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Revisiting the Concept of Absorptive Capacity: The Moderating Effects of Market Sensing and Responsiveness

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Revisiting the Concept of Absorptive Capacity: The Moderating Effects of Market Sensing and Responsiveness

Abstract

This study proposes new moderators acting on well-established antecedents of absorptive capacity. We treat separately the two dimensions of potential absorptive capacity and realized absorptive capacity. We first examine the moderating effect of market sensing on the relationship between coordination capability and potential absorptive capacity. Then, we assess the moderating effect of market responsiveness on the links between organizational systems and socialization processes and realized absorptive capacity. We draw on multilevel analysis with data from 205 managers from the banking sector in Turkey to test our hypothesized relationships. Our contribution reveals interesting insights on the contingent effects of market sensing and responsiveness for the emergence of absorptive capacity. Market sensing moderates the relationship between coordination capability and potential absorptive capacity, while market responsiveness moderates the relationships between organizational systems and socialization processes and realized absorptive capacity. The findings provide important implications for theory and practice on developing potential and realized absorptive capacity.

Keywords: Potential absorptive capacity, realized absorptive capacity, organizational antecedents, market sensing, market responsiveness, multilevel analysis, Turkey.

Introduction

A firm's absorptive capacity (AC) is a key determinant of organizational performance (Cohen and Levinthal 1990; Lane *et al.*, 2001; Zahra and George, 2002; Patel *et al.*, 2015). AC refers to the set of dynamic organizational routines and processes by which firms acquire, assimilate, transform and exploit new knowledge. The power of AC rests in its promise continually to develop the knowledge bases of firms to sustain their competitiveness (Griffiths-Hemans and Grover, 2006; Wales *et al*., 2013). Originally conceptualized as stocks of prior knowledge (Cohen and Levinthal, 1990), contemporary research views AC as a learning mechanism (Hughes *et al.*, 2014, 2018) unpacked into two sub-dimensions: potential absorptive capacity and realized absorptive capacity (Zahra and George, 2002). Potential absorptive capacity (PAC) is the capacity to acquire and assimilate new knowledge. Realized absorptive capacity (RAC) is the capacity to transform and exploit new knowledge. The assumption is that PAC and RAC are not only conceptually different but are driven by different mechanisms and contingencies (Zahra and George, 2002; Jansen *et al.,* 2005; Ebers and Maurer, 2014; Kotabe *et al*., 2017). Although a significant body of literature exists on the antecedents of AC (e.g., Van den Bosch *et al.*, 1999; Minbaeva *et al.*, 2003; Jansen *et al.*, 2005; Sun and Anderson, 2010; Patel *et al.*, 2014) and its contribution to organizational activity (Zahra *et al.*, 2009; Engelen *et al.*, 2014; Hughes *et al.*, 2014, 2018; Patel *et al.*, 2014; Song *et al.*, 2018), little is known about the contingencies that affect the emergence and development of AC, especially of its PAC and RAC dimensions. In the contemporary business environment, firms desire the innovation rewards commonly attributed to AC (Zou *et al.*, 2018). However, firms differ markedly in their AC, which indicates that little is known about the antecedent conditions that effectively generate AC.

Unpacking the AC construct and examining the effect of different contextual variables on the distinct antecedents of the AC dimensions is important in order to resolve differences in firms' AC (Volberda *et al.*, 2010; Wales *et al*., 2013; McKelvie *et al.*, 2018). Volberda *et al.* (2010) commented that investigating the moderating effects of related organizational capabilities is an essential prerequisite to stimulate organizational learning and develop the AC process. Through an organizational learning and capabilities lens, AC represents a deliberate

process to organize, assimilate and transform acquired knowledge (Keh *et al.*, 2007; Robertson *et al*., 2012; Hughes *et al.*, 2018) and implies great efforts to acquire and assimilate, transform and exploit information (Zahra and George, 2002) in ways that build on prior knowledge stocks (Cohen and Levinthal, 1990). In this way, AC supports opportunity identification, evaluation and execution (Patel and Fiet, 2011; Engelen *et al.*, 2014). Inherent to this is that the underlying learning processes of AC are intended to facilitate commercial activity (Cohen and Levinthal, 1990). This carries two implications: first, as a learning process, the extent to which antecedents of AC drive its emergence is likely to depend on whether other learning capabilities are present (or absent) in the firm; second, market-based learning capabilities hold particular promise. Yet, extant literature is virtually silent on these matters.

We integrate two learning capabilities to understand why some firms are better than others at forming PAC and RAC. Firms need both the ability to acquire, assimilate, transform and exploit knowledge and also the capability to sense accurately and respond appropriately to market changes (Day, 1994; Volberda *et al*., 2010), especially given the dynamism of contemporary markets (Wang *et al.*, 2014). We call these market sensing and market responsiveness capabilities. Such market-based capabilities are important to commercial endeavour (Srivastava *et al.*, 1998, 2001) and, we argue, enhance the development of the extent to which organizational antecedents give rise to PAC and RAC. This is because firms might ignore or misperceive changes in the business environment, which results in acquiring inappropriate knowledge, and risks missing opportunities (Yusuf *et al.*, 1999). Thus, while efforts to use organizational antecedents to give rise to PAC may prove fruitful, the quality of PAC may be honed when specific market-based capabilities are present.

Similarly, firms that emphasise the transformation and exploitation of knowledge might create a blind spot on the external factors that may disrupt the implementation of new knowledge, which makes them further unable to respond rapidly to environmental changes (Ahuja and Lampert, 2001). Thus, while efforts to use organizational antecedents to give rise to RAC may prove fruitful, the effectiveness of the organisational antecedents on RAC may be sharpened in certain circumstances. We argue that examining the effects of market sensing and

responsiveness capabilities on the relationship between organizational antecedents and AC is important to the further understanding of AC.

To address this, we propose and incorporate two learning capability moderators of AC neglected in prior studies: market sensing and responsiveness. Specifically, we provide a theoretical perspective and accompanying empirical evidence demonstrating that market sensing and responsiveness capabilities hone the emergence of AC when its organizational antecedents are put in place. Extant research (originating from Jansen *et al*., 2005) emphasises internally-focused capabilities as antecedents of PAC and RAC; however, market-based learning capabilities as contingencies of the relationship between forms of AC and their antecedents are neglected despite recognition of the effects of environmental dynamism on AC (Volberda *et al.*, 2010). We remedy this omission. Our contribution provides insight into how the firm's capability for anticipating customers' needs and competitors' initiatives (market sensing) and its capability to adapt and respond to change (market responsiveness) can resolve the managerial challenge of developing an effective learning process that assimilates, retains and exploits knowledge for commercial ends.

Theoretical background and hypotheses

The origins of AC lie in organizational learning theory (Lane *et al.*, 2006; Sun and Anderson, 2010). Organizational learning requires the potential to learn from past actions and the ability to render changes in organizational outcomes (Fiol and Lyles, 1985). This sets the premise for AC. Initially, AC was conceptualized as prior knowledge stocks, and operated as a means to make judgments about the value of new knowledge (Cohen and Levinthal, 1990); a by-product of its own R&D (Tilton, 1971; Cohen and Levinthal, 1990; Lane *et al.*, 2006). Subsequent reconceptualization (Zahra and George, 2002) and empirical work (Jansen *et al.*, 2005) placed a greater emphasis on practices that enable a firm to acquire, assimilate, transform and exploit knowledge. This perspective places attention on the firm's learning architecture and routines (Hughes *et al*., 2014, 2018) as the basis for AC forming, replicating and sustaining as a source of advantage. AC can be thought of as a specific type of organizational learning (Sun and Anderson, 2010) potentially enhanced when supported by additional learning mechanisms

(Lane *et al.*, 2006). Fiol and Lyles (1985) postulate that contextual factors in the firm's structure and organization affect the probability of learning. Recent studies extend this logic to consider the ability and motivation to learn and render changes (e.g., Kim *et al*., 2015). The antecedents of AC set the context within which the potential to learn is combined with greater likelihood to learn and then act on that knowledge. Thus, the organization of the firm is seen as an antecedent to the internal efficiency of communication (Cohen and Levinthal, 1991; Volberda *et al.*, 2010).

