

Developing Potential and Realized ACAP: The Role of Market Sensing and Responsiveness

Abstract

This study explores how firms develop potential and realized absorptive capacity. In doing so, we extend the associations between organizational antecedents (coordination, system, and socialization capabilities) and potential and realized absorptive capacity by integrating market sensing and responsiveness as prerequisite contextual variables. The analysis is conducted using multilevel data obtained from 205 managers of 24 banks. Our findings show that coordination capabilities are positively associated with potential absorptive capacity while system and socialization capabilities are positively associated with realized absorptive capacity. Market responsiveness significantly moderates the relationship between socialization capabilities and realized absorptive capacity, such that the positive effect becomes weaker as market responsiveness increases. Also, market responsiveness significantly moderates the relationship between system capabilities and realized absorptive capacity, such that the positive effect becomes weaker when market responsiveness both increases and to a less extent decreases. The findings provide implications for research and practice on developing potential and realized absorptive capacity.

Keywords: Potential absorptive capacity, realized absorptive capacity, organizational performance, environmental dynamism and exposure, multilevel analysis.

INTRODUCTION

Over the past two decades, research in strategic management literature highlights the important role of absorptive capacity (ACAP) in improving organizational performance. Zahra and George (2002) defined ACAP as a firm's ability to acquire, assimilate, transform and exploit knowledge. Prior research has suggested a positive linear relationship between ACAP and firm performance (Cohen and Levinthal 1990; Dyer and Singh 1998; Lavie *et al.* 2007). The rationale offered to explain this positive direct relationship is that firms must continuously develop their ability to acquire and use knowledge if they seek to prosper and sustain their competitiveness. Despite this overwhelming evidence, some studies highlight that ACAP might be subject to diminishing financial return or have a nuanced/ambiguous impact on firm performance (Martinez-Noya *et al.* 2013; Wales *et al.* 2013; Kotabe *et al.* 2014). This line of research is underpinned by the assumption that the impact of ACAP can be positive or negative depending on a plethora of contextual factors. While the benefits of ACAP have traditionally been exalted, the literature has almost universally ignored the boundary conditions related to internal and external exogenous factors (e.g. environmental dynamism and exposure) at different levels (Foss and Mahnke 2003; Volberda *et al.* 2010).

Furthermore, in conceptualizing a firm absorptive capacity, Zahra and George (2002) suggested that ACAP encompasses two dimensions: potential ACAP and realized ACAP (the latter aims to acquire and assimilate knowledge, while the latter aims to transform and exploit knowledge). The core assumption is that the two dimensions conceptually play different roles in developing a firm absorptive capacity but coexist in enhancing firm performance (Zahra and George 2002; Volberda *et al.* 2010). However, this complementarity between the two distinct dimensions has gained little attention in empirical research. In other words, scant attention has been paid to how the processes underlying the two ACAP dimensions overlap in explaining organizational outcomes. Building on this view, this study tends to assess whether there is a relationship between the two ACAP dimensions. Such question about if potential ACAP an antecedent of realized ACAP can be addressed by examining the mediating effect of realized ACAP on the relationship between potential ACAP and firm performance.

While the bulk of absorptive capacity research examines firms in dynamic environments (Jansen *et al.* 2005; Wang *et al.* 2013), the few studies that evaluate different environmental circumstances show inconsistent effects. Some empirical studies find that the relationship between ACAP and performance is positive in a stable market but tends to be negative in a volatile market (Park and Gallagher 2002). In contrast, other studies posit that the ACAP-organizational performance link is positive in dynamic environmental conditions whereas this positive effect is limited and short lived in a stable environment (Wales *et al.* 2013). Failure to consider the potentially distinct effect of ACAP dimensions on financial performance under different boundary conditions of environmental factors has led to inconsistent research findings, which hampered the progress of research on absorptive capacity. To address these shortcomings, this study assesses the indirect relationship between potential ACAP and performance via realized ACAP while taking into account the following environmental boundary conditions: high and low levels of environmental dynamism and exposure.

There are several important reasons for investigating the mechanisms and boundary conditions (environmental dynamism and exposure) that strengthen the relationship between ACAP and organizational performance. Firstly, the ability to acquire, assimilate, transform and exploit knowledge is subject to environmental change and turbulence. The changing in the business climate makes it difficult to acquire and use knowledge effectively. Volberda *et al.* (2010) note that examining combined or moderating effects of various environmental factors is vital to clarify further how environmental dynamics shapes the ACAP-performance link. Further, research to date has found inconsistent findings regarding the effect of environmental dynamism. Our study builds on this inconsistency and examines the influence of high and low levels of environmental dynamism on the ACAP-performance link. Secondly, prior research has put exclusive emphasis on the role of environmental dynamism without paying attention to the extent of organizational exposure to the external environment (i.e., how firms' units and branches are exposed/opened to the external environment). Accordingly, Cruz-Gonzalez *et al.* (2015) claim that the ACAP-performance link is context dependency, who call for a contingency approach and propose that assessing different

