



Business co-creation for service innovation in the hospitality and tourism industry

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Business co-creation for service innovation in the hospitality and tourism industry

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Abstract

Purpose - This study contains empirical originality to test a theoretical model of co-creation dynamics, service innovation and competitive advantage. We explore the dynamics of collaboration between travel agents and their suppliers in co-creating value for their customers. A research model is proposed to examine the relationship among six co-creation elements (co-creation dynamics), service innovation, competitive advantage, and two antecedents: technology adoption and environmental change, and the moderating effects of trust.

Design/methodology/approach - An empirical survey was performed based on travel agencies in Taiwan and Malaysia. A total of 105 valid responses from Taiwan and 102 valid responses from Malaysia were received. SPSS and PLS were used to analyze the data.

Findings – A new six-element construct of co-creation dynamics was suggested. All the proposed effects were found significant in which trust enhanced the effect of elements of innovation for Taiwan travel agencies. However, in contrast to the proposed hypotheses, technology adoption had no direct effect whereas trust had no moderating effect for Malaysia travel agencies.

Practical implications - This study suggests that managers should include co-creation approaches with partners and customers while developing new services. The identification of areas that may be lacking can allow managers to develop capabilities to improve business co-creation competency.

Originality/value – This study links the relational view with service dominant logic that emphasizes business co-creation and service innovation as operant resources and a key fundamental source for competitive advantage. This study also looks at interpreting business co-creation and discusses whether business co-creation effects service innovation in the hospitality and tourism industry.

Keywords: Co-creation dynamics, Service innovation, Relational view, Service dominant logic, Travel agency.

Introduction

The drastic changes of business environments and fast development of information technology (IT) have driven the continued growth and opened vast opportunities to many businesses in the hospitality and tourism industries (Beritelli and Schegg, 2016; Buhalis and Law, 2008; Gössling and Hall, 2006). As businesses in the tourism industries attempt to lure potential customers, several will join forces to interact with their customers to better learn of and understand their needs, which in turn provide the businesses with a basis for customizing offerings and co-creating value (Shaw et al., 2011). Value creation is the customer's creation of value-in-use and value co-creation is a function of interaction between companies and customers (partners) where interaction can be interpreted as the junction between provider and customer spheres of influence (Grönroos and Voima, 2013). Value co-creation not only emphasizes the collaboration with customers but also the collaboration with partners to design new services and enhance customer value (Aarikka-Stenroos and Jaakkola, 2012). A few studies have discussed the propositions of theories, models, or systems in co-creation (e.g., Vargo and Lusch, 2008; Prahalad and Ramaswamy, 2004) that view co-creation as an interactive process between players.

Value co-creation has been studied in the hospitality and tourism fields. These studies have demonstrated the valuation of co-creation processes with customers for the hotel industry (Shaw et al., 2011) and discussed the effect of firm's support to co-create values with customers and the consequential performance improvements for tourism services (Grisseman and Stokburger-Sauer, 2012). However, only a few studies in tourism have explicitly discussed co-creation in a business-to-business (B2B) context. Thus, there is an emergent need to empirically develop and examine a holistic research framework on business co-creation in order to gain a better understanding of how companies co-create value with their partners in the tourism industry.

Moreover, innovation management in the hospitality and tourism industry has gained relevance in recent years where categories of tourism innovation and important determinants of innovation were acknowledged (Hjalager, 2010). To add to this stream, Williams and Shaw (2011) suggested that innovation and internationalization are significant issues in tourism research. Based on their survey findings in Spanish hotel industry, Nieves and Segarra-Ciprés (2015) suggested that hotel internal context affects the development of management innovation. Nevertheless, the impacts of collaboration and co-creation between a firm and its partners on service innovation can be further investigated to explore how tourism businesses may develop more innovative service offerings.

This study adopts and modifies Prahalad and Ramaswamy's DART (Dialogue Access Risk Transparency) model (2004) by introducing two additional elements, flexibility and compatibility, within a B2B context and discusses the co-creation practices for travel agencies and their suppliers. This study is different from others because we provide an alternative view and define the interactions of collaborative elements or the co-creation blocks in the model as co-creation dynamics. With different combinations of these collaborative elements, the travel agencies can develop different strategies with their business partners to better engage their customers in collaboration, as well as to deliver co-created values to all of their customers. Furthermore, this study intends to link the relational view (Dwyer and Singh, 1998) with service dominant logic (Vargo and Lusch, 2008) that emphasizes business co-creation and service innovation as operant resources and a key fundamental source for competitive advantage. In the tourism industry, enhancing relationships with partners to co-create values for customers is necessary in order to provide customized tour packages for fulfilling different customer needs. Strong networking capabilities and trust with partners is critical to survival and success in a

global tourist business. This study also examines the effects of two antecedents, technology adoption and environmental change, on co-creation dynamics and the moderating effect of trust on the relations of co-creation dynamics and service innovation.

Specifically, due to the fast growth of Asia tourist business (World Tourism Organization, 2014), two Asian countries, Malaysia and Taiwan, were selected for this study. The tourist arrivals in Malaysia was constantly increasing to near 26 million in 2013 (Trade Economics, 2015) and a 24% increase of international arrivals is around 10 million in Taiwan in 2014 (Taiwan Tourism Bureau, 2015). A survey from the travel agent businesses in the two Asian countries was conducted to validate the proposed model. The results lend support to the positive impacts environmental change has on co-creation dynamics and co-creation dynamics has on service innovation and competitive advantage. Identifying co-creation elements involving suppliers' participation with respect to the provision of core capabilities could lead to service innovation and competitive advantage benefits. These elements could be incorporated into the value creation processes. Our findings have implications for managers in co-creative business relationships and can help them improve their service innovation.