An extensive body of literature examines organizational factors as antecedents of the firm's AC (Van den Bosch *et al.*, 1999; Jansen *et al.*, 2005; Sun and Anderson, 2010; Patel *et al.*, 2014). This literature establishes that firms seeking to absorb and apply knowledge are required to coordinate activities, use organizational systems that integrate and apply newly-acquired knowledge, and implement socialization processes that support the transformation and use of knowledge. These constitute contextual factors in the firm's organizational structure. Indeed, Jansen *et al.* (2005) find that coordination capability facilitates the acquisition and assimilation of new knowledge (PAC), while organizational systems and socialization processes facilitate the transformation and exploitation of new knowledge (RAC). However, the literature pays insufficient attention to contingencies affecting the extent to which AC develops. This omission centres on the difference between the antecedents presenting the firm's learning architecture, and additional learning capabilities needed to support the principles of AC: The interaction between coordination capability, organisational systems and socialization processes and the firm's ability to sense and respond to environmental context. Volberda *et al.* (2010) stress that AC is dependent on outward-looking dimensions – capabilities that create points of contact with the market place. We postulate market sensing and market responsiveness as two key capabilities (Day, 1994; Srivastava *et al.*, 1998, 2001).

Market sensing is the firm's ability to be aware of changes in its market, to detect unrealized market opportunities (Srivastava *et al.*, 2001) and to forecast accurately responses to marketing actions (Day, 1994). Market sensing emphasizes the capability of the firm to learn about customers, competitors, and stakeholders in order to act on events and trends in the market through various contact points and channels. Thus, market sensing is a core capability to generate and process information that firms use in order to learn (Fiol and Lyles, 1985; Day,

1994; Lukas and Ferrell, 2000). Market responsiveness, on the other hand, represents the firm's ability to adapt quickly to changing market conditions (Randall *et al.*, 2003; Atuahene-Gima *et al.*, 2005). Hence, market responsiveness is a critical capability for learning as firms face new opportunities and threats created by changing market conditions (Zhou and Li, 2010). We argue that investments in these capabilities augment AC by allowing a firm to more accurately forecast market trends and to take advantage of emerging market opportunities before rivals recognize them.

Our core argument here is that organizational antecedents are necessary but not sufficient to achieve a higher AC unless they are combined with other learning capabilities, specifically, market sensing and market responsiveness. AC, as a source of competitive advantage, relies on a firm possessing superior PAC and RAC than competitors. We specify coordination capability, organizational systems and socialization processes as prerequisite organizational antecedents to PAC and RAC, but market-based capabilities for sensing and responding to the external environment of the firm are necessary to augment the extent to which AC develops. Thus, firms need to combine coordination capability, organisational systems and socialization processes with market sensing and responsiveness capabilities to generate effective AC.

Next, we report our baseline hypothesis setting out why coordination capability, organizational systems and socialization processes are organizational antecedents of PAC and RAC. Then, we develop our research hypotheses that posit the moderating effects of market sensing and responsiveness on the relationships between these antecedents and dimensions of AC.

Antecedents of absorptive capacity

Coordination capability is the ability to link and integrate different parts of the firm (Van de Ven *et al.*, 1976); it includes cross-functional interfaces and participation in decision making and job rotation. Cross-functional interfaces enable the firm to increase interaction among employees from different functional backgrounds (Egelhoff, 1991). High cross-functional interfaces strengthen linkages between employees, teams and different functional departments

to enhance information flow and exchange (Jansen *et al.*, 2005). When employees from different functions work together, firms establish a platform of communication and knowledge sharing (Pagell, 2004), and thereby increase the firm's ability to acquire new knowledge (Cohen and Levinthal, 1990). Participation in decision making refers to joint decisions through which information is shared amongst superiors and subordinates (Lam *et al.*, 2002). Participatory management practices engage managers and subordinates to process information, make decisions, and solve problems (Wagner, 1994). This practice exposes employees to a high level of information processing and sharing (Van den Bosch *et al.*, 1999).

Organizational systems are designed to organize and integrate resources and processes within the firm (Crossan *et al.*, 1999) transform activities and execute actions (Van Den Bosch *et al.*, 1999). As elements of systems, formalisation and routines can impact RAC. Formalization, the extent to which work activities are defined formally by administrative rules, policies and procedures (Ford and Slocum, 1977:30), helps structure activities and processes. Formal rules, standards and procedures capture a document and transfer successful experiences and diffuse best practices (Levinthal and March, 1993). By documenting past solutions to organizational issues, formalization serves as a depository of best practices that enhances learning by organizing and applying past experiences (March, 1991; Schminke *et al.*, 2000).

Routines transform and exploit new knowledge. Routines can establish patterns to ensure that inputs are transformed into outputs. Repetitive activities provide ways for collective learning and mutual understanding of how complex tasks are performed (Cohen and Bacdayan, 1994; Argote, 1999) as employees learn how to accumulate, store and apply knowledge (Huber, 1991; Crossan *et al.*, 1999), helping to transform and institutionalise new knowledge with minimum interruptions and conflicts (Volberda, 1996).

Socialization processes provide a platform to execute actions crucial to the transformation and exploitation of new knowledge (Jansen *et al.*, 2005). Through this mechanism, firms create a set of communication codes and values to execute actions (Verona, 1999) within a relational system to transform and exploit knowledge (Cropanzano and Mitchell, 2005). Socialization establishes interpersonal relationships and leads to a congruence of values, norms and beliefs among employees (Saks and Ashforth, 1996; Cousins and Lawson, 2007).

Socialization helps newcomers to learn an organisational language that facilitates comprehension and communication with others (Jansen *et al.*, 2005). By providing information about how employees interpret and respond to actions or events, firms can encourage newcomers to interpret and respond to situations in a predictable manner (Van Maneen and Schein, 1979). In this way, socialization facilitates the combination and application of new knowledge to existing knowledge and supports compliance with processes of exploitation of knowledge (Alder and Kwon, 2002). From this review, we form our baseline hypothesis of the antecedents of AC.

> *Baseline Hypothesis*: Coordination capability, organizational systems and socialization processes are antecedents of absorptive capacity.

This hypothesis is not expected to vary when set in alternative contexts because the ability to absorb, assimilate and transform knowledge is essential in institutionally challenging environments (Lundan and Li, 2019). Therefore, we do not formally investigate this hypothesis. Instead, we predict that the extent to which coordination capability, organizational systems and socialization as antecedents of AC depends on the learning capabilities of the firm – those capabilities that enable the firm to identify the appropriate market knowledge and to respond to the firm's external environment through market sensing and market responsiveness.

Moderating effects of market sensing

We have argued that coordination capability positively affects PAC. We posit that market sensing moderates this relationship. Changes in the external environment make it difficult for firms to spot opportunities and recognize valuable resources (Prahalad and Hamel, 1990). Hence, key challenge firms face is the ability to cope with environmental dynamism (Volberda *et al.*, 2010; Wang *et al.*, 2014). A market sensing capability provides one such coping mechanism. Firms without a high market sensing capability cannot read, understand and react to the external environment effectively. They find it difficult to recognize, process and apply useful information for their own use (e.g., Slater and Narver, 1995). Accordingly, Day (1994)

argues that organisational learning mechanisms are insufficient unless they are combined with the capacity to sense changes in the external (market) environment. Firms must be oriented to the market through market sensing to ensure adequate knowledge acquisition and assimilation components contained in PAC develop as a function of internal coordination efforts. Thus, scholars highlight the complementarity of learning processes and market orientation[1] in stimulating sustained acquisition and use of external knowledge (Hurley and Hult, 1998). Moreover, through the learning processes generated by market sensing, firms can anticipate what knowledge should be absorbed and how it can be applied and assimilated into the firm (Bell *et al.*, 2002).

