

Interplay of Strategic Orientations, Innovativeness, and Industrial Sectors in Enhancing Innovation Performance

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This study addresses two specific research questions: Does combining different types of strategic orientation enhance or impede innovation performance? How are these combinative effects influenced by service innovativeness and industrial sectors (operational or professional services)? A fuzzy-set qualitative comparative analysis was employed to analyze data collected from 164-paired B2B service firms. The statistical results suggest that not all combinations of strategic orientation contribute to innovation performance. The development of strategic orientation needs to be aligned with innovativeness and service offerings. Overall, the findings provide important implications for managing strategic orientation and service innovation activities.

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Introduction

To increase the effectiveness of innovation performance, many firms now engage in service innovation activities (Cui & Wu, 2015). Much of the focus of this literature is on understanding the antecedents and conditions of service innovation activities, such as network management (Rusanen, Halinen, & Jaakkola, 2014), partner selection (Tsou,

Cheng, & Hsu 2015), and resource integration (Koskela-Huotari et al., 2016). This study focuses on the effects of combining different types of strategic orientation on innovation performance, in B2B service firms, to yield high innovation performance, while considering the internal and external contingencies by addressing the following two research questions as suggested in the literature.

First, *does combining different types of strategic orientation enhance or impede innovation performance?* To improve and maintain their innovation performance, service firms employ strategic orientations to create the proper behaviors for conducting innovation activities through a deeply-rooted set of values and beliefs (Gatignon & Xuereb, 1997). Theory development and empirical studies of strategic orientations have, thus, focused on the effect of a single strategic orientation that enhances or inhibits innovation performance within a firm (e.g., Chen et al., 2016; Kumar et al., 2011; Storey & Hughes, 2013). However, the extant literature has not examined *combinative effects* of different types of strategic orientation that could help or hinder the development of effective service innovation programs (Rusanen, Halinen, & Jaakkola, 2014). Developing strategic orientations requires tremendous resource commitment, and managers should take an integrated approach to this endeavor (Baker & Sinkula, 2007; Koskela-Huotari et al., 2016). Thus, we first select three types of strategic orientation (market, interaction, and learning orientations) that are significantly associated with service innovation development (Chen et al., 2016; Kumar et al., 2011; Melton & Hartline, 2013). Then, based on the three strategic orientations, we examine the interaction effects of four different combinations/configurations.

Second, *how are these combinative effects influenced by innovativeness and industrial sectors?* The extant service innovation literature has focused primarily on effect of one particular contingent role, such as manufacturing vs. service firms (Wang, Zhao, & Voss, 2016), or environmental factors (Kumar et al., 2011). However, configuration theory challenges the extant literature and argues that, since different contingencies may lead to multiple configuration outcomes, a focus that shifts from the net effect of an individual contingent role to the analysis of various configurations related to performance would be necessary. In particular, each service firm is considered as a complex system of interdependent characteristics, in which competitive advantage frequently rests not only on internal characteristics of innovativeness being developed, but also on external characteristics of the industrial sector (Kirca, Jayachandran, & Bearden, 2005; Kumar et al., 2011). Thus, there is a clear need to better understand how different types of strategic orientation jointly affect innovation performance in the contexts of service innovativeness and industrial sector. To extend this research need, we build on the configuration theory by theorizing four strategic orientation configurations or combinations that consider three strategic orientations (market, interaction, and learning), with different levels of service innovativeness (high and low) and service industrial sectors (operational and professional), to produce high innovation performance.

The remainder of this article is organized as follows. The next section reviews the theoretical background, followed by the development of research hypotheses. Research method, including data collection and measures, is discussed. We propose the use of Fs/QCA to allow for simultaneous examination of the three types of strategic orientations. We conclude with the presentation of the statistical findings and the relevant managerial and research implications.

Theoretical Background

Strategic Orientations in the Service Innovation Context

Strategic orientation refers to the strategic directions and emphases implemented by a firm to create the proper behaviors for conducting business through a deeply-rooted set of values and beliefs (Gatignon & Xuereb, 1997). It provides the strategic advantage of differentiation and, thus, sustains a firm's service innovation performance (Storey & Hughes, 2013). In particular, the emphasis on service innovation has been closely linked to three types of strategic orientations: market orientation, interaction orientation, and learning orientation (Chen et al., 2016; Kumar et al., 2011; Melton & Hartline, 2013).