The proposed model

Service dominant logic and the rational view of cooperative strategy provide the conceptual foundation for this study. The intersection of these concepts lies in service, the primary determinant of competitive advantage. Both concepts suggest that the offering must envelop a service which creates value (vs. embedding value during the time of co-creation), regardless of whether a business offers a product or service. As Gummeson (1995, p. 250-251) states, "customers do not buy goods or services: they buy offerings which render services which

create value”. Recently, Gummesson (2014) further recommends the hospitality sector to pay attention to the new logic of service co-creation. Furthermore, value is no longer added through the production process, but through the customer’s use of the product or service (Grönroos and Voima, 2013). The challenge lies in discovering and understanding what the customer perceives as value and how to derive it from the firm (and the associated partners).

Figure 1 depicts the proposed research model. The model suggests that technology adoption and environmental change are two important antecedents to positively affect co-creation dynamics. The more inclined a business is towards adopting new technology to leverage its resources and bridge relationships to advance its collaboration efforts, as well as adapting to environmental changes, the greater its ability to value co-creation. Additionally, the model suggests that six co-creation dynamics elements positively influence the level of service innovation which in turn increases competitive advantage. Moreover, trust as a moderator enhances the relationship between the co-creation dynamics (elements) and service innovation. When trust is high, the co-creation dynamics have a greater effect on service innovation.

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Insert Figure 1 about here

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Co-creation dynamics and two antecedents: technology adoption and environmental change

Co-creation refers to collaboration between the supplier and the buyer (the customer) in the process of value creation in that the buyer or the customer plays an active role as an innovator in the innovation process (Chathoth et al., 2013). This definition implies that while companies value the experiences shared by their customers, they may transform or utilize these experiences to improve their products or services to better meet customer preference (Vargo and Lusch, 2008;

Suntikul and Jachna, 2016). The dynamic nature of market conditions and the ever-changing customer needs require ongoing interactions between the business and its customers for co-creation (Grissemann and Stokburger-Sauer, 2012). Co-creation dynamics is defined as a process of value creation between a business and its suppliers through collaborative elements. It is a continuous social and economic process which begins with an interactive definition of the customer's problems or potential needs (Deighton and Narayandas, 2004). Prahalad and Ramaswamy (2004) identified four fundamental collaborative elements for co-creation, namely: dialogue (e.g., interactivity, engagement, propensity to act), access (e.g., sharing of information and knowledge), risk assessment (e.g., providing information to make informed decisions), and transparency (e.g., openness). These elements are contained in the DART model and are crucial to the interaction process between the business and its customers. By coupling these elements in different combinations (e.g., dialog and access, risk assessment and transparency, etc.), a business can develop different strategies with its business partners to better engage their customers as collaborators (Prahalad and Ramaswamy, 2004).

Moreover, in a B2B setting, compatibility and flexibility reflect the fit between business partners (e.g., buyer and supplier) and the relationships that are conducive to collaboration (Omar et al., 2012). Flexibility defines the responsiveness of a business to adapt to changes in technology and market opportunities by introducing new offerings, broadening its product line, and upgrading its offerings (Dwyer and Singh, 1998). Compatibility describes the extent of match between and among partners with respect to culture orientations and abilities as well as the activities of the businesses and how they play toward successful integration (Haverila, 2012).

Past research has shown that advances in information and web technologies have led to the quick and easy access of information that businesses can use to identify market opportunities and

changes, and achieve competitive advantage (Bilgihan et al., 2011). As a result, information and communications technology (ICT) has become a powerful means to gain competitive advantage by leveraging the business' resources, and helping bridge relationships between a business and its customers in order to learn about and communicate with one another (Tippins and Sohi, 2003). It also plays a significant role in the process of value co-creation and inter-business relations (Della Corte et al., 2009). Prahalad and Krishnan (2008) indicate that advances in ICT have enabled co-creation through global networks, which in turn promotes innovativeness. In the tourism industry, prior studies have suggested that ICT adoption has led to significant performance improvements and increased in productivity (e.g., Andreu et al., 2010). Thus, those that are most successful at ICT will be better positioned as co-creators. Based on this, this study presents the following hypothesis,

H1: Technology adoption has a positive effect on co-creation dynamics.

Periodic changes in the environment, such as changes to customer preference, the erosion of industry boundaries, changes to social values and demographics, the introduction and implementation of new government regulations, and advances in technology, will pressure businesses to commit to their strategic decisions or face failure (Gössling and Hall, 2006; Damanpour and Gopalakrishnan, 1998). These authors suggested that businesses must adopt innovative solutions that are appropriate to their changing situation. This has also forced businesses to seek creative methods for building collaborative relationships with customers and suppliers (El-Gohary, 2012). Under business environmental change, a broad direction and vision for new organizational strategies for innovation was proposed (Lee et al., 2012). Those businesses that can quickly adjust to environmental changes will by their nature be more inclined in innovative practices as they apply to co-creation dynamics. Hence we propose the second

hypothesis,

H2: Environmental change has a positive effect on co-creation dynamics.

The effects of co-creation dynamics on service innovation

While there are several different interpretations of service innovation (e.g., Rubalcaba et al., 2012; Peng and Lin, 2016), the definition on service innovation are depending more and more on how the "service" context is identified. Eisingerich et al. (2009) suggested that service innovation has become more customer-oriented because it can help take the development of new service offerings and processes to develop new services. In tourism literature, the firm's professionalism, entrepreneurship, and firm size have shown to be important determinants of innovation (Sundbo et al., 2007), and there were several studies to demonstrate the effect of co-production on service innovation (Chen et al., 2011). Nonetheless, the source of service innovation does not always come from within the firm itself (Sigala, 2014; Sigala, 2016). A firm sometimes chooses or is forced to co-create with another firm in order to be innovative and as part of the other firm's strategy (Carlisle et al., 2013). Additionally, a number of papers in the literature have identified alliances as instruments used by firms to learn new skills and acquire know-how from other organizations (Camisón and Monfort-Mir, 2012). With the co-creation dynamics, firms are able to enhance these relationships and improve its service innovation competence. Thus, we propose the third hypothesis,

H3: Co-creation dynamics have positive impacts on service innovation.

Service innovation and competitive advantage

Johannessen et al. (2001, p. 27) stated that "Innovation is a critical activity that is virtually important for most firms to embrace in order to create and sustain a competitive advantage".