While coordination capability facilitates the acquisition and assimilation of new knowledge, market sensing further provides flexible and dynamic practices (i.e., understanding environmental forces and generating useful information about market changes) to augment the firm's emerging processes to do with recognizing and absorbing appropriate knowledge. Yusuf *et al.* (1999) argue that firms focusing on acquisition and assimilation of knowledge might misperceive change in the business climate, which results in not apprehending the appropriate knowledge for application. Consequently, we integrate market sensing as a capability that strengthens the link between the coordination capability antecedent and PAC. Greater market sensing capability supports inter-functional coordination among teams by augmenting efforts by employees to connections with diverse market-based sources of knowledge. This refreshes and renews insights that feed into the coordinated activities of employees. The potential to combine unrelated matrices of knowledge is thus much greater, augmenting organizational efforts to coordinate staff to give rise to superior knowledge acquisition and assimilation activities (PAC).

First, firms that invest in combining various organizational learning mechanisms, such as market sensing capabilities, tend to activate a state of mind that detects environmental

[1] Market orientation is an organization-wide generation of market intelligence, dissemination of intelligence across departments specifically focused on customers and end-users (Hurley and Hult, 1998; Morgan *et al.*, 2009). While market orientation entails market generation and responsiveness, it also conveys implicitly some practices related to market sensing in terms of collecting and processing information about customers, competitors and events that may affect their end-users (Day, 1990). Market sensing, however, is a broader capability in which the firm seeks to increase contact points with knowledge sources in the market, at its periphery, in new markets and in unrelated markets to have the potential to sense a greater number of salient trends and events.

changes more extensively and quickly compared to counterparts with low market sensing (Ambrosini and Bowman, 2009; Cho *et al*., 2011). Such actions can generate vital resources such as knowledge and technology (Day, 1992) that increase the stock of mechanisms by which employees can enact knowledge acquisition and assimilation. Moreover, firms that sense and use new external knowledge, and are able to better apprehend opportunities from the external environment, can learn to better ascertain what kinds of knowledge should be absorbed in future and how such knowledge can be used effectively. When employees are well-coordinated this outcome of market sensing can further penetrate into and across employees and functions. Consequently, market sensing augments the relationship between coordination capability and PAC.

Second, market sensing plays an important role in complementing and improving organizational learning processes (Olavarrieta and Friedmann, 2008) by helping firms to capture useful information about new knowledge from a broad range of sources including partners, suppliers, customers, and government bodies (Eisenhardt and Martin, 2000). In this way, firms engage activities to acquire, interpret and disseminate information from a broader range of sources that diversifies and challenges the existing flow of information and worldview in the business. Firms that coordinate activities to acquire and assimilate knowledge and use such market sensing to foster organizational learning from the external environment, become better equipped to acquire and assimilate appropriate knowledge (Huber, 1991). Consequently, market sensing moderates the positive relationship between coordination capability and PAC.

> *H1:* Market sensing moderates the positive relationship between coordination capability and potential absorptive capacity.

Moderating effects of market responsiveness

We have argued that organizational systems and socialization processes positively affect RAC. We contend that market responsiveness moderates these relationships. While organizational systems and socialization processes facilitate the transformation and exploitation of new knowledge, market responsiveness provides an adaptable and adjustable mechanism for more

effective application of newly-acquired knowledge. As learning processes can be affected by changes in the external environment (Volberda *et al.*, 2010) and exogenous factors may also disrupt the implementation of new knowledge, we argue that market responsiveness is important as the firm reacts and adapts to these changes, giving rise to supportive processes that affect the relationship between organizational systems and socialization processes and RAC.

Firms with different levels of market responsiveness will be differentially exposed to the challenge of the fit or misfit of their learning capabilities with changes in the external environment. For instance, firms emphasising organizational systems for the transformation and exploitation of new knowledge might ignore or misperceive changes in the external business environment, which results in disrupting the implementation of newly-acquired knowledge (Ahuja and Lampert, 2001). The potential to miss market opportunities under these circumstances is relatively high. Because AC is geared towards supplementing internal knowledge with external knowledge (Sun and Anderson, 2010; Song *et al.*, 2018) as a basis to innovate new activities (Zou *et al.*, 2018) market responsiveness improves the relationship between organizational systems and RAC by setting in place a mind-set and set of channels predisposed to exploiting and acting on market changes. Such a position is commensurate with claims that firms seeking to develop their learning processes from the external environment need to interact and respond quickly to change (Holweg, 2005). With increasing competition and changing market conditions, market responsiveness is important because it interacts proactively with the opportunities and threats in the environment (White *et al.*, 2003; Wei and Wang, 2011). Thus:

> *H2:* Market responsiveness moderates the positive relationship between organizational systems and realized absorptive capacity.

To be effective, AC should be combined with other organizational learning capabilities (Voberda *et al.*, 2010). The transformation and exploitation of new knowledge epitomizing RAC benefits from high socialization within the firm (Jansen *et al.*, 2005). Socialization sets in place conditions in which employees possess ample opportunity for discussion and information

sharing on work-related matters with other employees, supervisors and managers. Complementing these initiatives with high market responsiveness can scale those discussions and also focus them on the action, specifically acting on market change and opportunity. Thus, market responsiveness provides an essential external lens to support the internal lens brought on by socialization.

High market responsiveness provides rapid adjustments to changes in the environment (Gindy *et al.*, 1999; Chang *et al.*, 2013). It also enables firms to adapt and reconfigure resources and processes in a timely fashion as market circumstances evolve (Zhou and Li, 2010). In doing so, market responsiveness as a capability sets in place both systematic and flexible mechanisms in response to environmental changes, enabling firms to reconfigure their actions and adapt their learning processes in turn (Atuaene-Gima *et al.*, 2005). As such, firms that use socialization processes to execute action in terms of transforming and exploiting new knowledge should integrate the market responsiveness capability to transform and exploit newly acquired knowledge successfully with fewer disruptions. These arguments posit that market responsiveness moderates the positive relationship between socialization processes and RAC.

H3: Market responsiveness moderates the positive relationship between socialization processes and realized absorptive capacity.

Figure 1 illustrates our conceptual model.

[Figure 1]

Research methods

Survey setting and data collection

A structured questionnaire was used to collect data from banks operating in Turkey. We selected Turkey as the research site because, as in most emerging economies, the external environment is very dynamic, and firms are on a quest to absorb external knowledge. The banking industry is especially suitable for our study because the industry has gone through a

rigorous macroeconomic strategy coupled with prudent fiscal policies and major structural reforms since early 2000 (Invest in Turkey, 2018). In this setting, banks have constantly renewed and upgraded their organizational capabilities and processes to survive and succeed in the changing environment (Erdem, 2014). The Turkish banking sector also proved resilient during the global financial turmoil in 2008 as well as the subsequent economic crisis, owing to the regulatory reforms and structural transformation that the Turkish government implemented in the wake of the country's own financial downturn in the early 2000s. The reforms in the sector boosted foreign investor confidence so much that Turkey's banking sector has attracted a substantial volume of foreign direct investment over the past two decades. From a total of 47 banks, 21 hold full or majority foreign ownership. Where foreign-owned banks are increasing their presence in the Turkish market while local banks are attempting to increase their international presence, means that the competitive landscape is increasingly challenging.

The study's participants are middle- and top-level managers, who possess a high level of knowledge and expertise on internal and external organizational activities. The survey questionnaire was first written in English and then translated into Turkish using the back-translation procedure recommended by Brislin (1986).

We sampled a range of banks located in Turkey to reach a satisfactory level of external validity (Cook and Campbell, 1979). The sampling frame was based on the website of BAT (the Banks Association of Turkey). BAT provides a database of all banks operating in Turkey (47 banks and 10397 bank branches), including state-owned banks, privately-owned banks, and foreign banks. Through a random sampling selection procedure, from this database, a total of 1000 branches of 25 banks was generated and constituted the sampling frame for the study.

The questionnaires were returned in sealed envelopes and with attached business cards. After two waves of data collection and two reminders, a total of 215 questionnaires were returned, of which 205 were usable (from a total of 205 managers from branches of 24 banks) representing an effective response rate of 20.5%. Our data derives from multiple branches of the banks (7 to 10 bank branches) and one respondent from each branch.

Of the responding managers in our sample, 63% were top-level managers, 30% were middle-level managers and 7% were low-level managers. On average, the managers had worked in the bank for 10.6 years and had been in their current job for 5.7 years.