within the firm. Mowery and Oxley (1995) focus on the firm's skills and competences to *modify* the assimilated knowledge for domestic application. More precisely, they conceptualize ACAP as a dynamic capability that enables the firm to continuously modify and adapt the absorbed knowledge to fit the changing environment. Zahra and George (2002) unfolded the construct of ACAP into four components: acquisition, assimilation, transformation and exploitation of knowledge. These four components come under two phases that include potential absorptive capacity and realized absorptive capacity. Potential ACAP involves acquisition and assimilation of knowledge from the external environment. This step is necessary to establish absorptive capacity. Firms can acquire and assimilate knowledge from the environment to build absorptive capacity, which can be via external sources of knowledge, i.e. foreign direct investment (FDI) knowledge spill over and internal sources through the firm's past experience. Realized ACAP includes transformation and exploitation of knowledge to produce competitive advantage. The assumption is that managing the four components effectively sustains a firm competitive advantage. Building on the seminal work of Zahra and George (2002), this study, firstly, explores empirically the extent of complementarity among potential and realized absorptive capacity (how the two dimensions co-exist) by assessing the mediating effect of realized ACAP on the relationship between potential ACAP and firm performance. Secondly, we integrate different environmental factors (i.e., environmental dynamism and exposure) to explain where/when this complementarity can be effective. We argue that firms operating in low (vs. high) levels of environmental dynamism, the mediating relationship will be stronger. Also, firms possessing high levels of environmental exposure (a high number of units and branches) can manager better the relationship between potential ACAP and organizational performance through realized ACAP. To structure our arguments, in the following sub-section we discuss the relationship between absorptive capacity and organizational performance, paying particular attention to potential and realized ACAP, and organizational performance (e.g. the mediating effect of realized ACAP on the potential ACAP-performance link). Then, we explain the role of environmental dynamism exposure in shaping and strengthening our proposed associations.

Absorptive Capacity and Organizational Performance

The vast literature on the relationship between absorptive capacity and organizational performance suggests that ACAP has a positive impact on performance. Organizational performance is measured by direct measures of performance such as organizational growth, sales volume, survival, and profitability, as well as indirect measures including innovation and learning capability (Cohen and Levinthal 1990; Dyer and Singh 1998; Ahuja and Katila 2001; Jansen *et al.* 2005; Lavie *et al.* 2007). However, a number of recent studies have reported a negative (Bierly *et al.* 2009; Weigelt 2009; Kotabe *et al.* 2014) or even an ambiguous impact of ACAP on organizational performance (Schildt *et al.* 2012; Martinez-Noya *et al.* 2013).

In terms of direct measures, research reported a positive relationship between ACAP and firm growth, sales volume, financial performance, competitive advantage, and firm survival. This line of research examines how ACAP captured by strategic alliances, organizational mechanisms and technological capabilities (c.f. Hitt *et al.* 2006; Lavie *et al.* 2007; Li *et al.* 2010) contributes to high organizational performance. For instance, Mayer *et al.* (2014) discussed the impact of different organizational forms such as diversity and experience, on performance and found that it is relatively affected by the diversity and experience of stakeholders. Jansen *et al.* (2010) found that potential and realized absorptive capacity, despite they are different in nature, co-exist to increase financial returns. They also argue that potential absorptive capacity has higher effect on financial gains than realized absorptive capacity.

In terms of indirect measures, previous research has examined the link between ACAP and competitive advantage (Dyer and Singh 1998; Nahapiet and Ghoshal 1998; Zahra and George 2002; Tallman *et al.* 2004; Lavie 2006). Dyer and Singh (1998) argue that ACAP enhances the firm's know-how and thereby establishes competitive advantage. Similarly, Zahra and George (2002) posit that firms can sustain their competitive advantage by managing effectively the four ACAP dimensions (i.e., acquisition, assimilation, transformation and exploitation of knowledge). Interestingly, the relationship between ACAP and competitive advantage has been mainly examined at a conceptual level (Matusik and Hill

1998; Tallman *et al.* 2004; Volberda *et al.* 2010). This may be due to the complexity of operationalizing and measuring competitive advantage.

Despite this overwhelming evidence, some empirical studies found a negative association between ACAP and performance (Bierly *et al.* 2009; Huang and Murray 2009; Weigelt 2009; Lichtenthaler *et al.* 2010; Kotabe *et al.* 2014). In a study of 438 firms, ACAP, through the application of knowledge, is found to be negatively linked to explorative innovation (Bierly *et al.* 2009). It is argued that technological relatedness, as a determinant of ACAP, hinders the application of external knowledge; hence negatively affects innovation capabilities of a firm. Huang and Murray (2009) examined 42701 U.S. patents and noted that patents decrease the long run production of public knowledge. The argument is that as patents are often developed and commercially exploited by private sector firms, consequently they have a negative impact on the production of public knowledge.

In addition, other studies have reported ambiguous findings in assessing the relationship between ACAP and performance. These studies reveal that the impact of ACAP can be positive or negative depending on a plethora of contextual factors (Park and Gallagher 2002; George *et al.* 2008; Lavie and Miller 2008; Hoang and Rothaermel 2010; Schildt *et al.* 2012; Martinez-Noya *et al.* 2013; Walter *et al.* 2013). For instance, a study of 110 U.S. public corporations demonstrated that technological capabilities and R&D activities, used to capture ACAP, have a negative effect on learning in the short term, but have a positive effect on learning practices in alliances in the long term (Schildt *et al.* 2012). Martinez-Noya *et al.* (2013) found that while ACAP, captured as R&D outsourcing, develops internal learning processes it also generates inadequate knowledge for domestic application. Park and Gallagher (2002) focused on the importance of environmental conditions in determining the relationship between ACAP, captured by strategic alliances, and growth. Their study highlighted that the relationship between growth and strategic alliances is positive in a stable market but tends to be negative in a volatile market. Similarly, Wales *et al.* (2013) found that ACAP-organizational performance link is positive in dynamic environmental conditions whereas this positive effect is limited and short lived in a stable environment.