Market orientation refers to "the organizational culture that most effectively and efficiently creates the necessary behavior for the creation of superior value for buyers and thus, continuous superior performance for the business" (Narver & Slater, 1990). Most empirical studies provide support for the positive effect of market orientation on service innovation performance (Storey et al., 2016), because a market-oriented firm can better acquire, disseminate, and use market information to develop innovations that satisfy and retain existing customers, attract new customers and, as a result, achieve desirable levels of innovative performance. Following this line of thought, we expect that B2B service firms with strong market orientations will have better service innovation because they are better able to obtain and use information from business customers, and take timely actions based upon this information, to develop new services to meet their needs.

Interaction orientation refers to firms' abilities to interact with customers and obtain information from them to maintain profitable and long-term relationships (Ramani & Kumar, 2008). It establishes strong personal relationships through social interactions, and acts as an element of service business. Ramani and Kumar (2008) argue that it is through interactions that information is exchanged, knowledge is generated, and value is created. In the case of B2B services, business customers usually have long-term contracts with service providers, with repeated interactions with specific persons among the service providers (Davies, Brady, & Hobday, 2006). Through such interactions, the service providers have opportunities to develop new services to meet customer needs (Foss, Laursen, & Pedersen, 2011; Jarrett, 2013; Salomonson, Åberg, & Allwood, 2012).

Learning orientation refers to “organization-wide activity of creating and using knowledge to enhance competitive advantage” (Calantone, Cavusgil, & Zhao, 2002). It encourages the development of new knowledge for enhancing necessary capabilities to achieve competitive advantage and for encountering environmental changes. Previous research (Pesämaa et al., 2013) has indicated that a strong learning orientation leads to superior service innovation performance because employees in a service firm are highly motivated to gather, interpret, evaluate, and share with colleagues external information about customer needs and competitors, and internal information about organizational conditions, which build up advanced new services knowledge. In this line, B2B service firms with stronger learning orientations can influence employees’ values and behavior to collect useful internal and external information, to interpret, evaluate, and share information and, as a result, to create new services knowledge. This new services knowledge improves organizational capacities to develop new services.

B2B Service Industrial Sectors

Research in strategy suggests that strategic orientations have different effects on innovation performance, depending on internal and external contingencies (Kirca, Jayachandran, & Bearden, 2005; Kumar et al., 2011). Accordingly, the present study examines the contingency effects of service industrial sectors (as an external contingency) and service innovativeness (as an internal contingency).

While industrial sectors have been widely studied in the context of product and service innovation (e.g., Wang, Zhao, & Voss, 2016), there is less empirical research in the context of firms seeking service innovation in the B2B service sector, perhaps due to the breadth of the literature on B2B service. Based on the literature (Boyt & Harvey, 1997; Gebauer et al., 2010; Lay, Schroeter, & Biege, 2009; Malhotra & Morris, 2009; von Nordenflycht, 2010), this study classifies B2B service into two industrial sectors: operational and professional. Operational services refer to B2B service providers that take over customers’ maintenance and operating processes, through which the overall management of the operations and maintenance functions are accomplished (Davies, Brady, & Hobday, 2006), such as manufacturing equipment maintenance, or technical support. Lay, Schroeter, and Biege (2009) describe new operational services as resulting mainly through exploiting firms’ intangible assets, such as existing knowledge. Gebauer et al. (2010) further advocate that operational services are value-enabling services because they provide business customers the ability for operating and maintaining productions, such as systems upgrading and innovation in software-based services embedded in the productions. Thus, operational services are mostly tailored to individual business customers and help business managers go beyond the last problem they experienced by exploiting the existing expert knowledge.

In contrast, professional services refer to dealing with business customers that require professional knowledge (Malhotra & Morris, 2009), such as accounting services, consulting services, or solicitor referral services. Professional services contain a highly educated and professionalized workforce, providing customers with customized knowledge (Greenwood et al., 2005). The inputs of professional services are mainly the expert knowledge of the professional workforce, while their outputs consist of expert knowledge presented in the form of customized solutions for their customers (von Nordenflycht, 2010). Thus, professional services are knowledge-intensive (Malhotra & Morris, 2009), which yields competitive advantage mostly by exploring new knowledge and providing new services (von Nordenflycht, 2010).