To check the consistency of responses on relevant variables, we compared answers of three respondents from each bank. This procedure yielded high consistency and equivalence with regards to the means and properties of relevant perceptual measures across the respondents within each bank.

To evaluate non-response bias, first, we compared responses from early and late respondents and found no statistically significant differences. Second, we ran Mann-Whitney U tests on three key demographic variables: Number of employees, firm size, and firm sales volume. The results indicated no significant differences. Hence, non-response bias does not pose a significant issue in our study.

We also conducted post-hoc tests to analyse if there are any differences between types of banks in terms of ownership structure (i.e., foreign and local banks) and responses provided for the measures used in this study. The test results revealed no serious significant differences in the responses between foreign-owned banks and local banks for the following measures: Coordination capability (t-value=1.59, p=0.11), organizational systems (t-value=1.10, p=0.27), socialization processes (t-value=1.78, p=0.07), potential absorptive capacity (t-value=0.41, p=0.68), realized absorptive capacity (t-value=0.94, p=0.35), market sensing (t-value=2.08, p=0.04) and market responsiveness (t-value=0.84, p=0.40).

Measurement of variables

All items are measured on a 7-point Likert scale (1='strongly disagree', 7='strongly agree').

Independent variables

Coordination capability (COOR) is measured by six items that are subsumed under two subdimensions: Cross-functional interfaces and participation in decision making (Jansen *et al.*, 2005). Cross-functional interfaces are assessed using three items by asking managers about the extent of liaison personnel, temporary task forces, and permanent teams to coordinate activities

(Galbraith, 1973; Gupta and Govindaraj, 2000). Participation is assessed using three items capturing the extent to which employees participate in decision making within a firm (Hage and Aiken, 1967; Dewer *et al.*, 1980).

Organizational systems (OSYST). This construct is measured by six items, which are subsumed under two subdimensions: Formalization and routineness. Each dimension includes three items. Formalization measures the degree of formalization of procedures and instructions within a firm. Routineness measures the extent to which tasks are uniform and invariable (Whitney *et al.,* 1983).

Socialization processes (SOCPR) consists of two subdimensions: Connectedness and socialization tactics. Three items measure each subdimension. Connectedness measures the extent to which individuals in a unit are connected to various levels of hierarchy in other departments/divisions (Jansen *et al.*, 2005). Socialization tactics items are also extracted from Jansen *et al.* (2005).

Dependent variables

Potential absorptive capacity (PAC) consists of acquisition and assimilation of knowledge and is measured using seven items from Jansen *et al.* (2005). Four items assess the ability to acquire knowledge and three items assess the ability to assimilate knowledge.

Realized absorptive capacity (RAC). This construct comprises transformation and exploitation of knowledge and is measured using nine items: Four items assess the ability to transform knowledge and five items assess the ability to exploit knowledge (Szulanski, 1996; Jansen *et al.*, 2005).

Moderator variables

Market sensing (MKTSEN) is composed of five items (Danneels, 2008) and focuses on the capacity of employees to sense the external environment through collecting and processing

information about customers, competitors, and changes in the business environment while participating in business events, professional associations, professional and scientific conferences and research communities, processes for market research, and from internal discussions (Lin and Wang, 2015).

Market responsiveness (MRKRESP) is composed of five items to assess the extent to which managers quickly and efficiently respond to change in the business climate (Jaworski and Kohli, 1993).

Control variables

Consistent with previous research (e.g., Jansen *et al.*, 2005; Chang *et al.*, 2013; Schweisfurth and Raasch, 2018), we controlled for *firm size* (SIZE), *manager's work experience* (EXP) and *educational level* (EDU). We measured SIZE by five ordinal categories consisting of the number of employees ranging from less than 250 to more than 5000 employees. EXP was measured through five categories in the same firm ranging from less than 5 years to more than 40 years. We measured EDU by five ordinal categories based on the qualifications obtained at university.

Analysis and results

Before hypotheses testing, we conducted confirmatory factor analysis (CFA) to determine if the study's constructs provide a good fit, and addressed the possibility of common method bias (CMB).

Confirmatory factor analysis

In line with the recommendations of Hair *et al.* (2010), due to low factor loadings and high-collinearity problems three items were eliminated from coordination capability, two items from PAC, and three items from RAC constructs. The exact wording of the items (excluding the eliminated items) is shown in Table 1 along with confirmatory factor analysis (CFA) results. We used AMOS software to test our CFA (Byrne, 2001). Table 1 shows that the model fit indices are within generally accepted ranges, indicating a good fit to the data [χ^2=1150.14;

df=443; χ^2/df=2.60, p<0.01; comparative fit index (CFI)=0.81; incremental fit index (IFI)=0.82; Tucker-Lewis index (TFI)=0.78; root-mean-square error of approximation (RMSEA)=0.088].

[Table 1]

We analysed the discriminant and convergent validity of our model by calculating the average variance extracted (AVE) and the squared correlations among the variables. The results in Table 2 indicate that AVE values are greater than 0.50. Therefore, the level of convergent validity for our survey instrument is acceptable (Fornell and Larcker, 1981).

[Table 2]

Common method bias

To address the possibility of CMB, we used multiple design-related techniques (i.e., psychological separation, methodological separation, and multiple sources) and statistical techniques (i.e., Harman's single factor test, and marker variable technique). First, we used design-related techniques to reduce potential CMB. We pre-qualified our potential respondents that have core knowledge of the topic. Then, we informed all potential participants that their responses would be confidential and anonymous. We received from each respondent a questionnaire in a sealed envelope, which helped us to reduce the threat of any social desirability bias (Podsakoff *et al.*, 2012). Adding to this, we separated the independent and independent variables/constructs from each other and randomized the items within each construct. Finally, at least seven managers completed the survey for each bank, which enhanced the validity and consistency of responses (Craighead *et al.*, 2011). Obtaining data from multiple respondents from each bank helps to tease out possible differences in perceiving a firm's AC and alleviates the possibility of CMB effects.

Second, we conducted two statistical tests for CMB. First, we employed Harman's single factor test to verify whether a single factor can explain the majority of the variance (Podsakoff *et al.*, 2003). If there is considerable common variance, this means that the single factor is expected to generate the majority of the covariance among all factors. The results show that the single factor did not account for the majority of the variance in the items. Second,

following the recommendation of Podsakoff *et al.* (2011), we used the marker variable technique. We took the smallest correlation between the marker variable and the substantive variables as an estimate of the CMB effects. Then, we subtracted the lowest positive correlation between self-report variables from each correlation value. The result reflects CMB adjusted correlations. The absolute differences were relatively small, ranging between 0.01 and 0.005, demonstrating relatively small differences between the unadjusted and CMB adjusted correlations. We conclude that CMB is not a substantive problem.

Hypotheses testing

Descriptive statistics, reliability estimates, and correlations of all measures are reported in Table 3. We assessed tolerance values and variance inflation factors (VIF) for each model to test for multicollinearity. The results show that all tolerance values were more than 0.70, and all VIF scores were between 1.08 and 1.44, affirming that multicollinearity is not a concern (Hair *et al.*, 2010).

[Table 3]

Due to the hierarchical nature of our data, which comprises multiple branches (7 to 10) of the banks, with one respondent for each branch, we conducted multilevel analyses using the software MLwiN (Rasbash *et al.*, 2009). We examined the nested structure of our data (205 branches nested in 24 banks), to control for any possible nesting effects of bank-level and branch-level factors on the relationships we tested. To assess whether the multilevel analysis was appropriate, we followed the recommendations of Klein *et al.* (2000). First, we compared a model with one structure (branch-level) to a model at two levels (branches nested in banks). The difference in log likelihood (474.72 – 495.31 = 20.59; $p<0.01$) is significant. Second, we compared the percentage of variance at level 2 to overall variance, i.e., we divided 0.107 (level 2 variance) by 0.644 (the total of variance) and found 0.166. Klein *et al.* (2000) argue that any value above 10% validates the use of multi-level analyses. Thus, there is a valid justification to use multilevel analysis.

