COMPLEMENTARITY OF INNOVATION CAPABILITY AND CUSTOMER-LINKING CAPABILITY: A CONFIGURATIONAL APPROACH

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INTRODUCTION

Customer-linking capability fosters a profitable customer base and ensures that there is a fit between the product or service offered and the customers served (Rapp, Trainor and Agnihotri 2010; Hooley et al. 2005). Innovation capability, in turn, provides a source of organizational renewal. This is necessary because customer preferences change and competitors' innovative activities erode the ability of existing products and services to cater to the needs and wants of the customer (Kim and Pennings 2009; Coad and Rao 2008). Thus, the firm's customer-linking capability and innovation capability support one another (Maciariello 2009).

However, developing both capabilities requires organizational resources. Thus, it is crucial for managers to understand the conditions under which customer-linking capability and innovation capability, either together or separately, are needed to achieve good performance. Extant studies have investigated whether the performance outcomes of the capabilities, either individually (e.g., Hooley et al. 2005; Rapp et al. 2010) or in combination (Moorman and Slotegraaf 1999; Song et al. 2005), are contingent on differences in organizational culture (Morgan, Vorhies and Mason 2009) or environmental turbulence (Hult, Hurley and Knight 2004). In this study, we show how these different considerations can be integrated using a configurational approach (Meyer, Tsui and Hinings 1993). Specifically, we investigate how combinations of customer-linking and innovation capabilities affect performance under different cultural and environmental circumstances.

BACKGROUND

Customer-linking capability and *innovation capability* are market-based capabilities that determine a firm's ability to produce value in a given market (Grant 1996; Day 1994). More specifically, customer-linking capability refers to the ability to create and manage close customer relationships (Day 1994), whereas innovation capability refers to "the ability of the organization to continuously transform knowledge and ideas into new products, processes and systems" (Lawson and Samson 2001, 384). The two capabilities are often cited as keys to competitive success: to maintain profitable customer relationships at a given point in time, and to maintain attractive offerings over time (cf. Teece 1986). A number of empirical studies have rather consistently evidenced that innovation capability (e.g., Langerak, Hultink and Robben 2007; Hooley et al. 2005) and customer-linking capability (e.g., Rapp et al. 2010; Hooley et al. 2005) are positively related to superior firm performance. However, while a company that has both capabilities is in a strong competitive position, it is costly to allocate resources into both capabilities. Therefore, such firms may sometimes experience poor financial performance (cf. Winter 2003). Hence, it is important to identify the conditions that favor the development of the capabilities simultaneously versus separately.

Organizational culture guides employee behavior (Schein 1996; Fiol 1991). In this study, we consider two aspects of organizational culture: *market orientation* (Narver and Slater 1990) and *learning orientation* (Sinkula et al. 1997). They both deal with how organizational members relate themselves to the market (Bell, Whitwell and Lukas 2002). Market orientation is a form of organizational culture that supports collaborative efforts to create, share and integrate information about customers and competitors (Narver and Slater 1990). As such, a strong market-oriented culture can improve the effectiveness of market-based capabilities (e.g., Paladino 2008) and leverage the synergies between customer-linking capability and innovation capability, because such a culture provides a unifying frame of reference that enables disparate marketing activities to be effectively combined (Kyriakopoulos and Moorman 2004; Menguc and Auh 2008). Learning orientation, in turn, refers to a firm-specific culture that gives "rise to that set of organizational values that influence the propensity of the firm to create and use knowledge" (Sinkula et al. 1997, 309). Firms need learning orientation in translating market intelligence into enhanced capabilities to serve customers' changing needs and wants (e.g., Hult et al. 2004; Sirmon et al. 2007). Thus, while market-oriented culture ensures that the firm's various capabilities together add value to the customer (Kyriakopoulos and Moorman 2004), a learning orientation ensures constant development of these capabilities.

Environmental turbulence has also been proposed to affect the performance implications of both individual market-based capabilities and their combination (e.g., Song et al. 2005; Hult et al. 2004). Following Jaworski and Kohli (1993), environmental turbulence can be divided into three components. First, *market turbulence* refers to the rate of change in the composition of customers and their preferences. Characterized by high customer turnover, it increases the need for constantly bringing new products to the market in order to attract customers' attention (Slotegraaf and Pauwels 2008), calling for a strong innovation capability. Second, *technological turbulence* is essentially about the rate of technological change in the marketplace. High turbulence essentially increases the rate at which existing offerings become obsolete (Jaworski and Kohli 1993) and, therefore, increases the need for innovation capability to constantly renew offerings (Kotabe and Swan 1995). Finally, *competitive intensity* refers to the amount of competition on particular market. Under heavy competition, customer-linking capability is needed to avoid competition and protect profits (Porter 1985).

Taken together, we argue that organizational culture and environmental turbulence define whether customer-linking capability and innovation capability complement one another.