As for the relationships between strategic orientations and B2B service industrial sectors, in B2B operational services, the value of the service is embedded in the interactions between firms and customers over a length of time (Boyt & Harvey, 1997; Davies, Brady, & Hobday, 2006), so it is crucial for firms to employ strategic orientations that emphasize the interaction of processes and delivery of service values during service operations. For B2B professional services, firms need to focus attention on developing new and differentiating existing service value propositions, to fulfill customers' expressed and unexpressed needs (Malhotra & Morris, 2009; von Nordenflycht, 2010). Therefore, the function and performance of strategic orientations could be situational, depending on the specific B2B service industrial sectors.

Service Innovativeness

Service innovativeness refers to the degree of newness of a new service (Tsai, Hsieh, & Hultink, 2011). It is an extent to which a new service differs from competing alternatives. Service innovativeness is an internal aspect of an organizational configuration, suggesting that strategic orientation may help or hinder the firm in adapting its innovation choice (Rubera & Kirca, 2012). To examine the role of service innovativeness in the B2B service innovation context, this study follows previous studies to operationalize the service innovativeness at high and low levels (Dotzel, Shankar, & Berry, 2013).

As for the relationships between strategic orientations and innovativeness, some studies find that different levels of innovativeness improve innovation performance, while others indicate they have a negative impact on innovation performance. For example, Cheng and Krumwiede (2012) indicate that when market orientation is complemented with a high level of innovativeness, it will be perceived as meeting and far exceeding the customer's expectations, and will deter innovation performance deterioration. Kibbeling, der Bij, and Weele (2013) suggest that the relationship between market orientation and innovation performance in supply chains is more positive at a high level of innovativeness than at a low level of innovativeness. These findings, therefore,

imply the need to better understand the conditions under which levels of service innovativeness in the B2B service context are more beneficial.

Figure 1 displays four configurations of market, interaction, and learning orientations, with high and low levels of service innovativeness, performed by operational and professional B2B service firms. Accordingly, four research hypotheses are developed in the next section.

		Service innovativeness	
		Low	High
Industrial sectors	Operational	Hypothesis 1: Market orientation Interaction orientation	Hypothesis 2: Interaction orientation Learning orientation
	Professional	Hypothesis 3: <i>Market orientation</i> <i>Learning orientation</i>	Hypothesis 4: Market orientation Interaction orientation Learning orientation

Figure 1. Configurations of strategic orientations, service innovativeness, and industrial sectors

Hypotheses Development

Given their narrow range of services for a specific target market, B2B operational service firms with low levels of service innovativeness engage cautiously in existing service development rather than seeking new opportunities (Gebauer et al., 2010). They aim to outperform competitors, within their specific markets, by offering higher quality service to their customers (Davies, Brady, & Hobday, 2006). To do so, service firms with a low level of innovativeness need to possess market-linking capabilities (Dotzel, Shankar, & Berry, 2013). In particular, B2B operational service firms focus on satisfying their limited choice of markets (Davies, Brady, & Hobday, 2006). They focus on understanding and satisfying the needs of their current market, resulting in a strong emphasis on market information. As B2B operational service firms with low levels of service innovativeness focus mainly on market information, market orientation should be their primary strategic orientation (Kirca, Jayachandran, & Bearden, 2005).

Additionally, reporting requirements associated with heavy interactions with customers are likely to reduce resources for understanding customer needs (Chen et al., 2016; Foss, Laursen, & Pedersen, 2011), thus encouraging employee engagement in interactions with customers (Cui & Wu, 2015). According to Ramani and Kumar (2008),

interaction orientation is a critical factor for service firms, as it manages interactions with their customers and develops capabilities to allow them to react and respond to individual customer feedback, while simultaneously codifying the acquired market information. Overall, for B2B operational service firms with a low level of service innovativeness, market orientation and interaction orientation are likely to positively complement each other in creating high innovation performance. Therefore,

H1: For firms performing in the B2B operational service industrial sector, a combination of interaction and market orientations with a low level of service innovativeness yields high innovation performance.

In contrast to B2B operational service firms with a low level of service innovativeness, firms with a high level of service innovativeness actively seek opportunities for new service development (Cheng & Krumwiede, 2012). They offer a broad range of new services to a given target market and have relatively strong information processing and learning capabilities (Dotzel, Shankar, & Berry, 2013). They focus less on customer satisfaction, but employ information through interactions with customers (Foss, Laursen, & Pedersen, 2011) to provide innovative solutions to current and new customers. Thus, interaction orientation enables firms with high levels of service innovativeness to engage in superior innovation exploration, resulting in high innovation performance.