Innovation has been identified as a key element to business success. This is particularly true for the tourism industry where service innovation is crucial for gaining and sustaining competitive advantage (Hjalager, 2010; Camisón and Monfort-Mir, 2012). Yet, service innovations often provide only a short-term advantage as factors that were attributed to the past success may no longer be relevant (Sakchutchawan et al., 2011). As such, a need to sustain service innovations becomes necessary to retain competitive advantage (Weerawardena and Mavondo, 2011). Thus, competitive advantage can be tied to the distinctive value customers realize through the use of offerings, which results from a service innovation (Chen et al., 2009). In light of this logic, service innovations will improve the competitive advantage of the business. Thus we propose the fourth hypothesis,

H4: Service innovation has a positive effect on competitive advantage.

The moderating effect of trust

Trust is a fundamental element in every relationship that is defined as the confidence a person places on another in an exchange relationship (Nunkoo and Ramkissoon, 2012), such that the other person will not exploit his/her vulnerabilities (Dwyer and Chu, 2003). Trust does not come easily; rather it is built gradually and consistently over time through a process of interactions (Füller et al., 2009). This study applies trust to inter-organizational relationships between partners that is essential to their innovative service collaborations to assure each is working in the best interest of the relationship (Bachmann and Inkpen, 2011). In the tourism industry, collaboration can be the single most important aspect of effective management and a necessary condition for successful collaboration (Fyall and Garrod, 2005). Accordingly, greater levels of trust will enhance the effects of co-creation dynamics on service innovation (Romero and Molina, 2011). We therefore propose the final hypothesis,

H5: *Trust moderates the relationship between co-creation dynamics and service innovation.*

Research methodology

Instrument design

To examine the proposed framework, this study adopted the scales from the pertinent literature in order to test the relationships among the constructs. To operationalize and theorize the construct of Co-creation Dynamics [CCD], this study added two dimensions (i.e., compatibility and flexibility) into the existing four dimensions in the DART model (i.e., dialogue, access, risk assessment, transparency). As aforementioned and based on the relational view, business co-creation requires these two factors to drive the subsequent continuous collaboration. The six indicators were then modified in accordance with the current study purpose. To examine Dialogue [DA], five items were adopted and modified from Sarin and O'Connor (2009) and Young-Ybarra and Wiersema's (1999) scales including communication, accurate and reliable information exchange, keeping informed, and sharing proprietary information with partners. To examine Access [AC], Prahalad and Ramaswamy (2004) and Salomo et al.'s (2008) measures were adopted, incorporated and modified to examine how the focal firm access to information, facilities, resources, and skills of its collaborating partners. For Risk Assessment [RA], four items were adopted from Keizer et al. (2002) and Bstieler's (2006) measures to test the quality, financial status, frankness and honesty while a firm facing problems. For Transparency [TR], four items were modified from Cannon and Homburg (2001) and Bstieler's (2006) measures to examine the degree of clearness and accessibility to the firm's communication network (Moenaert, et al., 2000). Flexibility [FL] was measured by using scales from Young-Ybarra and Wiersema (1999) and Barringer and Bluedorn (1999) to investigate the ability to modify the current relationship and the ability to change a firm original strategic plan.

Four items were drawn from Pansiri (2008) and Bucklin and Sengupta's (1993) measures to examine Compatibility [CO] including compatible culture, similar operating philosophies and management styles.

For the antecedents, Technology Adoption [TA] was measured by five items drawing from Srinivasan et al.'s (2002) scale including the breadth and depth of e-business usage.

Environmental Change [EC] was adopted and modified the scales from Zhang and Li (2010) and Swan et al. (2005) to obtain five items that measured the level of uncertainty in the environment.

Moreover, for the intermediate, dependent and moderating variables, the scale of Service Innovation [SI] was adopted from Avlonitis et al. (2001) scale of innovation including six items—new to the market services, new to the firm services, new delivery process, service modifications, service line extensions and service repositioning. Competitive Advantage [CA] was modified from Avlonitis et al. (2001) and Kim and Atuahene-Gima's (2010) scales, which included four items to assess how a firm uses new services to enter a new market, obtaining higher competitive advantage and providing better services quality than their competitors. Trust [TR] was measured by four items modifying from Andreu et al. (2010) and Wu and Chang's (2006) measures to examine the degree of the interdependence between business partners in protecting their business interests. All variables were measured with a five-point Likert scale, from 1 strongly disagree to 5 strongly agree. Finally, the demographics information including firm age, firm size and firm capital were considered control variables and their effects between firm performance was also included.

The developed instrument was then first translated from English into Chinese and then back translated into English, following the procedure suggested by Sawang et al. (2006). The Chinese version was used to collect responses from Taiwanese companies whereas the English version

was used to collect responses from Malaysian companies. Before the main data collection, the Chinese version instrument was reviewed and tested by five Taiwanese academics and five practitioners in order to ensure its suitability and readability, whereas the English version instrument was reviewed and translated back into Chinese by a Chinese-Malaysian graduate student who had studied in Taiwan and worked as an event manager in Malaysia for several years. The translation, back translation and the final review by academics and practitioners lend supports to the face validity (Hair et al., 2010). The final instrument consisted of a total of 53 items including five demographics questions.

Sampling

While this study aimed to investigate B2B co-creation in the service innovation, travel agencies were selected as the study context for two reasons. First, tourism has become one of the fast growing industries in both Taiwan and Malaysia (World Tourism Organization, 2014). Second, the tourism industry is known as a service sector service that involves intensive collaboration between agencies and their suppliers from pre, during and post service processes (Weiermair and Steinhauser, 2003). Therefore, the sampling frame was developed by obtaining the potential respondents from the Tourism Bureau of Taiwan and the Tourism Malaysia. The sampling frame was determined using two criteria. First, travel agencies which have dealt with both domestic and international tourism business were chosen because they had more insights in B2B co-creation and service innovation. Second, travel agency which has its own firm website was chosen because co-creation is considered to be more dynamic and frequent in the Internet environment (Füller, 2010).