Tables 4a and 4b report the results of the direct effects and moderation effects. For PAC, in Table 4a, Model 1 includes control variables only. Two models are included in reporting the

effects of coordination capability on PAC moderated by market responsiveness. Model 2 includes the controls, independent variable (coordination capability) and moderator variable (market sensing). Model 3 includes the independent variable, moderator variable, and interaction terms.

For RAC, in Table 4b, Model 1 includes control variables only. We set two models (Models 2 and 3) to report the effects of organizational systems and socialization processes on RAC moderated by market responsiveness. Model 2 includes the controls, independent variables (organizational systems, and socialization processes) and moderator variable (market responsiveness). Model 3 contains the independent variables, moderator variable, and interaction terms. Findings in Tables 4a and 4b show that none of the control variables have a significant effect on the hypotheses we tested.

[Tables 4a-4b]

The baseline hypothesis is supported and confirmed, in that coordination capability is positively and significantly related to PAC (β=0.30, p<0.01), as Model 2 in Table 4a shows. Also, Models 2 and 3 in Table 4b show that organizational systems (β=0.30, p<0.01) and socialization processes (β=0.43, p<0.01) are positively and significantly associated with RAC.

We find strong support for all three moderation hypotheses (H1 to H3). For H1, as Model 3 in Table 4a shows, the moderation effect of market sensing on the link between coordination capability and PAC is positive and significant (β=0.03, p<0.05), confirming H1.

Model 3 in Table 4b shows that the coefficient on the interaction term is negative and significant (β=-0.20, p<0.01). This finding provides support for H2 that market responsiveness moderates the relationship between organizational systems and RAC. To interpret the interaction term, we plotted simple slopes at one standard deviation below and above the mean of the moderator (Aiken and West, 1991; Bauer *et al*., 2006). These simple slope analyses of the moderating effects of market responsiveness on the relationship between organizational systems and RAC are plotted in Figure 2a. We regressed the slope estimates for Level 2 (bank-level) and Level 1 (branch-level) to test this interaction. We found that the positive relationship between organizational systems and RAC is significant when market responsiveness is at low levels (simple slope=0.04, p<0.05) and insignificant when market responsiveness is at high

levels (simple slope=0.07; p>0.05), as reported in Table 4c. Also, figure 2a shows that the effect of high levels of organizational systems on RAC is stronger with low levels of market responsiveness, whereas the variation in RAC is marginal with high levels of market responsiveness when organizational systems increase from low to high.

[Figure 2a]

For H3, Model 3 in Table 4b shows that the coefficient on the interaction term is negative and significant (β=-0.23, p<0.01), providing support for H3 that market responsiveness moderates the relationship between socialization processes and RAC. Following the same procedure earlier, we plotted the interaction at one standard deviation above and below the mean of our moderator. We also regressed the slope estimates for Level 2 (bank-level) and Level 1 (branch-level) to test this interaction. the test of simple slopes shows that the positive relationship between socialization processes and RAC is significant when market responsiveness is at low levels (simple slope=0.11, p>0.1) but becomes insignificant at high levels (simple slope=0.09, p<0.01), as shown in Table 4c. Also, figure 2b indicates that the effect of high levels of socialization processes on RAC is stronger with low levels of market responsiveness, whereas the variation in RAC is marginal with high levels of market responsiveness when socialization processes increase from low to high.

[Figure 2b]

[Table 4c]

Discussion and conclusion

We contribute to the understanding of the fundamental question: what contingencies affect the emergence and development of PAC and RAC? We scrutinized the moderating effects of market sensing and market responsiveness on the relationships between the firm's coordination capability, organizational systems, and socialization processes on PAC and RAC. The findings support our hypotheses. The baseline hypothesis confirms prior findings that coordination capability is positively associated with PAC, and organizational systems and socialization processes are positively linked with RAC. An extensive body of literature has examined the

organizational factors acting as antecedents of the firm's AC (Van den Bosch *et al.*, 1999; Jansen *et al.*, 2005; Patel *et al.*, 2014), but persistently absent in such investigations is the sensitivity and reliance of AC on outward-looking contingencies that create points of contact with the market. We contribute to this literature by showing that market sensing moderates the relationship between coordination capability and PAC; that market responsiveness moderates the relationship between organizational systems and RAC (the effect is significant at low levels of market responsiveness); and that market responsiveness moderates the relationship between socialization processes and RAC (the effect is significant at low levels of market responsiveness).

Theoretical implications

The findings provide two main contributions to the extant literature. First, they build on and extend Jansen *et al.*'s (2005) seminal work by examining organizational antecedents of PAC and RAC (coordination capability, organizational systems and socialization processes) to demonstrate that the contributions of organizational antecedents to PAC and RAC rely on the firm's capability for anticipating customers' needs and competitors' initiatives (market sensing) and its capability to adapt and respond to change (market responsiveness). Studies of the antecedents of AC are numerous (e.g., Van den Bosch *et al.*, 1999; Minbaeva *et al.*, 2003; Jansen *et al.*, 2005; Patel *et al.*, 2014) as are studies deploying AC as a contributor or contingency in other organizational means-ends relationships (e.g., Zahra *et al.*, 2009; Engelen *et al.*, 2014; Hughes *et al.*, 2014, 2018; Patel *et al.*, 2014). However, the examination of the moderators of the relationship between AC and its antecedents has been limited (McKelvie *et al.*, 2018). Longstanding concerns that AC may be dependent on outward-looking dimensions – capabilities that create points of contact with the market place – proposed by Volberda *et al.* (2010) are shown to be accurate in our findings. We identify the key capabilities of market sensing and market responsiveness as two such outward-looking dimensions to expand the nomological network of contingencies in the relationship between AC and its antecedents. Consequently, in response to our research question, we reveal market sensing and market

responsiveness as two new contingencies explaining why some firms are better at achieving PAC and RAC than others.

Second, AC has its origins in organizational learning theory (Lane *et al.*, 2006). Practices that enable a firm to acquire, assimilate, transform and exploit direct knowledge attention towards the firm's learning architecture and routines (Hughes *et al.*, 2014, 2018) as the basis for AC forming, replicating and sustaining as a source of competitive advantage (Sun and Anderson, 2010). However, as postulated in organizational learning theory (Fiol and Lyles, 1985), contextual factors in the firm's structure and organization affect the probability of learning and so raise the prospect of the sensitivity of AC to contingent effects (Song *et al.*, 2018). While revealing market sensing and market responsiveness as two such new contingencies, we further advance understanding of AC by showing the different developmental paths taken by PAC and RAC. For instance, while PAC requires market sensing for effectively absorbing new external knowledge, RAC requires market responsiveness for exploiting newly-absorbed knowledge successfully. The dynamism of contemporary markets (Wang *et al.*, 2014) has led scholars to propose that AC supports opportunity identification, evaluation and execution (Patel and Fiet, 2011; Engelen *et al.*, 2014). We extend this proposition through theory and empirical insight to show its reliance on the firm's capabilities to sense accurately and respond appropriately to market changes if such benefits are to accrue. An entirely inward view of AC is unsafe because although organizational antecedents of coordination capability, organizational systems and socialization processes set the structural context for PAC and RAC to develop, they ignore the market-facing capabilities needed to fortify the formation of knowledge acquisition and assimilation, transformation and exploitation representing PAC and RAC, respectively. Therefore, in further response to our research question, we offer a theoretical rationale to explain why organizational antecedents alone are not sufficient to make complete predictions about the formation, strength and utility of PAC and RAC.

Prior studies have alluded to the fact that the PAC processes are exposed to the external environment (Volberda *et al.*, 2010). Capabilities heightening the firm's sensitivity to market events should then augment internal organizational efforts to build PAC. This is captured by

the market sensing capability as it actively scans the external environment and processes valuable information about market dynamics necessary to supplement the formation of processes and routines to acquire and assimilate knowledge effectively. In a similar vein, firms that are successful in transforming and exploiting new knowledge (RAC) respond better to changes in the external environment than their counterparts. This implies that the contribution of organizational systems and socialization processes to RAC benefit from market responsiveness capability. The basic explanation for this is that as the RAC process is exposed to different environmental conditions, it needs procedures, routines and socialization processes to execute actions to be supplemented by the capability to respond rapidly and adapt to the changes in the environment necessary to transform and exploit newly-acquired knowledge effectively. This is captured by market responsiveness capability as it enables the reconfiguration of processes and resources necessary for an effective transformation and exploitation of new knowledge.