Although there has been considerable interest in the link between ACAP and organizational performance (using direct and indirect measures of performance), the relationship between potential and realized ACAP has been largely ignored in the ACAP literature (Lane *et al.* 2006). Even when potential and realized ACAP have been considered (see Jansen *et al.* 2005), the effects of the two distinct ACAP dimensions on organizational performance have been somewhat omitted. As such, the ACAP process is composed of two distinct organizational mechanisms: potential absorptive capacity and realized absorptive capacity. While potential absorptive capacity consists of acquisition and assimilation of knowledge, realized absorptive capacity consists of transformation and exploitation of knowledge. It is argued that the two dimensions have different organizational mechanisms but are complementary in increasing organizational performance (Zahra and George 2002).

Potential and realized absorptive capacity, and organizational performance

Previous research on ACAP acknowledges that potential and realized absorptive capacity enhances business performance. As such, the ability to acquire, assimilate, transform and exploit knowledge lead to high financial/sales performance and sustained competitive advantage (Van den Bosch *et al.* 1999; Zahra and George 2002). However, the impact of the two distinct dimensions on organizational performance remains unclear. For instance, Jansen *et al.* (2003) found that the level of realized to potential ACAP decreases the relationship with organizational performance. Developing processes underlying realized ACAP through transforming and exploiting knowledge, as opposed to processes underlying potential ACAP, decrease financial performance (Jansen *et al.* 2003). In a similar vein, Jansen *et al.* (2005) advocated that potential ACAP improves organizational performance while realized ACAP does not necessarily increase performance in dynamic markets. That is said, firms operating in a dynamic environment improve their financial performance by increasing the level of potential absorptive capacity. It is argued that potential ACAP provides greater strategic flexibility in reconfiguring resources and effective deployment of knowledge at lower cost, which are necessary in sustaining competitive advantage (Zahra and George 2002).

Building on the previous discussion, in this study we aim to clarify and bring a nuanced picture on the mixed findings among potential and realized ACAP, and organizational performance. In so doing, we separately treat the two distinct of ACAP dimensions (potential and realized absorptive capacity) to assess their influence on organizational performance. We expect the following two hypotheses:

Hypothesis 1: Potential absorptive capacity is positively associated with organizational performance.

Hypothesis 2: Realized absorptive capacity is positively associated with organizational performance.

Mediating Role of Realized Absorptive Capacity

Research reveals that potential and realized ACAP have different roles in developing a firm absorptive capacity but coexist and participate in improving firm performance (Zahra and George 2002). While potential and realized ACAP conceptually plays different roles (the latter aims to acquire and assimilate knowledge, while the former aims to transform and exploit knowledge) in developing a firm absorptive capacity, they coexist in enhancing financial performance. Volberda *et al.* (2010) also stressed that the underlying processes of both potential and realized ACAP ‘co-exist’, but surprisingly, there is a lack of research on the role of the processes of potential absorptive capacity in increasing business performance through the processes of realized absorptive capacity. It would further develop a better understanding of the relationship between potential and realized ACAP and performance. From the above discussion, we argue that potential ACAP mediates the relationship between realized ACAP and organizational performance.

Hypothesis 3: Potential absorptive capacity is positively associated with organizational performance through realized absorptive capacity.

Moderating Effect of Environmental Dynamism and Exposure

So far, we argued that potential absorptive capacity, mediated by realized absorptive capacity, is positively associated with organizational performance. To expand our argument, we further argue that environmental dynamism and exposure are boundary conditions to strengthen our proposed association. Environmental dynamism refers to the amount of unpredictability of change in customer tastes, production or service technologies, and the modes of competition in the firm's principal industries (Natarajan and Ganesh 2011:62). Increased dynamism in the firm's environment might result in various changes in suppliers, buyers and overall competitive landscape, which consequently raise challenges on how firms sustain superior performance (Tallon 2008). In a similar vein, environmental dynamism affects a firm decision to source external knowledge for firm performance. For instance, managing a firm's resources is predominantly affected by the level of market dynamism in terms of what/how it is acquired and used (Wu 2010; Drnevich and Kriauciunas 2011). Ensley *et al.* (2006) find that environmental dynamism has an impact on leadership capabilities and subsequently on performance; and this impact varies according to the level of market dynamism (i.e., positive in a stable market and negative in a relatively volatile market). Park and Gallagher (2002) argue that in a volatile market, resource-rich organizations have the ability to access external resources through alliances while resource-poor organizations are less likely to do so. Conversely, in relatively stable markets, resource-poor organizations actively engage in alliance formation. Hung and Chou (2013) indicate that technological market turbulence positively moderates the relationship between external technology acquisition and firm innovation. This finding underscores the important role of environmental characteristics on improving innovation capabilities within a firm. In addition, Jansen *et al.* (2005) examined the moderating effect of environmental dynamism on the relationship between potential and realized ACAP and organizational performance. They found that potential ACAP improves organizational performance while realized ACAP does not necessarily increase performance in dynamic markets. Our study goes beyond their argument and integrates market dynamism to strengthen the indirect relationship between potential ACAP and organizational performance via realized ACAP. In doing so, it tends to

clarify and bring a nuanced picture on the extent effect of high and low levels of market dynamism in strengthening the relationship between realized ACAP mediated by potential ACAP, and organizational performance.