According to Taiwan Tourism Bureau, nearly 1,200 travel agencies have managed their own websites. A stratified sampling strategy (i.e., the proportional method) was employed in

Taiwan. This resulted in a total sample size of 660 travel agencies. On the other hand, 458 travel agencies which have dealt with domestic and international tourist services and managed their own websites, were located in the Malaysian Peninsular. This study therefore included all of the 458 travel agencies in the Malaysia Peninsular as the Malaysian sample.

Data collection process

To collect data from travel agencies in two countries, a package containing a cover letter explaining the purpose of the research and the questionnaire in Chinese and English were prepared. The first stage of data collection resulted in a total of 60 and 30 responses from Taiwanese and Malaysian tourism managers respectively. Given the low response rate, online versions of questionnaire in Chinese and English using Google Questionnaire application were then developed and distributed through emails for the respondents' convenience to respond. Follow up calls were additionally made to the respondents who had yet to reply in the first stage. The continuous effort resulted in a total of 105 and 102 valid responses from Taiwanese and Malaysian travel agent managers, respectively. This equated to a responses rate of 15.9 percent for Taiwan and 22.3 percent for Malaysia. While the data collection consisted of two stages, non-response bias was used to test the measured variables using the independent t-test (Bossink, 2002). No significant differences were found in both two groups. Also, this study validated the proposed research model with a triangulation research method, namely the model was tested initially using a convergent interviewing method followed by Harman's single-factor test and a common latent factor test, and finally a structural equation modeling validating and building approach was adopted. The results showed no biases between data.

For the demographics of the responding agencies, there were around 50 percent of Taiwanese respondents and nearly 40 percent of Malaysian respondents who reported their firm

have been established for more than 15 years. More than half of the Taiwanese respondents stated that their companies had capitalization levels in the range of between 5 million and 10 million new Taiwanese dollars (56.2%), roughly equal to \$150,000 to \$310,000 US dollars. Likewise, 43.1 percent of the Malaysian respondents reported that the capitalization level of their companies fell into the same category. In relation to firm size, nearly half of the Taiwanese and Malaysian respondents reported their firms had less than ten employees (Taiwan, 43.8%; Malaysia, 49.1%). The general manager was the key respondent to the survey questionnaire in Taiwanese travel agencies (36.2%), while the departmental manager was the key respondent in Malaysian travel agencies (34.3%). Among Taiwanese respondents, nearly 50 percent of the respondents have worked for more than 15 years in the travel agency, while 22.5 percent of Malaysian respondents had worked for the travel agency business for more than 15 years.

Data analysis and results

Test of measurement model

SPSS and Partial Least Square (PLS) were used to test the proposed research model. An initial exploratory factor analysis (EFA) was conducted on the six reflective measures (DA, AC, RA, TR, FL, CO) in the Co-creation Dynamics (CCD), using the maximum likelihood method to extract the initial factors. This method employed an oblique method in the rotation phase to take into account any correlation among factors (Pedhazur and Schmelkin, 1991). All items were highly loaded on their own construct which support the six factors solution for dialogue (DA), access (AC), risk assessment (RA), trust (TR), flexibility (FL), and compatibility (CO). The eigenvalues for six components were more than one, respectively. Meanwhile, the cumulative proportion of variance value was at 73.28 percent, which satisfied the criterion of explaining 60

percent or more of the total variance in the original set of variables (Hair et al., 2010).

Confirmatory factor analysis (CFA) was then used to test the robustness of the measurement model through examining the construct reliability, the convergent validity and the discriminant validity using structural equation modeling through PLS. Moreover, bootstrapping with 1000 interactions was applied in both models to further ascertain their validity.

The construct reliability yielded a consistent result. Each of the constructs was shown a composite reliability over the cutoff point of 0.70 (Bucklin and Sengupta, 1993) (Table 1). The values of composite reliability were ranged between 0.83 and 0.96 for Taiwan samples and between 0.79 and 0.95 for Malaysia samples. The reliability of the multiple scales were also assessed with the Cronbach alpha values met the criteria of greater than 0.70, except for the construct for environmental change in both countries (i.e., the values of that for Taiwanese sample was at 0.68 and for Malaysian sample was at 0.61). However, as the alpha value was still within the acceptable range, these were included in the analysis. All estimated standard loadings were significant ($p < 0.01$), suggesting good convergent validity. Items TA1, TA2, EC3, EC5, and DA4 in the model were deleted from further analysis due to their low factor loading values. Methodologically, it is desirable to have three or more items per construct to ensure better measurement properties for each construct (Hair et al., 2010). The item deletion did not affect the measurement properties of constructs; they were technology adoption (TA3, TA4, TA5), environmental change (EC1, EC2, EC4), and dialogue (DA1, DA2, DA3, DA5).

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Insert Tables 1 about here

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To assess convergent validity amongst indicators, the ratio of construct variance to total variance was used. This is referred to as the average variance extracted (AVE). The AVE values for all constructs were greater than 0.5, and this confirmed that all measures had acceptable convergent validity. A correlation matrix was then used to examine discriminant validity (Table 2 and Table 3). Discriminant validity was considered acceptable when the square root of the AVE for diagonal measures were greater than the correlations among the measures off the diagonal. In our case these conditions were met and discriminant validity was considered to be satisfactory.

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Insert Tables 2 and 3 about here

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Test of the structure model

The results of the structural model for the Taiwanese sample (Figure 2; Table 4) showed that all the main hypotheses were supported with all the values being statistically significant ($p < 0.05$ or greater) (H1, H2, H3, H4 all supported). In addition, all the control variables showed no significant effects on service innovation and competitive advantage. The R-square values indicated that technology adoption and environmental change explained 26 percent of the variance in co-creation dynamics, and co-creation dynamics explained 23 percent of the variance in service innovation. Meanwhile, service innovation explained 51 percent of the variance in competitive advantage. With regard to the model for Malaysian sample (Figure 2; Table 4), the R-square values indicated that technology adoption and environmental change explained 29 percent of variance in co-creation, and co-creation dynamics explained 28 percent of variance in service innovation, meanwhile, service innovation explained 58 percent of the variance in

competitive advantage. All the values in the main hypotheses were significant at the minimum threshold of $p < 0.05$, except for hypothesis 1 (i.e., H1 rejected; H2, H3, H4 supported). That is, no significant path was shown from technology adoption to co-creation dynamics ($\beta = 0.14$, $t = 1.47$, $p > 0.05$). Therefore hypothesis 1 was not supported. On the other hand, the results from the Malaysian respondents showed that firm age had significant effects on competitive advantage, indicating that firms' service experience in Malaysia has made them better at handling competition in the marketplace. In addition, the control variables showed no significant effect on service innovation and competitive advantage.