However, the contribution of market responsiveness is not clear cut. We find that socialization, which embodies more flexible processes, should be combined with low levels of market responsiveness capability to generate more RAC. In a similar vein, organizational systems, which are based on rigid and formalized processes, require also low levels of market responsiveness to produce more RAC. Socialization appears to put in place a sufficiently-effective knowledge infrastructure by itself (e.g., Zou *et al.*, 2018) such that market responsiveness adds little additional value. From organizational learning theory, socialization sets conditions and processes for knowledge sharing and recombination (Jansen *et al.*, 2005), so those facilitated by market responsiveness only complicate what is already taking shape in the firm. Socialization processes, which incorporate connectedness and socialization tactics, can provide more organizational flexibility to react to the external environment (Saks and Ashforth, 1996). In turn, socialization substitutes the need for formal market responsiveness capability. But, when the environment is dynamic and external knowledge therefore changes, it becomes difficult for firms to convert knowledge to innovative outcomes (Zou *et al.*, 2018). Firms, relying on extensive organizational systems, provide routines and formal procedures to

execute actions, but they also need to interact and react to changes in the external environment (Schminke *et al*., 2000).

To conclude, obtaining information about current and latent market needs through market sensing is vital to anticipate what knowledge is required, and therefore support organizational antecedents to successfully form PAC. RAC requires a discipline of responding quickly to the changes in the external environment. The different developmental paths and contingencies revealed in our study provide new insights and solutions as to why some firms are better at developing AC than others.

Managerial implications

To help ensure the effectiveness of managers' actions to implement organizational antecedents as a forerunner to crafting the firm's ability to absorb and exploit underlying knowledge, it is vital that firms encourage their employees to engage in activities requiring sensing and responding to the external market environment. Our findings provide insight into how the firm's capability for anticipating customers' needs and competitors' initiatives (market sensing) and its capability to adapt and respond to change (market responsiveness) can resolve the managerial challenge of developing an effective learning process that assimilates, retains and exploits knowledge for commercial ends.

For effective transformation and exploitation of knowledge, firms are required to use different organizational systems and socialization processes, and also interact continuously and proactively with the external environment. Collectively, these conditions and actions activate a state of mind to respond appropriately to disruptive changes that may affect the transformation and exploitation of knowledge. While systems and socialization provide systematic practices to execute actions, organizations need the capability to respond to environmental changes to yield effective transformation and exploitation of knowledge through market sensing and market responsiveness. Managers may draw on this by interacting continuously with the environment in order to develop the firm's ability to absorb and use knowledge.

Limitations and future research

As with all studies, ours has some limitations, which provide opportunities for future research. We only use organizational antecedents (coordination capability, organizational systems and socialization processes) to capture the richness of the AC construct. Given the multidimensional nature of AC, more micro-foundation research on AC that identifies antecedents at levels beneath the organization level is called for. Future research could fruitfully explore how micro-level variables such as the individual's motivation to learn (and unlearn) and to share or withhold knowledge may affect the ability of firms to acquire, assimilate, transform and exploit new knowledge.

The cultural and business context of the research site may limit generalization. Data was obtained from Turkey, where the cultural context is characterized by high in-group collectivism. In this cultural setting, organizations tend to have high social networks and coordination abilities (Kabasakal and Bodur, 2007). In this vein, firms engaging in AC via coordination capability might be influenced by the cultural context rather than internal organizational capabilities/mechanisms alone. Also, our study was undertaken within the banking industry in Turkey, where the government is involved in stabilizing the market, so we cannot fully extrapolate our findings regarding how firms read and respond to environmental dynamics. Therefore, future research is needed in different industry and ownership contexts to provide further insight into how a firm's AC, and its ability to sense and respond to a rapidly changing environment, may vary in different settings.

Finally, the study targeted employees who occupy senior managerial positions. These participants possess managerial expertise, prior knowledge, and are also involved in decision-making. Incorporating data from different sample populations (e.g., low/high employee managerial levels) when crafting further multi-level models of AC that build on our own would be beneficial. This would also help scholars and managers understand in what ways the ability to learn, absorb and use knowledge varies between different hierarchical levels.

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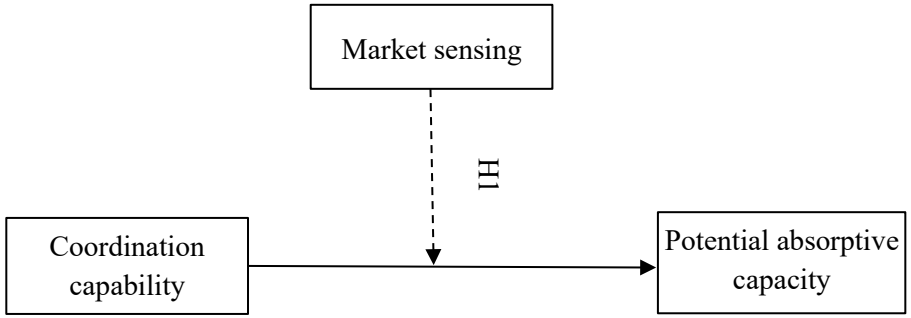
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a) Potential absorptive capacity



b) Realized absorptive capacity

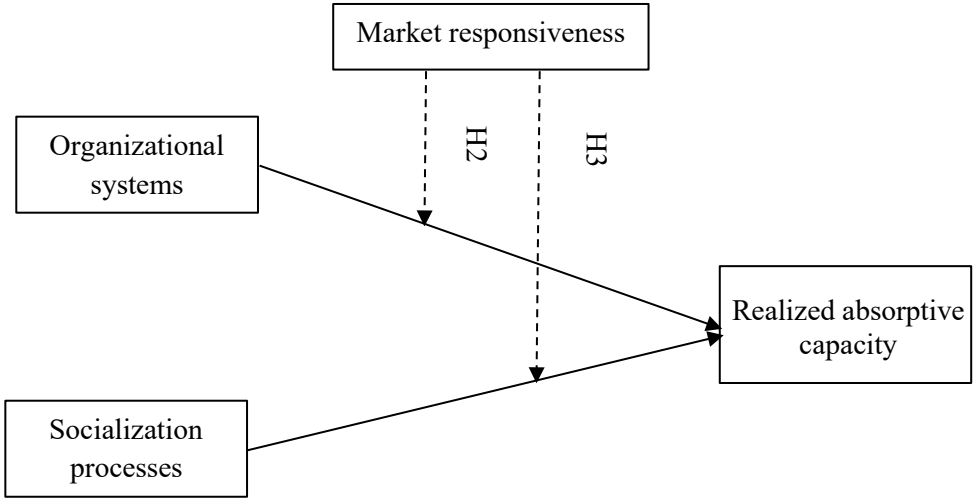


Figure 1. Conceptual model

Figure 2a. Interaction of market responsiveness with organizational systems on potential absorptive capacity

