM	RESP	SENS	TECH
CO	0.969	**0.915**					
FP	0.965	0.873	**0.935**				
KM	0.972	0.893	0.900	**0.903**			
RESP	0.972	0.896	0.905	0.817	**0.923**		
SENS	0.975	0.880	0.850	0.826	0.901	**0.931**	
TECH	0.949	0.841	0.818	0.832	0.828	0.808	**0.852**
Fit Indices: SRMR = 0.034; NFI = 0.885; Chi-square = 759.762							

Note: CO: Customer-orientation organizational factors; FP: Financial performance; KM: Knowledge management; RESP: Customer-responding capabilities; SENS: Customer-sensing capabilities; TECH: IT capabilities. Squared AVEs are in bold.
Source: Own research.

4.2. Hypotheses testing

In order to test the proposed hypotheses, the bootstrapping procedure is executed with 10000 subsamples. The results of path coefficients and hypotheses testing are presented in Table 2. According to the results, only Customer-responding capabilities have significant positive impacts on the firm's performance (path coefficient = 0.63, $p < 0.05$). While Customer-sensing capabilities only have significant impacts on the Customer-responding capabilities (path coefficient = 0.676, $p < 0.05$) and not directly on firm's performance (path coefficient = - 0.168, $p = 0.125$). Thus, only hypotheses H2 and H3 are supported.

The Customer-orientation organizational factors show significant positive impacts on both sensing and responding capabilities, which make H4a and H4b supported (path coefficient = 0.684 and 0.265 respectively, $p < 0.05$). On the other hand, Knowledge management factors only have significant positive associates with sensing capabilities (path coefficient = 0.275, $p = 0.125$). It means that only hypothesis H5a is supported. Surprisingly, IT capabilities do not have significant influences on both sensing and responding capabilities ($p > 0.1$). Thus, H6a and H6b are not supported. However, IT capabilities are found to have significant positive effects on both Knowledge management and Customer-orientation organizational factors making hypotheses H7a and H7b are supported (path coefficient = 0.896 and 0.868 respectively, $p < 0.05$). Thus, it seemed that IT capabilities' impacts on customer agility capabilities are fully mediated by Knowledge management and Customer-orientation organizational factors.

Table 2
Path coefficients estimated from bootstrapping analysis

Paths	Sample mean	Standard deviation	T statistics	P values	Hypotheses testing
SENS -> FP	-0.168	0.103	1.536	0.125	H1 not supported
RESP -> FP	0.630	0.114	5.428	0.000***	H2 supported
SENS -> RESP	0.676	0.058	11.727	0.000***	H3 supported
CO -> RESP	0.265	0.093	2.853	0.004***	H4b supported
CO -> SENS	0.684	0.121	5.593	0.000***	H4a supported
KM -> RESP	-0.031	0.065	0.455	0.649	H5b not supported
KM -> SENS	0.275	0.113	2.498	0.013***	H5a supported
TECH -> RESP	0.059	0.072	0.790	0.430	H6b not supported
TECH -> SENS	-0.075	0.109	0.680	0.496	H6a not supported
TECH -> CO	0.896	0.018	48.478	0.000***	H7a supported
TECH -> KM	0.868	0.018	49.326	0.000***	H7b supported

Table 2 **Continued**

R-square (R^2) of endogenouse variables	
FP	0.918
SENS	0.784
RESP	0.915
CO	0.873
KM	0.812

Note: ***: $p < 0.05$
Source: Own research.

5. Discussion

Agility has been extensively investigated regarding its attributes and theoretical framework in different disciplines such as supply chain management, strategic management, and information technology implementation, etc. (Sherehiy et al., 2007; Doz & Kosonen, 2010; Kotter, 2014; Tarafdar & Qrunfleh, 2017). However, there are very little empirical attempts to validating these frameworks. This study contributes to solving this issue by empirically testing the antecedents and consequences of customer agility suggested in past researches using the tourism industry context (Sharifi & Zhang, 1999; Roberts & Grover, 2012a, b). The findings in this study provide a number of new insights into the agility topic.