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Insert Figure 2; Table 4 about here

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The moderating effects

This study adopted Chin et al. (2003) suggestion to test the moderation effects. Instead of mean centering the constructs, the weights were transformed into composite scores. The results from the Taiwan model showed that trust has a significant moderating effect ($\beta = 2.73$, $p < 0.001$) on the relationship between co-creation dynamics and service innovation, thus hypothesis 5 was supported. R-square values of the two models were compared to assess the interaction effect between the model with the moderating effect and the model without the interaction effect. The effect size was calculated to see the level of interactions effect on service innovation, using the following formula (Pavlou and El Sawy, 2006):

$$\text{Effect size } f = \frac{R^2(\text{interaction model}) - R^2(\text{main effects model})}{1 - R^2(\text{main effects model})}$$

The model with no interactions explained 27 percent of the variance in service innovation while this is 38 percent in model with interactions. The interaction had a small to medium effect

size ($f = \frac{0.38-0.27}{1-0.27} = 0.15$). Therefore, trust had a positive moderating effect on the relationship between co-creation dynamics and service innovation. Surprisingly, the moderator, trust in Malaysia showed no significant moderating effect on the relationship between co-creation dynamics and service innovation (Table 5). Thus hypothesis 5 was not supported.

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Insert Table 5 about here

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Discussion and conclusion

The term co-creation dynamics was proposed and modified from Prahalad and Ramaswamy's DART model specifically for the use of business co-creation. The new multiple-dimension variable was examined through EFA and the six sub-constructs were loaded. The path coefficient between co-creation dynamics and service innovation for travel agencies in both nations were positive and statistically significant. Taiwan and Malaysian travel agencies were virtually identical in terms of their co-creation dynamics for developing service innovation. Dialogue, access, risk assessment, transparency, flexibility, and compatibility had significant loadings on the construct of co-creation dynamics. This indicated that co-creation dynamics plays a positive role in service innovation practices. The findings ascertained one of the first tests of the idea that co-creation dynamics for service innovation practices is necessary for deriving benefits from collaboration partners. The findings also demonstrated that dialogue, access, risk assessment, transparency, flexibility, and compatibility, which form and facilitate co-creation dynamics across organizational boundaries, play important roles in service innovation. The findings moreover indicated that service innovation has a significant relationship to competitive advantage. The results were in agreement with the resource based view that innovation is an

important competency and a source of competitive advantage in service firms. Thus, managers must utilize or create unique resources to add to their core competencies which can be varied and must change over time. This is no different to technology firms such as Google and Amazon who find themselves constantly having to re-invent themselves and innovate to the point of providing new services, for example cloud based data storage as a service (Amit and Zott, 2012).

The effects of technology acceptance and environmental change on business co-creation dynamics for both nations were varied. The findings from Taiwan data suggested technology adoption plays an important role with respect to the co-creation dynamics. Yet, this was not shown in the Malaysian data. Generally, advances in technology have impacted the way business is conducted over all industries, often enabling and/or integrating IT to their competitive advantage. The degree to which businesses adopt technology may lie in the extent to which they assign technology to leverage their business functions. Further investigation into this aspect is needed to determine the reason for the differences. Meanwhile, the changing landscape of tourism has affected the business model of travel agencies across both nations in that they have to modify their operations because customers nowadays are becoming more empowered. This has meant that travel agencies need to co-create with their customers as well as interact with their suppliers in order to deliver better value to their customers. In line with the literature, trust does play a moderating role in the relationships between co-creation dynamics and service innovation in Taiwan, showing that when the level of trust is higher, the effects of co-creation dynamics on service innovation become stronger. However, there was an unexpected finding in which trust in Malaysia was insignificant in its moderating effect on co-creation dynamics and service innovation. The mixed results suggested trust may enhance the effects of partner collaborations on service innovation under certain circumstances. The measures of this study were not able to

capture the reason for this mixed result, and future studies might include other variables to better understand the presence of the effect.

Theoretical implications

Our primary objective is to investigate how a firm's innovation activities are influenced by business co-creation. We believe that incorporating co-creation dynamics into our analysis leads to a more comprehensive view of the strategic behavior of firms. The findings of this study provide insightful theoretical contributions specifically to the hospitality and tourism literature. First, the study examines the theory of co-creation and innovation in a travel agency context and is among the first to discuss the dynamics of business co-creation on service innovation in the hospitality literature. We argue that co-creation with partners can be with any combination of the six proposed co-creation elements that with an interactive process to solve customer's problems or realize potential needs. Although the pertinent literature has reinforced the importance of business partners' collaboration, a few studies have drawn on the service dominant logic view to examine business co-creation dynamics and its impact on a firm's service innovation and competitive advantage. Second, we introduce two additional elements of compatibility and flexibility to expand the four co-creation elements (Prahalad and Ramaswamy 2004). The scale of the business co-creation is developed and ascertained through this empirical study. It can be adopted and used as a future reference of business co-creation dynamics. Third, in line with service innovation in other industries, this study empirically shows that business co-creation has positive effects on service innovation for travel agent practices. Collaboration with partners to design and offer new services is crucial for travel agents to satisfy various customer needs and maintain competitive advantages over competitors. Service dominant logic paradigm has asserted that a firm should provide operand resources for customers to interact with it for value

co-creation (Vargo and Lusch, 2008). This extends this view to further suggest that while integrating and synthesizing a firm and its business partners' resources, the firm ensures that it covers all different customers' touchpoints that characterize their interactions with the firm. Consequently, customer journey can be mapped out by the firm for bettering customer experiences (Teixeira et al., 2012), which in turn maintains the firm's competitive advantage in the marketplace.