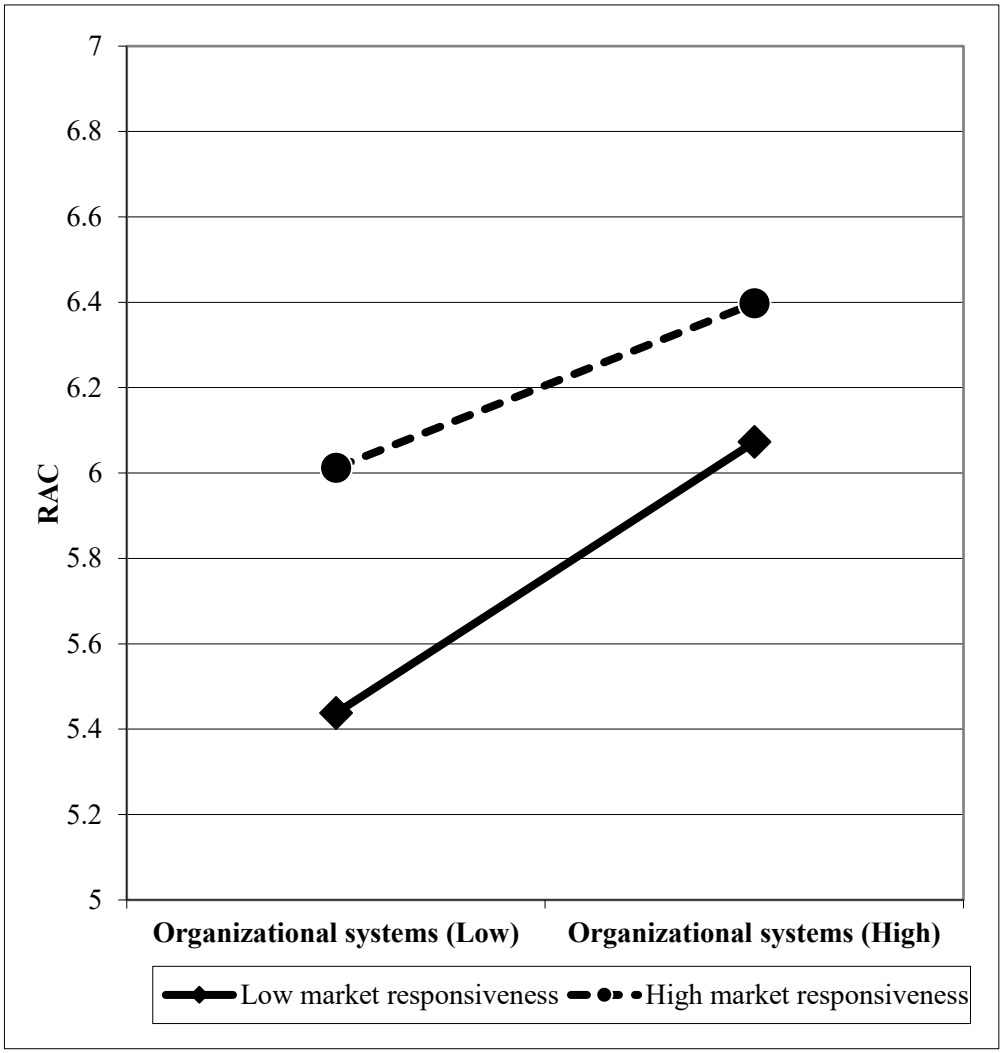


Figure 2b. Interaction of market responsiveness with socialization processes on realized absorptive capacity

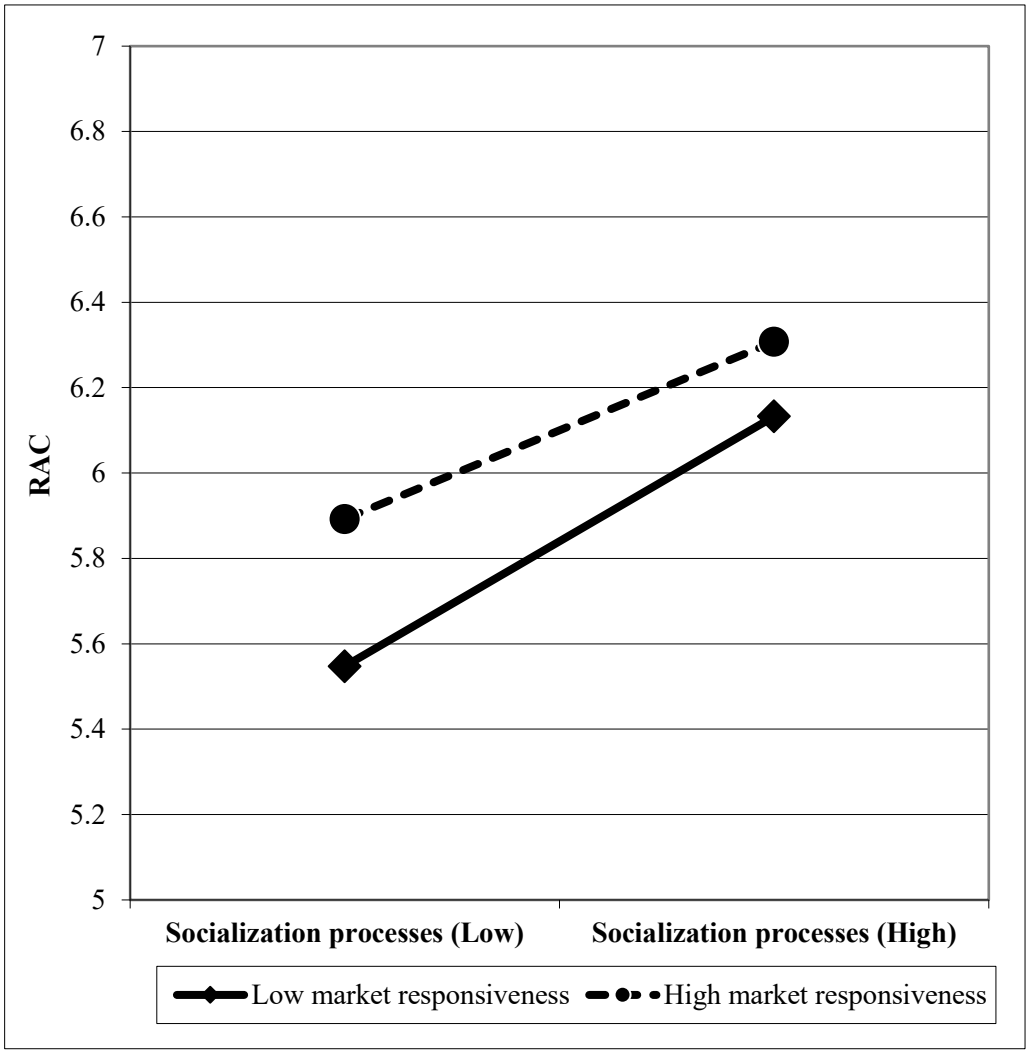


Table 1. Results of confirmatory factor analysis

Constructs	Items	Standardized loadings[a]	CR[b]
Coordination capability	**COOR**		**0.74**
Our bank uses liaison personnel to coordinate decisions and actions.	COOR1	0.72	
Our bank uses temporary task forces to coordinate decisions and actions.	COOR2	0.71	
Our bank uses permanent teams to coordinate decisions and actions.	COOR3	0.68	
Employees participate in decisions on the adoption of new programs.	COOR4	0.65	
Employees participate in decisions on the adoption of new policies.	COOR5	0.61	
Employees participate in decisions to hire new staff.	COOR6	0.58	
Organizational systems	**OSYST**		**0.81**
To do their work, employees in our bank can rely on established procedures and practices.	OSYST1	0.80	
It is necessary for employees to go through the proper channels in getting jobs done.	OSYST2	0.84	
Employees have to follow strict operational procedures at all times.	OSYST3	0.79	
Work in our bank is routine.	OSYST4	0.80	
Employees do the same job, in the same way, most of the time.	OSYST5	0.77	
To do their work, employees in our bank can rely on established procedures and practices.	OSYST6	0.75	
Socialization processes	**SOCPR**		**0.85**
There is ample opportunity for informal discussion among individuals from different departments.	SOCPR1	0.75	
In our bank, employees from different departments feel comfortable contacting each other when the need arises.	SOCPR2	0.76	
Managers here encourage employees to discuss work-related matters with those who are not their immediate superiors or subordinates.	SOCPR3	0.80	
Managers in my department can easily schedule meetings with managers in other departments.	SOCPR4	0.76	
Experienced employees see advising or training newcomers as one of their main job responsibilities.	SOCPR5	0.81	
Employees gain a clear understanding of the role of observing senior colleagues.	SOCPR6	0.81	
Market sensing	**MKTSEN**		**0.83**
In our bank, people participate in professional business associations' activities.	MKTSEN1	0.78	
Our employees attend scientific and professional conferences.	MKTSEN2	0.83	
We connect with our active network of contacts with the scientific and research community.	MKTSEN3	0.88	
We use established processes to identify target market segments, changing customer needs and customer innovation.	MKTSEN4	0.87	
A lot of informal discussion in this bank concerns our competitors' tactics or strategies.	MKTSEN5	0.77	