In addition, firms with high levels of service innovativeness that need innovative solutions to market needs, require profound new knowledge. Under this circumstance, learning orientation is the major force capable of doing so (Melton & Hartline, 2013; Pesämaa et al., 2013). Therefore, in the B2B operational service industrial sector, firms with high levels of service innovativeness that combine interaction orientation with learning orientation should yield high innovation performance. Thus,

H2: For firms performing in the B2B operational service industrial sector, a combination of interaction and learning orientations with a high level of innovativeness yields high innovation performance.

If service firms with low levels of service innovativeness operate in the professional sector, a combination of market orientation and learning orientation becomes more important for innovation performance. Dotzel, Shankar, and Berry (2013) indicate that weak service innovativeness leads to multiple and similar choices for customers. As a result, professional service firms must monitor and respond to existing markets' changing needs and preferences to ensure that their target customers prefer their service offerings over those of their competitors (von Nordenflycht, 2010). As such, market orientation

should be appropriate for professional service firms with a low level of service innovativeness.

While market orientation is important for service firms with low levels of service innovativeness in the professional sector, the role of learning orientation must also be analyzed to identify the relationship between service innovation and market orientation (Melton & Hartline, 2013). Especially, as professional service firms engage primarily in exploring new services (von Nordenflycht, 2010), they need to develop learning methods for different types of innovation. To do so, professional service firms should develop an orientation related to learning and, thereby, form a basis for innovation processes innovation, as well (Pesämaa et al., 2013). Accordingly, professional service firms with low levels of service innovativeness are more likely to benefit from leveraging market orientation in combination with learning orientation (Melton & Hartline, 2013), resulting in high innovation performance. Thus,

H3: For firms performing in the B2B professional service industrial sector, a combination of market and learning orientations with low levels of innovativeness yields high innovation performance.

Finally, as firms with low levels of service innovativeness mainly seek ways to fulfill existing market needs and to diversify new services, they are likely to be at risk of overlooking new service development opportunities from outside their current business domain (Salomonson, Åberg, & Allwood, 2012). However, Chen et al. (2016) find that interaction orientation stimulates market-related capabilities (e.g., market orientation), which encourage firms to explore radical innovations (namely, a high level of service innovativeness). Interaction-oriented firms also overcome the myopia induced by a strong market orientation toward customers (Chen et al., 2016). In addition, garnering breakthrough knowledge from interactions with customers (interaction orientation) and maintaining organizational learning (namely, learning orientation), may help firms improve the outcomes of innovation (Foss, Laursen, & Pedersen, 2011; Cui & Wu, 2015). Furthermore, Baker and Sinkula (2007) suggest that learning orientation enhances the quality of market-oriented behaviors, by creating market-oriented processes that are better at producing new products/services. Overall, the literature appears to suggest that, for the better effective performance of innovation, professional service firms focusing on a high level of innovativeness appear to depend on combining market, interaction, and learning orientations. Therefore,

H4: For firms performing in the B2B professional service industrial sector, a combination of market, interaction, and learning orientations with a high level of innovativeness yields high innovation performance.

Research Method

Data Collection

The sampling frame consisted of 1,500 top B2B service firms operating in Taiwan that engage in B2B services with their customers around the world, as compiled by the China Credit Information Service. To ensure the competence of informants, we followed previous studies (e.g., Storey & Hughes, 2013) to focus on firms that had actually recently launched B2B new services and to target general managers, CEOs, or people in similar high-level positions as informants. In total, we identified 501 general managers based in Taiwan and asked them to complete the questionnaire, which was embedded in the email. With two-round reminders via phone and email, 185 questionnaires were completed and acceptable.

The paired questionnaires were then sent to the named international B2B firms. The final sample consisted of 164 firms (328 questionnaires) and resulted in a response rate of 32.7%, a rate that is comparable to previous B2B survey (Candi & Kahn, 2016). To ensure the truth of the response data, we contacted each respondent by phone to confirm that they had completed the questionnaire. About 85% of respondents were general managers and the rest were senior managers. On average, respondents have worked in their current positions for 9.6 years. The average experience of respondents was 14.3 years in the B2B service industry, suggesting the subject competence of the respondents. The sample consisted of IT consulting services (26.8%), financial services (25.6%), tourism and travel services (22.6%), management consulting services (21.3%), and others (3.7%). The number of firm employees varied between 61 and 7,269, with 79.8% of firms having more than 200 employees.