Practical implications

Our study also contributes to practice in several ways. First, the results suggest that innovative services should be considered by managers and that the development of these services should include co-creation approaches with partners and customers. Based on the six co-creation dynamics elements proposed, management could identify areas that may be lacking and develop capabilities for improving co-creation competency for companies in the hospitality and tourism industry. Firms should develop strong relationship competencies, select well-matched partners and link them to core research and development teams to develop an integrated platform. Managerial awareness that "trust" is a major factor in the selection process is paramount. The goals and objectives of a firm need to be consistent with their partners and managers need to be alike with respect to their management styles. It is essential that firms work together to maintain a trusting, steady and lasting collaborative relationship. This is best achieved through regular interactions between managers allowing them to explore common interests and needs.

Secondly, managers need to guarantee that objectives are clearly defined with respect to new service initiatives from both the organizational and customer viewpoints. Effective interactions with its partners and consumers are the key to be able to deliver the value in use to the consumers. The managers should carefully consider adding the collaborative elements in

their operations and treat these elements as operant resources that can generate competency that allows the firm to constantly innovate and eventually sustain competitive advantage. In addition, our study showed that the changes of business environment in the tourism industry positively influence the co-creation dynamics that explicitly reflects the current challenges between travel agents. The growing popularity of low cost airlines is likely to result in an increase in the number of younger and more adventurous travelers—a development that could bring benefits to a range of tourism service and product providers, particularly within the budget price segment and outside major cities. The managers should find opportunity to co-create with each other to come up with new services in order to meet these growing demands in the market. Moreover, considering the increasing usage of information technology worldwide, IT adoption catalyzes the need of co-creation. Managers should be aware and try to incorporate their business with IT to enhance their co-creation dynamics. The Internet and mobile will become even more important for such attractions over the forecast period as consumers look for information and also purchase their tickets online. More operators of such attractions will shift their marketing and promotional efforts to the Internet and especially social networking websites such as Facebook and Twitter and specific travel websites such as Expedia, Wotif, and Hotels.com. Those that fail to do so will eventually be left behind and find it harder to sustain their competence levels in the dynamic marketplace.

Limitation and future research

This study provides valuable insights into co-creation; however it has some limitations which can lead to avenues for future research. First, this study identified six proposed elements of co-creation dynamics that can enhance service innovation. Future research can explore the possibilities of other co-creation blocks that can contributed to co-creation dynamics such as

partner adaptability, complementary, legal bonds, and operational linkage. Second, although this study collected data merely from two countries, that is, Taiwan and Malaysia, hospitality and tourism businesses located in other countries may find our results insightful in terms of cultural differences and its effect on B2B readiness for co-creation. Future research therefore may consider conducting comparison studies from different cultures based on our model. Also, the respondent perception was completely based on their expectations when completing the questionnaire. This may affect the validity of the collected information. The proposed future studies can serve as an audit of this study and may provide an excellent opportunity to gain practical insights, share ideas and findings with practitioners and to cooperate for mutual benefits. Lastly, this study was restricted to tourism, applying the same research model may generate different results in a different industry. Future research therefore can be conducted in different service industries that may lead to a more generalized view of the entire service industry.