Table 1. (continued)

Constructs	Items	Standardized loadings[a]	CR[b]
Market responsiveness	**MKTRESP**		**0.90**
Several departments get together periodically to plan a response to changes taking place in our business environment.	MKTRESP1	0.76	
If a major competitor were to launch an intensive campaign targeted at our customers, our bank would implement a response immediately.	MKTRESP2	0.80	
Our bank is quick to respond to significant changes in our competitors' pricing strategies.	MKTRESP3	0.88	
When our bank finds out that our customers are unhappy with the quality of our service, it takes corrective action immediately.	MKTRESP4	0.65	
When our bank finds that customers would like us to modify a product or service, it makes concrete efforts to do so.	MKTRESP5	0.75	
Potential absorptive capacity	**PAC**		**0.77**
Our bank has frequent interactions with corporate headquarters.	PAC1	0.66	
Our bank collects industry information through informal means (e.g., lunch with industry friends, talks with trade partners).	PAC2	0.68	
Our bank periodically organises special meetings with customers or third parties.	PAC3	0.70	
Our bank periodically organises special meetings with customers or third parties.	PAC4	0.51	
Our bank is slow to recognize shifts in our market (e.g., competition).	PAC5	0.73	
Our bank quickly understands new opportunities to serve our clients.	PAC6	0.77	
Our bank quickly analyses and interprets changing market demands.	PAC7	0.56	
Realized absorptive capacity	**RAC**		**0.78**
Our bank regularly considers the consequences of changing market demands in terms of new products and services.	RAC1	0.76	
Our employees record and store newly acquired knowledge for future reference.	RAC2	0.73	
Our employees clearly understand the opportunities from new external knowledge.	RAC3	0.76	
Our bank quickly recognizes the usefulness of new external knowledge to improve on existing knowledge.	RAC4	0.67	
Our bank periodically meets to discuss the consequences of market trends and new product development.	RAC5	0.70	
Our bank clearly knows how activities should be performed.	RAC6	0.76	
Our bank is constantly looking for ways to better exploit new knowledge.	RAC7	0.85	
Our bank has difficulty introducing new products and services.	RAC8	0.74	
Our employees have a common language regarding our products and services.	RAC9	0.73	

Notes:
[a]All loadings are significant at $p<0.001$;
[b]CR=Composite reliability

Table 2. Convergent and discriminant validity of the measurement model[a]

Constructs	Number of Items	AVE[b]	COOR	OSYST	SOCPR	MKTSEN	MKTRESP	PAC	RAC
COOR	6	0.54	*0.73*						
OSYST	6	0.56	0.02	*0.75*					
SOCPR	6	0.75	0.42	0.26	*0.86*				
MKTSEN	5	0.73	0.36	0.24	0.41	*0.85*			
MKTRESP	5	0.78	0.24	0.19	0.52	0.51	*0.88*		
PAC	7	0.83	0.35	0.22	0.55	0.46	0.63	*0.91*	
RAC	9	0.78	0.31	0.25	0.43	0.52	0.52	0.64	*0.88*

Notes:
[a]Italicized values on the diagonal are the square root of the AVE values.
[b]Average variance extracted.
COOR: Coordination capability, OSYST: Organizational systems, SOCPR: Socialization processes, MKTSEN: Market sensing, MKTRESP: Market responsiveness, PAC: Potential absorptive capacity, RAC: Realized absorptive capacity.

Table 3. Means, standard deviations, and correlations among variables

Variable names	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. SIZE	Firm size	4.64	0.70	1									
2. EXP	Work experience	3.67	1.13	0.14	1								
3. EDU	Educational level	2.15	0.56	-0.06	-0.10	1							
4. COOR	Coordination capability	4.56	0.81	-0.03	0.02	0.12	1						
5. OSYST	Organizational systems	5.54	0.59	0.09	0.11	0.01	0.30*	1					
6. SOCPR	Socialization processes	5.49	0.80	0.05	0.18*	-0.002	0.34*	0.50*	1				
7. MKTSEN	Market sensing	5.59	0.81	0.22*	0.02	0.07	0.32*	0.49*	0.56*	1			
8. MKTRESP	Market responsiveness	5.59	0.81	0.28*	0.16	-0.02	0.26*	0.45*	0.63*	0.69*	1		
9. PAC	Potential absorptive capacity	5.47	0.79	0.23*	0.12	0.10	0.36*	0.46*	0.62*	0.62*	0.64*	1	
10. RAC	Realized absorptive capacity	5.77	0.94	0.24*	0.04	0.006	0.31*	0.49*	0.51	0.59*	0.62*	0.68*	1

Notes:
N= 205 branches nested in 24 banks.
*$p<0.01$.

Table 4a. Results of multilevel modelling for potential absorptive capacity

	Model 1			Model 2			Model 3		
	β	***SE***	***t***	***β***	***SE***	***t***	***β***	***SE***	***t***
Intercept	3.80**	0.40	9.50	4.40**	0.39	9.74	4.27**	0.39	10.95
Control variables									
SIZE	0.06	0.06	1.00	0.07	0.06	1.16	0.05	0.04	1.25
EXP	0.04	0.04	1.00	0.06	0.04	1.50	0.04	0.03	1.33
EDU	0.10	0.08	0.12	0.04	0.08	0.50	0.08	0.07	0.87
Direct effects (Baseline hypothesis)									
COOR				0.30**	0.07	4.28	0.21**	0.06	3.50
Moderation effects									
MKTSEN				0.33**	0.06	5.50	0.34**	0.06	11.32
MKTSEN × COOR (H1)							0.03*	0.01	2.14
Change in 2 log likelihood									
Level 1 intercept variance (SE)	0.02	0.02		0.25	0.02		0.26	0.08	
Level 2 intercept variance (SE)	0.38	0.03		0.35	0.05		0.36	0.05	
R^2		0.06			0.29			0.30	
ΔR^2		0.06			0.23			0.01	

Notes:
SIZE: Firm size, EXP: Work experience, EDU: Educational level, COOR: Coordination capability, MKTSEN: Market sensing.
N = 205 branches nested in 24 banks.
*p<0.05; **p<0.01.

Table 4b. Results of multilevel modelling for realized absorptive capacity

	Model 1			Model 2			Model 3		
	β	***SE***	***t***	***β***	***SE***	***t***	***β***	***SE***	***t***
Intercept	5.99**	0.49	12.22	5.13**	0.45	11.40	5.51**	0.45	12.24
Control variables									
SIZE	0.05	0.08	0.62	0.04	0.08	0.50	0.07	0.08	0.87
EXP	-0.07	0.04	-1.75	-0.05	0.05	-1.00	-0.04	0.05	-0.80
EDU	0.01	0.07	0.14	0.03	0.09	0.33	0.04	0.09	0.44
Direct effects (Baseline hypothesis)									
OSYST				0.30**	0.07	4.28	0.21**	0.07	3.00
SOCPR				0.43**	0.06	7.16	0.26**	0.07	3.71
Moderation effects									
MKTRESP				0.41**	0.08	5.12	0.40**	0.08	5.00
MKTRESP × OSYST (H2)							-0.20**	0.07	-2.85
MKTRESP × SOCPR (H3)							-0.23**	0.07	-3.28
Change in 2 log likelihood									
Level 1 intercept variance (SE)	0.03	0.02		0.21	0.07		0.24	0.09	
Level 2 intercept variance (SE)	0.32	0.03		0.31	0.03		0.33	0.04	
R^2		0.06			0.35			0.36	
ΔR^2		0.06			0.29			0.01	

Notes:
SIZE: Firm size, EXP: Work experience, EDU: Educational level, OSYST: Organizational systems, SOCPR: Socialization processes, MKTRESP: Market responsiveness.
N = 205 branches nested in 24 banks.
*p<0.05; **p<0.01.

Table 4c. Results of interaction terms

Moderation effects	**Simple slope**
(Low) MKTRESP × OSYST	0.04
(High) MKTRESP × OSYST	0.07
(Low) MKTRESP × SOCPR	0.11
(High) MKTRESP × SOCPR	0.09