Non-response and Common Method Bias

Non-response bias was assessed by randomly selecting 40 firms that did not respond, for their firm-level attributes (age and size). The t-test results showed no significant difference (99% confidence interval) between these two groups, indicating no systematic differences between non-respondents and respondents (Armstrong & Overton, 1977).

This research design involves cross-sectional data, which tend to be vulnerable to common method bias. To alleviate potential concerns, we first performed confirmatory factor analysis by examining a single-factor model in which all items were loaded onto

one factor to check for the presence of common method bias (Podsakoff et al., 2003). We found that fit indices for the single factor model were poor fit (comparative fit index = 0.356, root mean squared error of approximation = 0.143). In addition, Harman's one-factor test was also used. The results showed that the first factor explained only 19.41% of the total variance. No single factor emerged that could account for the majority of the covariance in the measures. Therefore, both results indicated that common method bias was unlikely to be a major concern.

Measures

All constructs were measured by multiple-item scales (see the Appendix). The scales were adopted from previous studies and modified for the unique characteristics of B2B service. A double-translation method was used to translate items in English into Mandarin. Once the initial items were developed, two pilot tests were performed to ensure the measurement was reliable and valid (Churchill, 1979). First, four academics and 15 experienced senior managers were interviewed to detect ambiguous questions, check the face and content validity of the measurement scales, and certify the wording of the items. Second, refined scales were tested using a sample of 42 senior managers with work experience in B2B service industries. Some minor adjustments were then made regarding wording and formatting.

All items were measured with a 5-point Likert scale, with end points of "strongly disagree" and "strongly agree". Market orientation was assessed using six items from Baker and Sinkula (2007), interaction orientation with 13 items from Ramani and Kumar (2008), and learning orientation with 10 items from Sinkula, Baker, and Noordewier (1997). The measures for service innovativeness were adapted from previous studies with four items (Salomo, Talke, & Strecker, 2008; Cheng & Huizingh, 2014). To measure service industrial sectors, we asked the respondents, by phone, to indicate which service industrial sectors they belonged to. For innovation performance, we captured each firm's innovation profit margin (%) acquired from a commercial database provided by the China Credit Information Service. A firm's innovation profit margin reflects profitability of its service innovativeness. As for control variables, this study included firm age, firm size, and environmental uncertainty, all of which were viewed as control variables because their effects on service innovation performance have been documented (Cheng & Krumwiede, 2012).

Analysis and Results

Reliability and Validity

For reliability, Cronbach's alpha values for all constructs were well above the threshold value of 0.7 that Nunnally (1978) recommended. To refine the measures, a principal component analysis was conducted with varimax rotation, and evaluation of the eigenvalues was used to identify the number of factors to retain. All initial eigenvalues were greater than one. The remaining items explained 67.2% of the variance, and all items loaded on the right factor, generally with high factor loadings. Throughout this process, the items loaded as expected.

For the measurement models, the results of confirmatory factor analysis indicated that all factor loadings were significant ($p < 0.01$), and all were well above the recommended value of 0.5. To establish construct validity, we examined both convergent and discriminant validity. Composite reliability was an indicator of the shared variance among the observed variables used as an indicator of a latent construct (Fornell & Larcker, 1981). The results of all indicators exceeded the usual 0.70 benchmark (Hair et al., 2010).

Table 1. Descriptive statistics, correlations, and AVEs

Constructs	Mean	SD	1	2	3	4	5	6	7	8	9
1 Market orientation (1-5)	3.63	.82	.79								
2 Interaction orientation (1-5)	3.48	.74	.18*	.79							
3 Learning orientation (1-5)	3.75	.86	.20*	.14	.81						
4 Service innovativeness (1-5)	3.05	.53	.19*	.22*	.29**	.81					
5 Industrial sectors (operational, 1/0)	.45	.37	.21*	.24*	.18*	.20*	-				
6 Innovation profit margin (%)	4.46	12.14	.17*	.09	.32**	.25*	.13	-			
7 Firm size (size category, 1-5)	3.83	1.63	.01	.02	.04	.01	.03	.12	-		
8 Firm age (age category, 1-5)	3.36	1.58	.03	-.01	.05	.12	.01	.11	.23*	-	
9 Environmental uncertainty (1-5)	3.57	.69	.21*	.24*	.32**	.34**	.04	-.18*	.01	.02	.82