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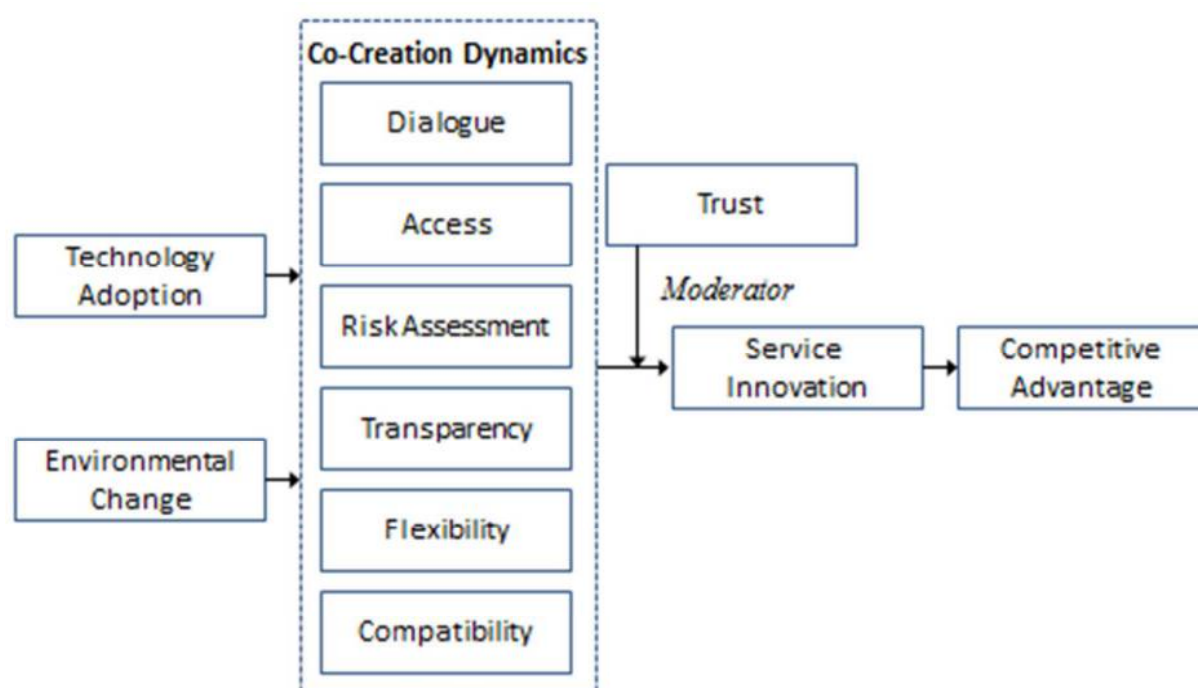
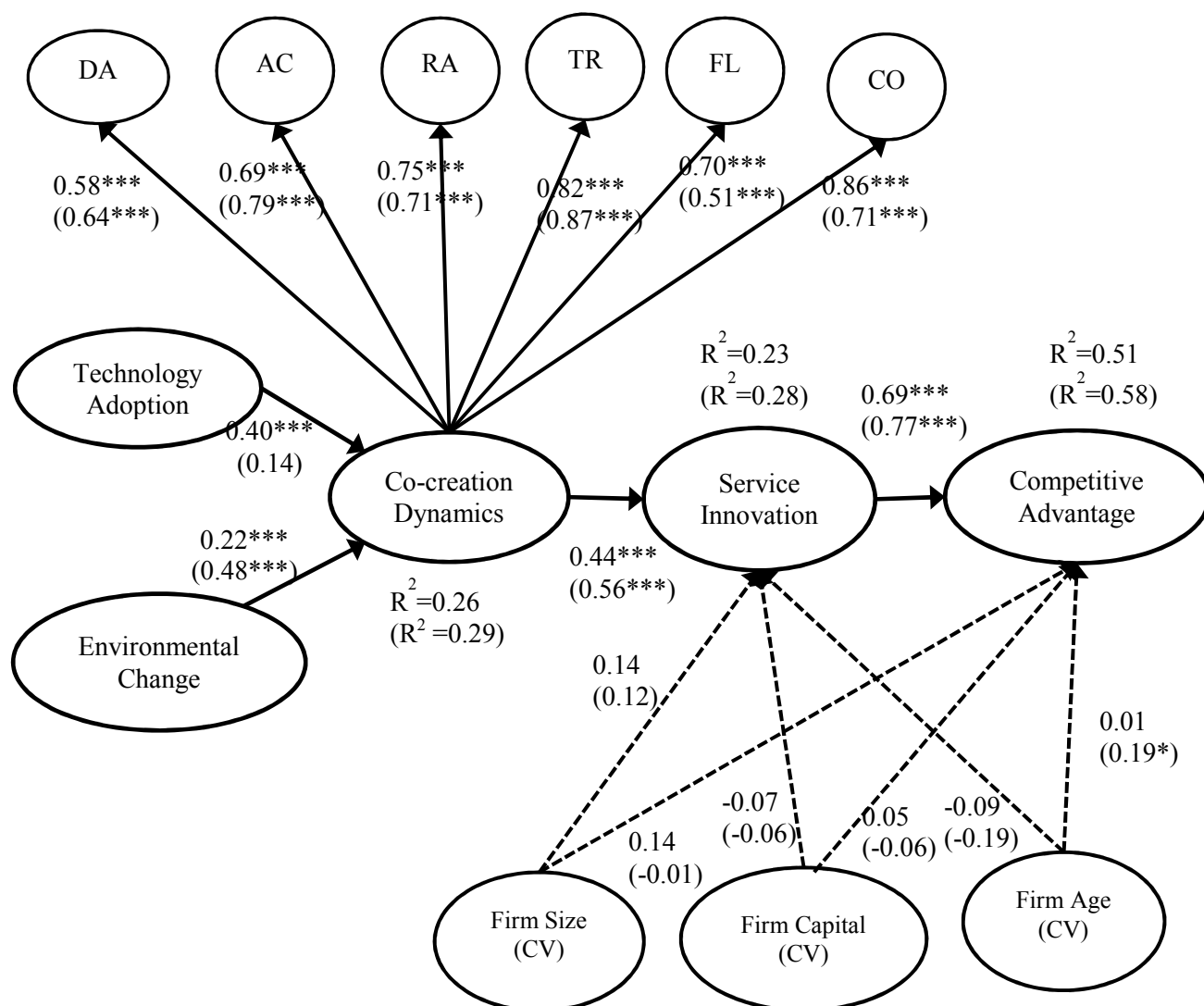


Figure 1. Proposed research model



Note.

1. The paths represent standardized beta estimates. Number in the parenthesis indicates the path value for Malaysia. All R^2 values are significant at the $p < .001$.
2. * $P < .05$, ** $P < .01$, *** $P < .001$
3. DA: Dialogue AC: Access RA: Risk assessment
 TR: Transparency FL: Flexibility CO: Compatibility
4. CV = control variable

Figure 2. Direct effects results of Taiwan and Malaysia**Table 1. Factor loadings and reliability validity for Taiwan and Malaysia data**

Construct name	Construct Identifier	Items	Factor loading		Cronbach Alpha		Composite Reliability	
			Taiwan	Malaysia	Taiwan	Malaysia	Taiwan	Malaysia
Dialogue	DA	DA1	0.81	0.65				
		DA2	0.89	0.79				
		DA3	0.78	0.79	0.82	0.73	0.88	0.82
		DA5	0.73	0.72				
Access	AC	AC1	0.8	0.79				
		AC2	0.85	0.81				
		AC3	0.79	0.83	0.84	0.83	0.89	0.89
		AC4	0.84	0.82				
Risk Assessment	RA	RA1	0.82	0.79				
		RA2	0.83	0.76	0.87	0.8	0.91	0.87
		RA3	0.86	0.78				
		RA4	0.89	0.83				
Transparency	TR	TR1	0.89	0.89	0.9	0.91	0.93	0.94

		TR2	0.88	0.88				
		TR3	0.87	0.94				
		TR4	0.87	0.85				
Flexibility	FL	FL1	0.83	0.72				
		FL2	0.95	0.83	0.88	0.75	0.92	0.85
		FL3	0.91	0.88				
Compatibility	CO	CO1	0.71	0.88				
		CO2	0.9	0.78				
		CO3	0.91	0.8	0.88	0.85	0.92	0.9
		CO4	0.9	0.86				
Technology Adoption	TA	TA3	0.87	0.77				
		TA4	0.84	0.84	0.82	0.78	0.89	0.88
		TA5	0.86	0.9				
Environmental Change	EC	EC1	0.84	0.73				
		EC2	0.74	0.7	0.68	0.61	0.83	0.79
		EC4	0.76	0.8				
Trust	TRU	TRU1	0.88	0.85				
		TRU2	0.91	0.9				
		TRU3	0.91	0.82	0.93	0.86	0.95	0.91
		TRU4	0.92	0.8				
Construct name	Construct Identifier	Items	Factor loading	Cronbach Alpha	Composite Reliability			