In addition, firms that continuously interact with the external environment may be affected, not only by environmental dynamism, but also by the degree of their environmental exposure. Firms seeking to internalize new resources obtained from the external environment need considerable technical expertise and exposure to the environment, which can assist them to understand, interpret, and apply knowledge quicker than their counterparts (Mowery *et al.* 1998). Environmental exposure, which reflects the extent to which firms expose and connect their activities/processes/units to the external environment, promotes speed, frequency and magnitude to generate and institutionalise new knowledge from the environment (Kim and Kogut 1996; Roberts 2015). Organizations possessing large scope of environmental exposure (i.e., high number of units distributed in different geographical locations) know where and how to find key resources and skills required to absorb and use knowledge (Gnywali and Park 2009). Further, such exposure allows businesses develop core processes and capabilities and address environmental risks and uncertainties. When dealing with uncertainty from rivalry and intense competitive pressures, increasing business presence via creating different units/branches/divisions and generating diverse resources is an essential prerequisite to develop ACAP which can be leveraged in response to changes (Simon *et al.* 2007). Accordingly, firms that have high environmental exposure tend to develop better capabilities in recognizing and assimilating valuable knowledge. These firms are likely to engage in sensing the external environment and possess strategic flexibility provide a basis to implement the absorb knowledge effectively. Indeed, openness to the external environment fosters a variety of learning and external sources which is a prerequisite to develop the ACAP process and subsequently improve firm performance. From the above, we argue that high level of exposure positively affects how firms absorb and exploit knowledge. Hence, we argue that the indirect relationship between potential ACAP and organizational performance via realized ACAP is stronger where environmental exposure is high.

Our moderated mediation hypotheses based on the above discussion are:

Hypothesis 4a: Potential absorptive capacity has a stronger association with organizational performance through realized absorptive capacity where environmental dynamism is low (vs. high).

Hypothesis 4b: Potential absorptive capacity has a stronger association with organizational performance through realized absorptive capacity where environmental exposure is high (vs. low).

Our conceptual model along with hypothesized relationships is delineated in Figure 1.

[Insert Figure 1]

RESEARCH METHODS

Sampling and Data Collection Procedures

We used a structured questionnaire to collect primary data from bank branches operating in Turkey. We selected Turkey as the research site as it constitutes an appropriate context for our study. Turkey is relatively under-researched, but shares a number of key features with other notable emerging economies (e.g. India, Brazil, Mexico and South Korea) including the industrial and organizational structures (Fainshmidt *et al.*, 2016). We chose bank branches because they are geographically diverse and exposed to global competitive dynamics; which renders a proper setting for investigating organizational mechanisms and processes leading to firm performance. Banks in Turkey tend to renew and upgrade their organizational learning processes, enhance their performance and survive in an increasingly changing environment. While foreign-owned banks are increasing their presence in the Turkish market, local banks are seeking to increase their international presence, through which they need to promote their learning processes, and also upgrade their resources and capabilities in order to sustain their competitive advantage (Erdem, 2014).

The sampling frame of the research was based on the website of BAT (the Banks Association of Turkey). BAT provides a database of all banks (47 banks) and bank branches

(10722 branches) operating in Turkey. The contact information of these banks is available via BAT website (<https://www.tbb.org.tr/en/home>). We randomly sampled a total of 3002 bank branches operating in Istanbul from this database. We mailed 1000 questionnaires (i.e., 3 surveys to each bank branch) with a cover letter introducing the research project and requesting participants at different managerial levels (middle, senior and executive managers) with relevant knowledge should complete it. Using multiple respondents for each bank branch fosters the accuracy of the data and increases the validity of responses. The questionnaires were returned in sealed envelopes and with attached business cards. This procedure further yielded in increasing the validity and reliability of responses.

The survey questionnaire was originally written in English, and then translated into Turkish using the back-translation procedure recommended by Brislin (1986). This procedure of back translation was essential to depict misinterpretations and misunderstandings before we run the questionnaire. Two Turkish-based bilingual researchers independently translated the survey instrument from English into Turkish, to increase the veracity of the translation. Next, we discussed the wording of the items with colleagues from related fields. Two other bilingual researchers translated the Turkish questionnaire back to English and checked whether the Turkish version was accurately transcribed from a literal English language translation. This procedure was vital to ensure face validity.

The study's participants are middle and top level managers and executives, who possess a high level of knowledge and expertise on internal and external organizational activities. Each variable is analysed via managerial perceptual evaluations. Using perceptual measures is a suitable way to explore and understand our focal phenomenon (Glick, 1985; Singh *et al.* 2016) because managers have core knowledge about the functions and organizational mechanisms within the boundaries of the firm. Following the selection criteria of Dillman (2007), we targeted participants based on their responsibilities, and who possess relevant expertise and deeper understanding of core processes/mechanisms and organizational performance.

We administered two waves of data collection and two reminders, and obtained a total of 210 questionnaires, of which 200 questionnaires were usable (from a total of 24 banks)

representing an effective response rate of 20%. We believe that the response rate was deemed satisfactory given the confidential nature of the questionnaire. Of the responding managers in our sample, 61% were top level managers, 29% were middle level managers and 6% were low level managers. On average, the managers had worked in the bank for 10.4 years and had been in their current job for 5.8 years. Of the managers in our sample, 66.5% hold a bachelor's degree while 27% hold master's degree.