RESEARCH METHODS

In this study, organizational configurations (Meyer et al. 1993) are defined as groups of organizations with similar capabilities and organizational culture that face similar degrees of environmental turbulence.

Fuzzy-set qualitative comparative analysis (fsQCA) is a new approach for studying organizational configurations (Fiss 2011). fsQCA overcomes several limitations associated with other, more traditional configurational methods in marketing: interaction effects, cluster analysis, and the deviation score approach (e.g., Miller 1996; Doty, Glick and Huber 1993). The fsQCA procedure involves describing cases as configurations by using a set-theoretical approach (for details, see Fiss 2007). The outcome, in this case good financial performance relative to competitors, is a set to which each case either belongs or not. However, the membership of each firm in the group of good performers is allowed to vary between full and zero membership (Ragin 2000). Similarly, each firm is also characterized by its degree of membership in each of the configurations, i.e., in the sets of logically possible combinations of capabilities, culture and turbulence. The analysis determines all configurations that consistently lead to good financial performance. The logical expressions describing the configurations are then simplified on the basis of redundancy (e.g., if A * B * C → X and A * B * ~C → X, then A * B → X; where "*" refers to logical *and*, while "~" denotes logical *not*) (Ragin 2008).

Validated measurement scales were used when available. As no established scale to study innovation capability exists, we built the scale based on Vorhies and Morgan (2005) and Chen (2009). To assess customer-linking capability, in turn, we developed a scale based on Rapp et al. (2010) and Hooley et al. (2005). To account for market-oriented culture, items were directly adopted from Narver and Slater's (1990) scale, whereas items for learning orientation were adopted from Sinkula et al. (1997). For market environment, we used Jaworski and Kohli's (1993) measurement items for environmental turbulence. Finally, financial performance was measured in terms of relative profits, ROI and ROA (cf. Hooley et al. 2005). Seven-point Likert scales were used.

The data was collected in spring 2010 using a web-based survey that was targeted at the top management in Finnish companies with more than five employees. The survey resulted in 1134 responses, corresponding to a firm-level response rate of 10.9%. Due to missing performance data, the usable data set included 689 respondents. In the data, non-response bias is not a likely problem (Armstrong and Overton 1977).

Confirmatory factor analysis in LISREL was employed to obtain the latent variables to be used as the basis for identifying organizational configurations with fsQCA. We analyzed the scales in two sets. The first CFA (Set 1) consisted of second order constructs (market orientation and learning orientation), the second (Set 2) of innovation capability, customer-linking capability, environmental turbulence and financial performance. After necessary eliminations, both measurement models fit the data well (Set 1: χ^2=801.78, df=163, RMSEA=.075, GFI=.896, NNFI=.971, CFI=.975; Set 2: χ^2=319.61, df=120, RMSEA=.049, GFI=.951, NNFI=.966, CFI=.973). Reliability measures and the correlations between the latent variables are shown in Table 1. We found adequate support for discriminant validity (Fornell and Larcker 1981) and good convergent validity. Furthermore, common method bias is not a threat to the validity of the findings (Podsakoff and Organ 1986).

Table 1. Descriptive statistics, correlations, and construct reliability and validity

Construct	Mean (S.D.)	CR	AVE	1	2	3	4	5	6	7	8

1. Innovation capability	4.64 (.96)	.81	.52	**.72**							
2. Customer-linking capability	4.87 (.84)	.77	.53	.46	**.73**						
3. Market orientation	5.14 (.86)	.72	.45	.44	.47	**.67**					
4. Learning orientation	5.10 (.94)	.83	.64	.42	.42	.72	**.80**				
5. Market turbulence	4.34 (1.40)	.76	.62	.08	.09	.17	.17	**.79**			
6. Competitive intensity	3.94 (1.32)	.64	.47	.00	.03	.11	.08	.33	**.69**		
7. Technological turbulence	4.49 (1.36)	.86	.61	.10	.11	.13	.14	.41	.14	**.78**	
8. Financial performance	4.39 (1.46)	.96	.90	.29	.31	.19	.21	.01	.01	.04	**.95**

Square-root of average variance extracted (AVE) on the diagonal in bold; correlations off-diagonal

In our analysis, we use the truth table algorithm (Ragin 2008), which seeks for the most parsimonious logical expression that encompasses all the configurations that meet a frequency threshold (here set to two cases) and a consistency threshold (here .80). For the purpose of the *fsQCA procedure*, the factor scores were transformed into membership scores so that cases where the factor score was below the first quartile was assigned a membership score of 0, the second quartile (.33), the third quartile (.67) and the fourth quartile (1.00). In order to understand the sensitivity of the high-performance configurations to contextual factors, we introduce a hierarchical approach to fsQCA.

The goodness-of-fit of the models obtained is determined by *consistency* and *coverage* indices. Consistency is an index that reflects whether a configuration systematically leads to the outcome of interest in the data. The coverage index, in turn, indicates the degree to which the configuration is necessary for an outcome to occur.