SD: standard deviation; Bold figures on the diagonal are the square root of the AVE; * $p < .05$; ** $p < .01$

Discriminant validity was assessed in two approaches. First, for each construct the value of the square root of each average variance extracted (AVE) was greater than the values of the inter-construct correlations. Second, the confidence interval did not include 1.0 by plus or minus two standard errors around the correlation between the constructs (Anderson & Gerbing, 1988), and the Chi-square test between any two constructs was significant ($p < 0.001$). Table 1 shows descriptive statistics, correlations, and the square root of AVE of constructs.

Hypotheses Testing

This study used a fuzzy set qualitative comparative analysis (Fs/QCA), an analysis of set relationships with the ability to identify the conditions that lead to a given outcome (Ragin, 2008). The main reason to use this approach is because traditional multivariate techniques are frequently less adept at capturing complex systems of interdependent variables among configuration variables (Woodside, 2013). Several recent studies suggest

that using Fs/QCA in organization, strategy, and environment settings can offer new insights into causal interplay issues (e.g., Frambach, Fiss, & Ingenbleek, 2016; Fiss, 2011; Woodside, 2013).

All variables were converted into sets, namely data calibration (Fiss, 2011). A value of 5 indicated full membership, while a value of 1 indicated full non-membership, and a value of 3 indicated the crossover point. For example, market orientation was initially measured using Likert scales, so we employed the direct method for calibrating fuzzy sets (Ragin, 2008), based on theoretical anchors (Ordanini, Parasuraman, & Rubera, 2014). In contrast, with no external thresholds, we based metrics use on the average use of metrics by the firm in each category, with the thresholds based on sample quartiles. For example, we calibrated the firm's innovation profit margin using 5%, 0%, and -5% as thresholds for full and non-full membership crossover points, respectively.

Second, after calibrating the measures, we ran a test for necessity, in which no condition passed the consistency threshold of 0.90, the minimum acceptable raw consistency was 0.80 (Ragin, 2008), and proportional reduction in consistency values was 0.75 (Fiss, 2011) for a necessary condition. The results presented in Table 2 show that the four configurations are sufficient for achieving high innovation performance (raw consistency cutoff 0.92 and proportional reduction in consistency value cutoff 0.81). As for overall coverage, the four configurations identified account for 68% of membership in the outcome, suggesting acceptable fit. In addition, all configurations show high consistency values between 0.90 and 0.94, with the overall solution consistency at 0.90. All analyses used the Fs/QCA 2.5 software package.

Table 2. Results of configurations for enhancing innovation performance

	Configuration			
	1	2	3	4
Strategic orientations				
Market orientation	●		●	●
Interaction orientation	●	●		●
Learning orientation		●	●	●
Service innovativeness				
High	□	●		●
Industrial sectors				
Operational	●	●		□
Firm characteristics				
Firm size (large)	□		□	□
Firm age		□	□	
Goodness-of-fit				
Raw coverage	0.43	0.42	0.39	0.44
Unique coverage	0.08	0.07	0.06	0.09
Consistency	0.91	0.93	0.90	0.94
Solution consistency	0.90			
Solution coverage	0.68			

Note: Black circles indicate the presence of conditions, and crossed-out circles indicate their absence. Blank spaces indicate a don't care situation. Large circles indicate core conditions; small circles, peripheral conditions.

The results indicate that Hypothesis 1 combines a low level of service innovativeness with the operational service industrial sector. In this setting, the presence of market and interaction orientations dominates, suggesting that the finding is consistent with Hypothesis 1. In addition, Hypothesis 2 confirms that a high level of service innovativeness in the operational service industrial sector, that combines interaction and learning orientations, would yield high innovation performance. Similarly, the findings provide support for Hypothesis 3. Namely, a low level of service innovativeness in the professional service industrial sector would yield high innovation performance, if firms perform market and learning orientations. Finally, Hypothesis 4 is supported; indicating a high level of service innovativeness in the professional service industrial sector would combine market, interaction, and learning orientations.