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

We used two steps to evaluate non-response bias. Firstly, we compared responses from early and late respondents and found no statistically significant differences. Secondly, we ran Mann-Whitney U tests on three key demographic variables: number of employees, firm size, and firm sales volume. We again found no significant differences, of which non-response bias does not pose any issue in our study.

Measurement of Variables

In this study, most of our items are based 7-point Likert scales (1= strongly disagree to 7= strongly agree) and are drawn from earlier research.

Potential and realized absorptive capacity. To measure potential and realized ACAP, we used twenty-one items developed by Jansen *et al.* (2005) relying on a 7-point Likert scale. Potential ACAP includes acquisition and assimilation of knowledge. Managers are asked to assess the ability to acquire knowledge using six items and also the ability to assimilate knowledge using three items. We combined acquisition and assimilation abilities to represent potential ACAP for an aggregate score ($\alpha=0.75$). Realized ACAP includes transformation and exploitation of external knowledge. Six items were used to assess transformation and six items to assess exploitation (Szulanski, 1996; Jansen *et al.*, 2005). We combined acquisition and assimilation abilities to represent realized ACAP for an aggregate score ($\alpha=0.78$).

Environmental dynamism. Environmental dynamism (ENV) examines the degree of change and shift in the local environment. Managers were asked to evaluate the pace and shift in the environment where they operate (Volberda and Van Bruggen 1997). Four items were included on a seven-point Likert scale ($\alpha=0.82$).

Environmental exposure. In our study, we refer to environmental exposure (EXP) as the number of branches distributed within the site of our study. This variable was operationalized by taking the number of branches within the respective location. For instance, high level of exposure represents banks with more than 100 branches while low level of exposure represents banks with less than 100 branches operating in Turkey.

Organizational performance. We employed perceptual measures to assess organizational performance (OP) by using 6 items on a seven-point Likert scale (1= 'strongly disagree' and 7= 'strongly agree') based on Zou and Cavusgil (2002) and Jansen *et al.* (2005). Managers were asked to evaluate and compare several aspects of their organizational performance (e.g. return on asset, return on equity, and cost efficiency) with corresponding business units in reference branches and their direct competitors. The resulting scale for financial performance was reliable ($\alpha=0.94$). Such subjective measures of organizational performance are commonly used on business units of large organizations (Jansen *et al.* 2005). Accordingly, previous research has found a strong correlation between subjective and objective measures. Singh *et al.* (2016) reveal that using subjective measures on organizational performance is reliable and provides statistical rigor to test hypotheses. The authors provided an in-depth statistical exercise conducted on subjective measures of organizational performance as reported by managers and show consistent results.

Control variables. We controlled for the variables of firm size, manager's experience in a bank and educational level to measure the relationship between organizational mechanisms and absorptive capacity.

We measured firm size (SIZE) by an ordinal variable consisting of five ordinal categories consisting of the number of employees ranging from 0 to 5000 employees.

To control for manager's level of experience (EXP), we used five categories to measure managerial experience in the same bank ranging between less than 5 years to more than 40 years.

We measured educational level (EDU) by five ordinal categories based on the qualifications obtained at university.

RESULTS

We undertook three steps to analyse the data. First, we run confirmatory factor analysis (CFA) to demonstrate if the study's variables and model provide a good fit. Secondly, we tackled the possibility of common method bias (CMB) by following a marker variable technique suggested by Podsakoff *et al.* (2011). Finally, we used multilevel analysis to test our proposed relationships including mediation and moderated mediation hypotheses.

Confirmatory Factor Analysis (CFA)

To test CFA, we assessed the discriminant validity of our measures using AMOS software (Byrne 2001). In doing so, we followed a procedure in line with previous research (e.g. Klein *et al.* 1999; Schumacker and Lomax 2004) to report our findings. Our conceptual model, as shown in Figure 1, includes six study variables (i.e., acquisition and assimilation; transformation and exploitation; environmental dynamism; environmental exposure; and organizational performance). Our CFA results supported the discriminant validity of our measures and report a good fit with the data [$\chi^2=1237.6$; $df=512$; $\chi^2/df=2.42$, $p<.01$; comparative fit index (CFI)=0.82; incremental fit index (IFI)=0.82; Tucker-Lewis index (TFI)=0.79; root-mean-square error of approximation (RMSEA)=0.083].

Common Method Bias (CMB)

We checked whether CMB is an issue in the current research by using the suggested marker variable technique of Lindell and Whitney (2001). In so doing, we took the smallest

correlation between the marker variable and the substantive variables as an estimate of the CMB effects. We subtracted the lowest positive correlation between self-report variables from each correlation value. Each of these values was then divided by the value of 1, which represents the lowest positive correlation between self-report variables. The resulting correlation values reflect CMB adjusted correlations. Large differences between the unadjusted and common method bias adjusted correlations suggest that CMB is a problem. The absolute differences were relatively minimal in our findings, ranging between 0.01 and 0.005. Hence, CMB does not pose a serious problem in this study.

Hypotheses Testing

The descriptive statistics, reliability estimates and correlations of all measures are reported in Table 1.