RESULTS

In the first step, we include only innovation capability and customer-linking capability in the analysis. No configurations of these capabilities are found to consistently lead to good financial performance. Consequently, in step two, we introduce organizational culture into the analysis. We find one configuration that consistently leads to good financial performance: *Innovation capability*Customer-linking capability*Learning orientation →Good financial performance* (*consistency* =.79; *coverage*=.36). Taken together, findings from the first two steps propose that a strong innovation and customer-linking capabilities are necessary but insufficient conditions for good financial performance, and that a learning-oriented culture is needed to complement these. That is, the capabilities support one another insofar as the culture supports commitment to learning, open-mindedness, and shared vision (Sinkula et al. 1997).

In the third analytical step, we consider the influence of environmental turbulence on the capabilities' performance outcomes. We find two configurations that lead to good performance: *Innovation capability*Customer-linking capability*~Market turbulence*Competitive intensity* (*consistency*=.83; *coverage*=.13) and *Innovation capability*Customer-linking capability*Market turbulence*~Competitive intensity*Technological turbulence* (*consistency*=.82; *coverage*=.12). The overall consistency of the solution is .83 and the coverage is .21. The results suggest that configurations characterized by only strong customer-linking capability *or* strong innovation capability do not consistently lead to good performance. At the same time, a combination of innovation capability *and* strong customer-linking capability leads to good performance in only two specific environmental contexts. Finally, the fourth step combines the capabilities of our interest with both cultural and turbulence contexts. We find five configurations associated with good financial performance (Table 2). The overall solution consistency (.79) and coverage (.40) indicate that the model fits the data well (Ragin 2008; Fiss 2011).

Table 2. Configurations of the capabilities and contingency factors related to good performance

Capabilities	**Culture**	**Turbulence**	**Raw coverage**	**Unique coverage**	**Consistency**
IC * CLC	MO * LO	-	0.33	0.14	0.81
IC * CLC	-	CI * ~TT	0.15	0.03	0.79
IC * CLC	LO	MT * CI	0.18	0.00	0.80
CLC	MO * LO	MT * CI	0.20	0.01	0.80
CLC	LO	MT * CI * ~TT	0.12	0.01	0.80

Solution coverage: 0.40 Solution consistency: 0.79

"IC" = Innovation Capability; "CLC" = Customer-linking Capability; "MO" = Market Orientation; "LO" = Learning Orientation; "MT" = Market Turbulence; "CI" = Competitive Intensity; "TT" = Technological Turbulence

The capability configurations that lead to good financial performance are here found to be contextual in two ways (Porter and Siggelkow 2008). As indicated by the first configuration in Table 2, regardless of the environmental turbulence, firms with strong innovation and customer-linking capabilities, *and* a market-oriented *and* learning-oriented culture perform well in financial terms. The last configuration, in contrast, is highly specific in terms of environmental turbulence. At the same time, there are several combinations of capabilities and organizational culture that lead to good performance in this environment (Doty et al. 1993). Thus, there are two types of configurations leading to good performance: orientation-specific (robust in terms of the business environment) and highly turbulence-specific ones (allowing variation in orientations).

DISCUSSION

The study contributes to the existing literature in strategic marketing in three ways. First, we integrate two disparate approaches to marketing capability research: capability complementarity approach (Moorman and Slotegraaf 1999) and contingency theory of capabilities (Morgan et al. 2009). Our findings imply that innovation capability and customer-linking capability are complementary, but only in the context of certain organizational cultures and business environments.

Second, Priem and Butler (2001) have criticized the resource-based view from producing too generic and context-insensitive prescriptions. In practice, managers have to consider both internal and external contingencies when applying general research insights into a specific business context (Porter and Siggelkow 2008). To address this challenge, we developed a framework for understanding the situational factors that determine whether and how market-based capabilities complement or substitute each other. Based on this framework, we found that the complementarity of innovation and customer-linking capabilities is context-contingent in two ways: it is either culture-specific or turbulence-specific.

Third, prior capability research has largely relied on linear methodologies. The ability of these methods to consider several contextual variables simultaneously is limited (Fiss 2007). By adopting the fsQCA methodology, we are able to conduct a more fine-grained analysis in examination of contextual robustness of the different capability combinations' performance outcomes.

The limitations of our study point to opportunities for future research. First, we have examined the performance effects of capabilities using a cross-sectional approach. It would be interesting to analyze the sustainability of the performance effects using longitudinal data (cf. Kumar et al. 2011). Second, we have relied on fairly coarse-grained measures of organizational culture. Organizational culture, however, is a complex social phenomenon and could be better addressed with an in-depth, qualitative research approach (Gebhardt et al. 2006). Future research could delve into the social dynamics within firms that enable and constrain the effectiveness of market-based capabilities and their combinations.

References Available Upon Request