First, while customer agility is assumed to exert positive impacts on the firm's performance in the literature of agility (Yang & Liu, 2012; Zhou et al., 2018). It is empirically tested in this study that not all the attributes of customer agility have direct impacts on firms' performance-if not- negative impacts on the firm's performance. It is suggested that only Customer-responding capabilities can have direct positive influences on firms' performance. For Customer-sensing capabilities, it cannot solely exert the influences on firms' performance but must transfer its effects via specific actions responding to customer changes to indirectly influence on firms' performance. These findings provide an unusual case for further scholar works since previous studies are not keen on the interactions between attributes of customer agility and its effects on the firm's performance. It seems that in the tourism industry, investing only in processes for catching up with customer changes might not yield positive results until managers use these learnings for providing the customer with new value propositions and offers.

Secondly, among the proposed antecedents of agility, IT capabilities are surprisingly found to be insignificant in the tourism industry context. This finding is contrasting with most of the research on the effects of Information technology on the firms' agility (Weill et al., 2002; Sambamurthy et al., 2003; Swafford et al., 2008). However, it is not a unique finding because mixed results of the use of technologies on customer outcomes are not unpopular (Jayachandran, Sharma, Kaufman, & Raman, 2005; Hendricks, Singhal, & Stratman, 2007; Karadag, Cobanoglu, & Dickinson, 2009). Moreover, IT capabilities in this study are found to have significant impacts on the other two antecedents of customer agility of Customer-orientation organizational factors and knowledge management factors. It can be the interactions between IT capabilities with other antecedents are much more important rather than using technological infrastructures or competences as the sole driver of firms' agility (Breu, Hemingway, Strathern, & Bridger, 2002; Overby, Bharadwaj, & Sambamurthy, 2006). As such, practitioners should pay more attention to motivate the cooperation between IT departments and others for achieving firms' agility.

Finally, this study supplies the empirical findings that organizational factors and knowledge management factors are the main drivers of agility and customer agility, in particular. These findings are consistent with earlier researches suggesting that learning organization skill and customer orientation are requisites to generate and sustain the flexibility and adaptability of a firm (Roth, 1996; Malhotra, 2005; Ashrafi

et al., 2005). Notably, as shown in this study, managers in tourism firms should wield the power of customer-orientation organizational factors such as compensation plan, organizational structures, top managers' commitment because they exert the highest positive effects on customer agility (Doz & Kosonen, 2010). As argued in Crocitto and Youssef (2003), the human side consisting of leadership, organization culture, and employee reward systems create a solid foundation for connecting humans, processes, and technologies to reinforce organizational agility.

6. Conclusion

This study draws on the theoretical frameworks of agility in the literature and extends it by empirically testing the antecedents and consequences of customer agility capabilities. We showed that knowledge-creating processes and organizational factors toward customer orientation could facilitate a firm's ability to sense and respond to changes in customers' demands and needs. IT capabilities factors, on the other hand, are not directly associated with the firm's agility but play a supporting role for other drivers of organizational agility and have indirect effects on firms' customer agility. Findings also suggest the mechanism through which sensing capabilities transmit its effects on a firm's performance by using information and knowledge collected as inputs for responding processes to constantly change value propositions offered to customers overtime.

In terms of theoretical implications, this study is among some of the first studies to provide empirical evidence of customer agility 's impacts on firms' performance. By doing so, this study filled the gap of customer agility research in the tourism and hospitality sector where keeping up with the customers' change is so crucial for firms to survive and grow in the long term. Moreover, this study also proposed and tested antecedents of customer agility, which can provide the required conditions and necessary capabilities for developing the desired agility toward customers from SMEs' perspective.

In terms of practical implications, the findings in this study emphasize the needs of managers to adopt the customer-orientation across the organizations as it was proved to be the most important antecedent for building customer agility. Notably, a high level of IT investments seemed to be not as important as other factors in developing agility toward customers. Instead, IT applications should be focused on supporting information sharing and knowledge management across organizations using. This is consistent with the findings from researches on the roles of Information technologies in supporting customer processes (Harrigan, Ramsey, & Ibbotson, 2012). According to Harrigan et al. (2012), the three key technologies of email, website and database management are sufficient if they are used effectively for serving customer agility. Another implication should be noted by managers is the balance and interaction between the two main capabilities of customer agility. SMEs in tourism sectors by nature should be very good at defining changes in customers' preferences because of its closes relationships with key customers. However, they usually lack the capabilities and resources to execute the necessary changes. Then, customer agility might be not sufficient and effective in SMEs. Thus, managers can realize and remedy this issue by continually executing small changes at a time for improving core business processes or integrating new tools such as social media applications into the SMEs' customer services.