[Insert Table 1]

We used multilevel analysis to test our hypotheses. Due to the nature of our data (200 managers clustered in bank branches of 24 banks), we controlled for any possible nesting effects of bank-level and employee-level factors on the relationships we tested, as recommended by Rasbash *et al.* (2009), and Kim *et al.* (2015). We followed the recommendations of Klein *et al.* (2000) to test whether multilevel analysis was the adequate statistical technique for our study. First, we compared a model of one structure (individual level) to a model at two levels (individuals nested in banks). The results highlight that the difference in log likelihood ($474.72 - 495.31 = 20.59$; $p < .01$) is significant. Secondly, we compared the percentage of variance at level 2 to overall variance, i.e., we divided 0.107 (level 2 variance) to 0.644 (the total of variance) and found 0.166. Any value above 10% justifies the use of multilevel statistical technique (Klein *et al.* 2000). From the arguments above, there is a valid justification to use multilevel analysis for our study.

To test the indirect relationship between transformation and exploitation, and performance via acquisition and assimilation, we followed a procedure recommended by

Bauer *et al.* (2006). We applied Monte Carlo Markov Chain (MCMC) stimulations with 20,000 iterations in order to receive confidence intervals for our proposed indirect effects. In doing so, we used an online tool to develop *R* value and test the indirect effect (mediation) (Selig and Preacher 2008). If confidence intervals do not contain zero value, it means that the indirect effect is significant. Furthermore, to test the moderated mediation effect (e.g. testing whether high/low environmental dynamism and exposure moderate the indirect relationship of transformation and exploitation with organizational performance via acquisition and assimilation), we followed Edwards and Lambert's (2007) procedure.

Table 2 shows regression results predicting the relationship between potential and realized absorptive capacity and organizational performance. Table 2 also reports the results of the mediation and interaction effects of potential ACAP with organizational performance through realized ACAP; and the interaction with high and low levels of environmental dynamism and exposure. There are two models for assessing the relationship between potential and realized ACAP and organizational performance (Models 1 and 2). Two models to test the mediation effect of realized absorptive capacity on the association among potential ACAP and performance (Models 3 and 4). Four models for examining the moderated mediation effect of environmental dynamism on our proposed associations (Models 5, 6, 7, and 8). Findings in Table 2 show that there are no significant effects of control variables (firm size, work experience and educational level) on the hypotheses tested.

[Insert Table 2]

Model 2 shows that there is a strong support for Hypothesis 1, in that potential ACAP has a positive and significant effect on organizational performance ($y=.5, p<.01$).

Similarly, Hypothesis 2 was supported. Model 2 reports that realized ACAP is positively and significantly related to organizational performance ($y=.38, p<.01$).

To test Hypothesis 3 which predicts that potential ACAP has an indirect and positive relationship with organizational performance via realized ACAP, we followed the recommendations by Bauer *et al.* (2006). The results in Table 2 (Model 3) indicate that

potential ACAP is positively and significantly associated with realized ACAP ($y=.55, p<.01$). Also, Model 4 shows that potential ACAP is positively and significantly associated with organizational performance when realized ACAP is taken into account ($y=.40, p<.01$). Furthermore, we conducted MCMC stimulations to obtain confidence intervals for our proposed indirect effects. We used an online tool that develops R value to test the mediation as suggested by Selig and Preacher (2008). The bootstrapping test reported that the indirect effect of potential ACAP on organizational performance via realized ACAP was significant (i.e., indirect effect=.08, $p<.01$). Also, the 95 percent confidence interval (CI: 0.09-0.33) of the indirect effect did not contain zero. Thus, a strong support was found for Hypothesis 3.

We found strong support for the two moderated mediation hypotheses (Hypotheses 4a and 4b). To test Hypothesis 4a, we used a recommended procedure by MackKinnon and Fairchild (2009). We first split the sample into two subsamples, using the sample mean value of environmental dynamism. This procedure is also suggested in recent research concerning moderated mediation analyses (Muller *et al.* 2005). As Model 6 indicates, the moderated path analytic procedure reveals that the indirect effect was significant ($y=.75, p>.5$) at a low level of environmental dynamism (95 % CI: 0.26 - 0.6). However, the indirect effect, as shown in Model 5, was insignificant ($y=.12, p>.5$) at a high level of environmental dynamism (95% CI: -0.08 - 0.22). Thus, there is a support for Hypothesis 4a, suggesting that the indirect effect of realized ACAP on organizational performance via potential ACAP varies by environmental dynamism. The moderated indirect relationships are plotted in Figure 2a.

[Insert Figure 2a]

To test Hypothesis 4b, similarly, we followed similar procedure as recommended by MackKinnon and Fairchild (2009). We first split the sample into two subsamples, using the sample mean value of exposure to environment. This procedure is also suggested in recent research concerning moderated mediation analyses (Muller *et al.* 2005). As Model 7 shows, the moderated path analytic procedure reveals that the indirect effect was significant ($y=.15, p>.5$) at a high level of environmental exposure (95% CI: 0.02 - 0.13). Conversely, the indirect effect was insignificant ($y=.28, p>.5$), as reported in Model 8, at a low level of

environmental exposure (95% CI: -0.2 - 0.4). Hence, Hypothesis 4b is supported. The findings reveal that the indirect effect of realized ACAP on organizational performance via potential ACAP varies by exposure to environment. The moderated indirect relationships are plotted in Figure 2b.