Findings

Overall, there is no one particular strategic orientation that dominates in all four configurations to yield high innovation performance, while a combination of any two strategic orientations does. Specifically, without considering configuration 4 (a high level of innovativeness in the professional service industrial sector), market orientation is part of configurations 1 and 3 (a low level of innovativeness in the operational and professional service industrial sectors), and is absent in configuration 2 (a high level of innovativeness in the operational service industrial sector). In contrast, interaction orientation is part of configurations 1 and 2 (high and low levels of innovativeness in the operational service industrial sector), and is absent in configuration 3 (a low level of innovativeness in the professional service industrial sector). On the other hand, learning orientation is part of configurations 2 and 3 (a high level of innovativeness in the operational service industrial sector, and a low level of innovativeness in the professional service industrial sector), and is absent in configuration 1 (a low level of innovativeness in the operational service industrial sector).

Conclusions and Discussion

Building on configuration theory, this study examines four sets of configuration that interplay: market, interaction, and learning orientations, high/low levels of service innovativeness, and operational/professional B2B service industrial sectors, and examines their impact on innovation performance. The findings provide important implications for managing strategic orientation and service innovation activities.

First, by using the Fs/QCA, our four sets of configurations allow for simultaneous examination of the three types of strategic orientations, and show that they have

differential contingent impacts on innovation performance. The contrasting effects improve our understanding of the distinct internal (service innovativeness) and external (industrial sectors) contingencies underlying combinative effects of market, interaction, and learning orientations. In particular, the findings demonstrate the importance of the combinative effects of market, interaction, and learning orientations as a configurational approach for firms to use, rather than as a unidimensional approach commonly used in previous studies (e.g., Kirca, Jayachandran, & Bearden, 2005; Chen et al., 2016; Melton & Hartline, 2013). In addition, contrary to the extant literature (e.g., Cheng & Krumwiede, 2012; Ramani & Kumar, 2008), market, interaction, or learning orientation does not significantly contribute to innovation performance individually. A possible explanation is that previous findings that use regression analysis may only partially explain the net effect of a single strategic orientation associated with the innovation performance, and are likely to ignore the combinative effects of different types of strategic orientation.

In short, this study suggests contingency theory as a useful theoretical lens with potential for better understanding combinative effects of strategic orientations. Furthermore, many of the high-innovation performance firms do not belong to any of the four configurations, which are highly context specific. The findings imply that simply copying the practices of high innovation performance firms may not lead to similar outcomes (Ordanini, Parasuraman, & Rubera, 2014).

Second, in the past the literature has assumed that all B2B service firms offer identical services with no consideration of the contingency effect of service offerings (e.g., Lay, Schroeter, & Biege, 2009; Salomonson, Åberg, & Allwood, 2012). Our finding raises awareness of the relative benefits of pursuing combinative effects of strategic orientations under operational and professional B2B service industrial sectors. Apparently, adding the service industrial sectors consideration offers additional insights that would not otherwise have been revealed. For example, market orientation is the one strategic orientation that is most widely studied (Kirca, Jayachandran, & Bearden, 2005), yet our findings suggest that combination effects of market orientation and other types of strategic orientation (interaction or learning) do not always make significant contributions to innovation performance under operational or professional B2B service sectors. The statistical results enrich the literature by clarifying the contingency effect of strategic orientations across two different B2B service industrial sectors. This finding, which has not been accounted for by prior research, may also help reconcile some of the inconsistent findings in the strategic orientation literature (Kirca, Jayachandran, & Bearden, 2005) that focus primarily on the performance of strategic orientations without considering the effect of service offerings. Furthermore, it is worth noting that combinative effects of interaction and learning orientations seem beneficial for the B2B operational and professional service firms with a high level of service innovativeness. These findings add new insights to the radical innovation literature: combining effects of interaction and learning orientations

are more essential for service firms to create radical innovation (a high level of innovativeness) than incremental innovation (a low level of innovativeness).

Third, by taking the firm's perspective to examine internal (service innovativeness) and external (B2B service industrial sectors) contingencies needed for innovation, this study complements prior studies that have primarily focused on customers, and answers the call for examining the firm conditions fitting for innovation performance (Cui & Wu, 2015). It provides a better understanding of integrating the firm's co-innovation activities with its internal and external organizational factors through the perspective of strategic orientations. In addition, our study goes beyond the level of individual employees to examine broader organizational levels of service innovativeness and service industrial sectors required for co-innovation development.