			Taiwan		Malaysia		Taiwan		Malaysia		Taiwan		Malaysia	
Service Innovation	SI	SI1	0.77	0.77										
		SI2	0.74	0.76										
		SI3	0.88	0.86	0.89	0.91	0.92	0.93						
		SI4	0.9	0.84										
		SI5	0.85	0.88										
		SI6	0.68	0.86										
Competitive Advantage	CA	CA1	0.93	0.86										
		CA2	0.93	0.95										
		CA3	0.94	0.93	0.94	0.93	0.96	0.95						
		CA4	0.9	0.92										

Table 2. Means, SD, correlations and average variance extracted (AVE) for Taiwan data (n = 106)

Construct	Mean	SD	AVE	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
AC	(a)	3.46	0.84	0.67	0.82									
CO	(b)	3.22	0.76	0.74	0.86									
CA	(c)	3.83	0.86	0.85	0.40	0.92								
DA	(d)	4.11	0.53	0.65	0.43	0.29	0.81							
EC	(e)	4.26	0.58	0.61	0.26	0.20	0.42	0.78						
FL	(f)	3.69	0.77	0.80	0.43	0.53	0.26	0.30	0.90					
RA	(g)	3.74	0.70	0.72	0.55	0.50	0.24	0.45	0.24	0.85				
SI	(h)	3.98	0.73	0.65	0.37	0.31	0.70	0.30	0.42	0.39	0.81			
TA	(i)	3.93	0.80	0.74	0.30	0.33	0.25	0.36	0.24	0.32	0.35	0.86		
TR	(j)	3.50	0.74	0.77	0.47	0.70	0.41	0.35	0.31	0.47	0.50	0.40	0.88	
TRU	(k)	3.76	0.74	0.82	0.57	0.58	0.32	0.46	0.30	0.54	0.69	0.47	0.21	0.90

Notes: 1. Figures in shaded diagonal are values of the square root of the AVE.

2. AC: access; CO: compatibility; CA: compatibility; DA: dialogue; EC: environmental change;

FL: flexibility; RA: risk assessment; SI: service innovation; TA: technology adoption

TR: Transparency; TRU: Trust

Table 3. Means, SD, correlations and average variance extracted (AVE) for Malaysia data (n = 102)

Construct	Mean	SD	AVE	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
AC	3.84	0.75	0.66	0.81										
CO	3.36	0.74	0.69	0.56	0.83									
CA	4.14	0.79	0.84	0.49	0.39	0.83								
DA	4.13	0.53	0.54	0.48	0.31	0.39	0.74							
EC	4.26	0.54	0.55	0.36	0.47	0.19	0.25	0.74						
FL	3.85	0.66	0.66	0.39	0.20	0.21	0.24	0.36	0.81					
RA	3.78	0.59	0.62	0.42	0.23	0.33	0.43	0.43	0.37	0.79				
SI	4.07	0.67	0.69	0.43	0.32	0.74	0.43	0.20	0.30	0.36	0.83			
TA	4.46	0.58	0.70	0.26	0.24	0.23	0.36	0.23	0.08	0.05	0.22	0.84		
TR	3.73	0.86	0.79	0.66	0.45	0.54	0.43	0.40	0.40	0.65	0.49	0.13	0.89	
TRU	3.75	0.69	0.71	0.51	0.31	0.39	0.40	0.37	0.49	0.70	0.39	0.12	0.70	0.84

Notes: 1. Figures in shaded diagonal are values of the square root of the AVE.

2. AC: access; CO: compatibility; CA: compatibility; DA: dialogue; EC: environmental change;

FL: flexibility; RA: risk assessment; SI: service innovation; TA: technology adoption

TR: Transparency; TRU: Trust

Table 4. Direct effects for Taiwan and Malaysia models

Path/hypothesis	Path coefficient (β)			Results	
	Taiwan	Malaysia		Taiwan	Malaysia
Technology Adoption $\rightarrow$ Co-creation Dynamics H1	0.40 ***	0.14		Supported	Not Supported
Environmental Change $\rightarrow$ Co-creation Dynamics H2	0.22 ***	0.48 ***		Supported	Supported
Co-creation Dynamics $\rightarrow$ Service Innovation H3	0.44 ***	0.56 ***		Supported	Supported
Service Innovation $\rightarrow$ Competitive Advantage H4	0.69 ***	0.77 ***		Supported	Supported
Firm Size $\rightarrow$ Service Innovation	0.14	0.12			
Firm Capital $\rightarrow$ Service Innovation	-0.07	-0.06			

Firm Age → Service Innovation	-0.09	-0.19
Firm Size → Competitive Advantage	0.14	-0.01
Firm Capital → Competitive Advantage	0.05	-0.06
Firm Age → Competitive Advantage	0.01	0.19 *

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Moderating effects for Taiwan and Malaysia models

Variable(s) entered	Dependent variable: Service innovation					
	Taiwan		Malaysia		Taiwan	Malaysia
	Hypotheses	Main effects: + Interaction	Main effects: + Interaction	Main effects + Interaction	Results	
Firm year		-0.07	-0.09	-0.17	-0.17	
Firm Capital		0.08	0.09	-0.05	-0.05	
Firm Size		0.10	0.09	0.13	0.13	
Co-creation Dynamics		0.22	-1.12	0.58***	0.34	
Trust		0.30	-1.24	-0.04	-0.39	
Co-creation Dynamics x Trust	H5	N/A	2.73***	N/A	0.56	Not Supported

Supported			
R^2	0.27	0.38	0.33
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$			

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