[Insert Figure 2b]

[Insert Table 3]

DISCUSSION & CONCLUSION

Building on Zahra and George (2002) seminal work, the present study extends our understanding of the ACAP-performance link by examining the indirect effect of potential on organizational performance via realized absorptive capacity, and suggesting that this association is moderated by high and low levels of environmental dynamism and exposure. The current study contributes to this area of study by explaining empirically that potential and realized ACAP complement each other to enhance firm performance. Also, we contribute to extant research by reporting that the increase and decrease of performance is determined by boundary conditions of environmental factors, i.e., high and low levels of environmental dynamism and exposure. While the indirect relationship is strengthened at low levels of environmental dynamism, it is strengthened at a high level of environmental exposure. Our findings offer a number of theoretical contributions for ACAP research and also provide several opportunities for future research.

A primary contribution of this study is to explore that, of the two distinct ACAP dimensions, potential absorptive capacity is the basis of creating and sustaining a firm competitive advantage. We reveal from our analysis that the processes underlying potential ACAP (acquisition and assimilation) improve better firm performance compared to processes underlying realized absorptive capacity (transformation and exploitation). This might be due to two reasons. Firstly, firms tend to find difficulties in managing the two ACAP dimensions successfully. For instance, while firms put exclusive emphasis on acquisition and assimilation of knowledge underlying potential ACAP, they might not manage effectively the ability to transform and exploit knowledge underlying realized ACAP. Accordingly, Volberda *et al.*

(2010) posit that some underlying tensions may occur between the dimensions of ACAP, through which high levels of potential absorptive capacity might be detrimental to develop realized absorptive capacity. Secondly, prior research (e.g. see Jansen *et al.* 2005) advocates that in dynamic environments, firms manage better their potential ACAP in increasing performance. It is argued by these authors that potential ACAP provides greater strategic flexibility in reconfiguring resources and effective deployment of knowledge at lower cost, which is a prerequisite element to promote business performance. From the above discussion, we build upon extant knowledge by arguing that for the ACAP process to be effective, firms need to invest more time and effort in developing different processes to realize the absorbed knowledge. As the processes underlying realize ACAP confront difficulties in interacting with the environment, adding new organizational mechanisms (e.g. reconfiguration and adaptation capabilities) will enhance further the processes underlying realized absorptive capacity (transformation and exploitation). Indeed, emphasizing on the two organizational mechanisms is necessary, but not sufficient to enhance how firms realize their potential to sustain superior performance and competitive advantage.

Furthermore, this study confirms Zahra and George's (2002) conceptual contribution which pertains that potential absorptive and realized absorptive capacity are complementary and co-exist in enhancing organizational performance. In so doing, we empirically examined the mediated effect of realized ACAP on the relationship between potential ACAP and performance and found a positive and significant effect. Moreover, from our analysis, we note that the indirect relationship has higher effect than direct relationships of the ACAP-performance link. In other words, the relationship between potential absorptive capacity and firm performance is higher through the condition of realized absorptive capacity. This finding further explains that there is an overlap of the processes underlying the two ACAP dimensions in improving financial returns. Indeed, the overlap of acquisition, assimilation, transformation and exploitation processes is required to maintain superior performance and achieve a sustained competitive advantage.

A second theoretical contribution to the current research is that the relationship between ACAP and firm performance is not always positive and can and should be viewed as subject

to diminishing financial returns. Recent research has reported mixed findings in assessing the relationship between ACAP and performance. These studies suggest that the impact of ACAP can be positive or negative depending on a plethora of contextual factors (Hoang and Rothaermel, 2010; Schildt *et al.*, 2012; Martinez-Noya *et al.*, 2013; Walter *et al.* 2016). These findings caution against overly positive view of absorptive capacity and its effect on organizational performance. Building on this argument, we contribute to the current research of context dependency of ACAP by elaborating and testing different environmental factors (e.g. market dynamism and exposure). Our results reveal that the ACAP-performance link is influenced by high and low levels of environmental dynamism and exposure. Researchers should use these potentially countervailing outcomes: while absorptive capacity may improve business performance in general, such increased performance may be achieved by different aspects of the environmental (i.e., levels of environmental dynamism and exposure). Depending on whether firms face high or low levels of environmental dynamism, the impact of organizational performance differs. The significance of this finding is underscored by the observation that environmental dynamism and exposure have a double edge sword in explaining the ACAP-performance link. While firms operate under low levels of environmental dynamism, they are better in managing potential and realized ACAP and increase financial returns. That is said, at a low level of environmental dynamism, firms can develop their potential absorptive capacity and are more likely to engage in effective transformation and exploitation of knowledge to improve organizational performance. Conversely, firms operating at high levels of environmental dynamism find difficulties in developing their ability to acquire and exploit knowledge, which lead to decreased financial performance. Our findings imply that, rather than absorptive capacity is more beneficial in certain settings, different conditions of the external environment require that firms will deploy quite distinct different capabilities and strategies for improved performance. Drawing on this, we advance research on ACAP one step further in our comprehension of the complex nature of the external environment as well as knowledge absorption and usage in different environmental dynamics.