This study has some limitations, which are promising areas for improving and developing in future research. First, it is encouraged to include in the research model the contextual factors such as environmental dynamism and turbulence to investigate the agility-firms' performance relationship in different contexts and environments. Second, it seems that not all agility attributes directly influence

the firm's outcomes. Thus, it is imperative to look for possible mechanisms through which agility can exert their effects on firms' competitive advantages and performances. What might be the mediators and moderators for the agility-firms' performance relationship? Finally, the roles of IT capabilities factors need to be clarified in future research given their mixed results in recent research on agility.

Appendix A

Constructs and indicator variables

Construct	Questions	Indicator	Loading	Source
Customer-orientation organizational factors	• We consider retaining customers to be a top priority.	CO1	0.905	Adapted from Chang, Park, and Chaiy (2010)
	• We encourage employees to focus on customer relationships	CO2	0.903	
	• We consider customer relationships to be a valuable asset	CO3	0.929	
	• We provide employees with incentives based on customer satisfaction measures	CO4	0.908	
	• We evaluate our customer contact employees based on the quality of their customer relationships	CO5	0.912	
	• We provide education programs for employees to enhance the quality of customer interactions	CO6	0.931	
Knowledge management	• We encourage employees to document their experiences	KM1	0.923	Adapted from Cohen and Olsen (2015)
	• The knowledge of individuals is recorded in a structured way, so that others in the organization may benefit from it	KM2	0.903	
	• We have processes for integrating knowledge from different sources.	KM3	0.913	
	• We have systems and venues for people to share their knowledge with others in the company.	KM4	0.900	
	• Our employees regularly share ideas with other employees even if they are based in different departments	KM5	0.882	
	• We promote sharing of knowledge between work groups/teams	KM6	0.928	
	• Comparing with competitors, employee turnover in my firms is …	KM7	0.905	
	• Comparing with competitors, employee competences in my firms is …	KM8	0.868	
Technology infrastructure	• IT facilitates the acquisition of knowledge about our customers, suppliers and/or competitors	TECH1	0.839	Adapted from Bharadwaj (2000)
	• Knowledge is embedded in our databases and decision support systems	TECH2	0.891	
	• We developed information systems like Intranet and electronic bulletin boards to share information and knowledge	TECH3	0.892	
	• We invest in technology to acquire and manage "real-time" customer information and feedback.	TECH4	0.834	
	• We have a dedicated CRM technology in place.	TECH5	0.835	
	• Relative to our competitors the quality of our information technology resources is larger.	TECH6	0.834	
	• Our relational databases or data warehouse provides a full picture of individual customer histories, purchasing activity and problems.	TECH7	0.833	
	• CRM software allows us to differentiate among customer profitability.	TECH8	0.845	
Customer sensing capability	• We continuously try to discover additional needs of our customers of which they are unaware.	SENS 1	0.926	Adapted from Roberts and Grover (2012)
	• We extrapolate key trends to gain insight into what users in a • current market will need in the future.	SENS 2	0.931	
	• We continuously try to anticipate our customers' needs even before they are aware of them.	SENS 3	0.923	
	• We attempt to develop new ways of looking at customers and their needs.	SENS 4	0.930	
	• We attempt to develop new ways of looking at customers • and their needs.	SENS 5	0.951	
	• We strongly encourage employees to learn from their experiences to extract customers' needs.	SENS 6	0.925	

Appendix A **Continued**

Construct	Questions	Indicator	Loading	Source
Customer responding capability	• We respond rapidly if something important happens with regard to our customers.	REPS1	0.922	Adapted from Roberts and Grover (2012)
	• We quickly implement our planned activities with regard to customers.	REPS 2	0.925	
	• We quickly react to fundamental changes with regard to our customers.	REPS 3	0.945	
	• When we identify a new customer need, we are quick to respond to it.	REPS 4	0.917	
	• We are fast to respond to changes in our customers' product or service needs.	REPS 5	0.909	
	• We use many channels to respond to customers' needs	REPS 6	0.923	
Financial performance (0.976) (0.912)	• Achieving overall performance.	FP1	0.942	Adapted from Roberts and Grover (2012)
	• Attaining market share.	FP2	0.941	
	• Attaining growth.	FP3	0.922	
	• Current profitability.	FP4	0.935	

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