Managerial Implications

The empirical findings also have a possible implication for managers. As service innovation activities have been playing a significant role in enhancing firms' innovation performance (Storey et al., 2016), firms face the decision as to how to optimally increase innovation performance with limited resources. Our findings provide guidelines for this decision. To decide how to engage in service innovation activities, firms need to simultaneously assess their business customers' orientations and their innovation strategies (high/low levels of innovativeness). Firms also need to be aware of the potential contingency effects of operational/professional services, and find ways to maximize or minimize this effect. Especially, firms with low levels of service innovativeness are found to benefit from market orientation across the operational and professional service sectors, whereas firms with high levels of service innovativeness benefit from interaction and learning orientations. On the other hand, firms in the operational service sectors require focusing on interaction orientation, while firms in the professional service sectors should focus on market and learning orientations.

Limitations and Future Research

Finally, this study is subject to several limitations and leaves some areas in need of further research. First, this study tests the role of strategic orientations in the B2B service context. Research in other settings (e.g., business-to-customer) could expand the research scope of strategic orientations. Another limitation of this study is that the survey depended upon only one key informant of each firm. Future works could enhance reliability of the data by using multiple informants. Finally, this study focuses on B2B service firms in Taiwan. In the context of growing markets, the very essence of innovation performance and the roles of strategic orientations may significantly differ from the Taiwanese setting, potentially leading to significantly different success processes. Future

research should also survey companies in other countries or regions to gain a more comprehensive view of successful configurations in specific market contexts.

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Appendix

Measurement items

Market orientation (Cronbach's α = .90; Composite Reliability = .91; AVE = .63)	Factor loading
We are slow to detect changes in our customers' service preferences	.75
We frequently review the likely effect of changes in our business environment on customers	.78
When something important happens to a major customer or market, the whole firm is informed about it within a short period	.83
When one department finds out something important about competitors, it is slow to alert other departments	.76
For one reason or another, we tend to react slowly to changes in our customers' service needs	.81
Several departments get together periodically to plan a response to changes taking place in our business environment	.84
Interaction orientation (Cronbach's α = .95; Composite Reliability = .96; AVE = .62)	
We believe that each customer cannot be satisfied with the same set of services	.84
We consciously seek to identify and acquire new customers on an individual basis	.79
We believe that the reactions of customers to services should be observed at the individual customer level	.75
We have systems in place that record the transactions of each customer	.74
We can identify all transactions pertaining to each individual customer	.83
We analyze previous customer transactions at the individual customer level to predict future transactions from that customer	.81
In our firm, all customer interfaces gather transaction information on individual customers at all times	.77
We encourage customers to share opinions of our services with their firms	.72
We encourage customers to share opinions of our services with other customers	.80
We encourage customers to interactively participate in designing services	.85
We have an excellent idea of what each individual customer has been contributing to its profits	.75
We predict what each individual customer will contribute to its profits in the future	.78
We compute the revenue generated as a result of every service directed at an individual customer	.76
Learning orientation (Cronbach's α = .93; Composite Reliability = .95; AVE = .65)	
Our employees view themselves as partners in charting the direction of the firm	.80
We place a high value on open-mindedness	.84
We encourage employees to "think outside of the box"	.83
An emphasis on constant innovation is a part of our firm culture	.79
We basically agree that our firm's ability to learn is the key to our competitive advantage	.81
The basic values of our firm include learning as a key to improvement	.85
Learning in our firm is seen as a key commodity necessary to guarantee firm survival	.82
In our firm, there is a well-expressed concept of who we are and where we are going as a business	.75
Our employees are committed to the goals of our firm	.78
We are not afraid to reflect critically on the shared assumptions we have about our customers	.77
Service innovativeness (Cronbach's α = .90; Composite Reliability = .89; AVE = .66)	
The majority of our service innovations	.81
Are based on substantially different core technologies/procedures/concepts	.81
Involve technologies/procedures/concepts that make old technologies/procedures/concepts obsolete	.80
Use new technologies/procedures/concepts that permit quantum leaps in performance	.78
Use technologies/procedures/concepts that have an impact on or cause significant changes in the whole industry	.86
Environmental uncertainty (Cronbach's α = .88; Composite Reliability = .86; AVE = .67)	
How difficult is it to forecast the sales in markets?	.85
To what extent do changes in the trade policies of markets influence sales?	.78
How difficult is it to forecast the competitive situations in markets?	.82

Note: AVE: average variance extracted

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