In addition, our findings underscore the importance of environmental exposure in shaping the effectiveness of the ACAP process. The inclusion of environmental exposure illuminates an important contingency in the relationship between ACAP dimensions and business performance. Namely, we report that realized ACAP positively mediates the relationship between potential ACAP and organizational performance where environmental exposure is high, but this effect does not appear at low level of exposure. These results advance our understanding on how ACAP can be, not only affected by the shift in the external environment, but also by the size and scope of units and branches exposed to the environment. The value of absorptive capacity increases with the degree of exposure and openness to the external environment. The underlying argument for this finding rests on the fact that high exposure to the environment enables firms to create, engage and grasp new opportunities such as accessing new resources as well as developing core capabilities to sense and respond to the environment quickly than their counterparts. For instance, high number of bank branches tends to develop strong tie and strategic flexibility to absorb and use knowledge effectively. In such context, bank branches are exposed to a variety of technologies and resources, which is an essential prerequisite to manage and develop their absorptive capacity, and subsequently enhance superior performance and sustain competitive advantage. Indeed, as bank branches offer strategic flexibility in understanding and reacting to the external environment, expanding their presence in different geographical locations is necessary for firms intending to promote their PACAP and RACAP, and also increase firm performance.

Our results provide a number of direct implications for banks. For instance, banks hoping to increase financial gains from absorptive capacity need to invest in opening new branches in different geographical locations. Such investment would be beneficial for firms to capture new opportunities and help them to absorb valuable knowledge from the external environment. For example, by creating different branches, banks tend to increase customer engagement opportunities, which allow them to generate and disseminate adequate information about market trends and respond quickly to challenges compared to their competitors. Moreover, large size of bank branches develops the ability to acquire and exploit

knowledge effectively which is an essential prerequisite to achieve a sustained competitive advantage.

Implications notwithstanding, the contributions of this study should be considered in light of its research limitations. One limitation is that the study does not focus separately on the effect of acquisition, assimilation, transformation and exploitation of knowledge on a firm financial performance. Future research could fruitfully explore the extent to which each distinct of the ACAP process can contribute to increase/ decrease the level of firm performance.

A second limitation is related to the nature of the complementarity of potential and realized absorptive capacity in developing a firm's absorptive capacity and increasing organizational performance. The underlying research question for this criticism is how/why the four ACAP practices (from acquisition to transformation) co-exist? To address this shortcoming, we call scholars to adopt qualitative research methods in order to explore the extent of the overlap of the processes underlying potential and realized ACAP. Indeed, this avenue would further explain how the two distinct interact and react to environmental dynamism, which is needed to bring a nuanced picture on the extent flexibility of each dimension.

The third limitation of the study rests on the cultural and business context. In particular, this study was conducted in Turkey, where the cultural context is characterized by high in-group collectivism (Kabasakal and Bodur 2007). In this cultural setting, individuals have high social network and coordination abilities. Therefore, it is difficult to depict the nature of these coordination capabilities (cultural or organizational abilities). In this vein, firms engaging in absorptive capacity via coordination capability might be heavily influenced by the cultural context rather than internal organizational capabilities/mechanisms. Also, given that our study was conducted with banks in Turkey, where the government is involved in stabilizing the market (IMF 2013), we cannot extrapolate our findings regarding how firms read and respond to environmental dynamics. Therefore, future research is needed in different contexts (cultural and business) to provide a more nuanced picture of how firms sense and respond to a rapidly changing environment, while they engage in assimilating and using knowledge.

Clearly, more research is needed in order to develop a full understanding of the relationship between ACAP and organization performance. This requires that further attention be paid to contextual variables that might shape and affect the ACAP-performance link. Our study reveals that a firm is affected not only by the fast/slow pace environments but more by the degree of exposure of processes/mechanisms related to a firm absorptive capacity. As noted earlier, the ACAP-performance link is subject to external exogenous factor that shape the relationship. Specifically, we stress that performance is determined by the high/low conditions of environmental characteristics and factors. Based on this analysis, we encourage scholars to start assessing multi environmental perspectives to gain a better understanding of the ACAP- performance link. Indeed, we hope scholars will heed our call for more research on ACAP and performance to further explore different characteristics and environment but also by the size and scope of activities and processes within the environment.

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Figure 1. Conceptual model

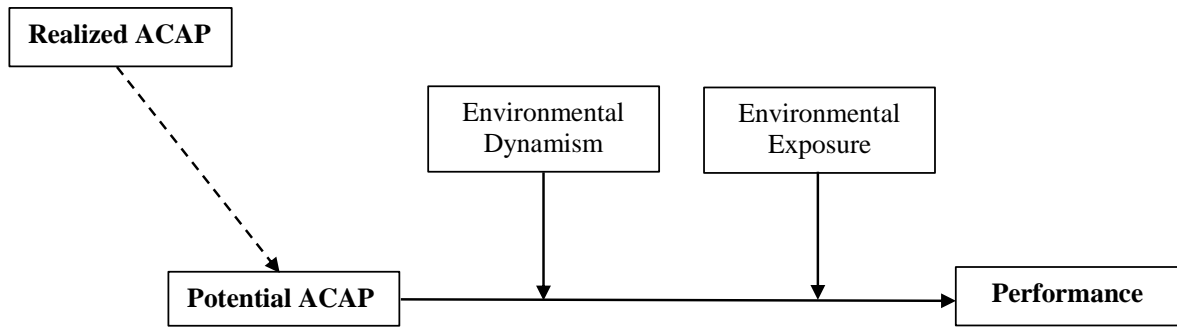


Figure 2a. The indirect effect of potential ACAP on organizational performance via realized ACAP at levels of environmental dynamism

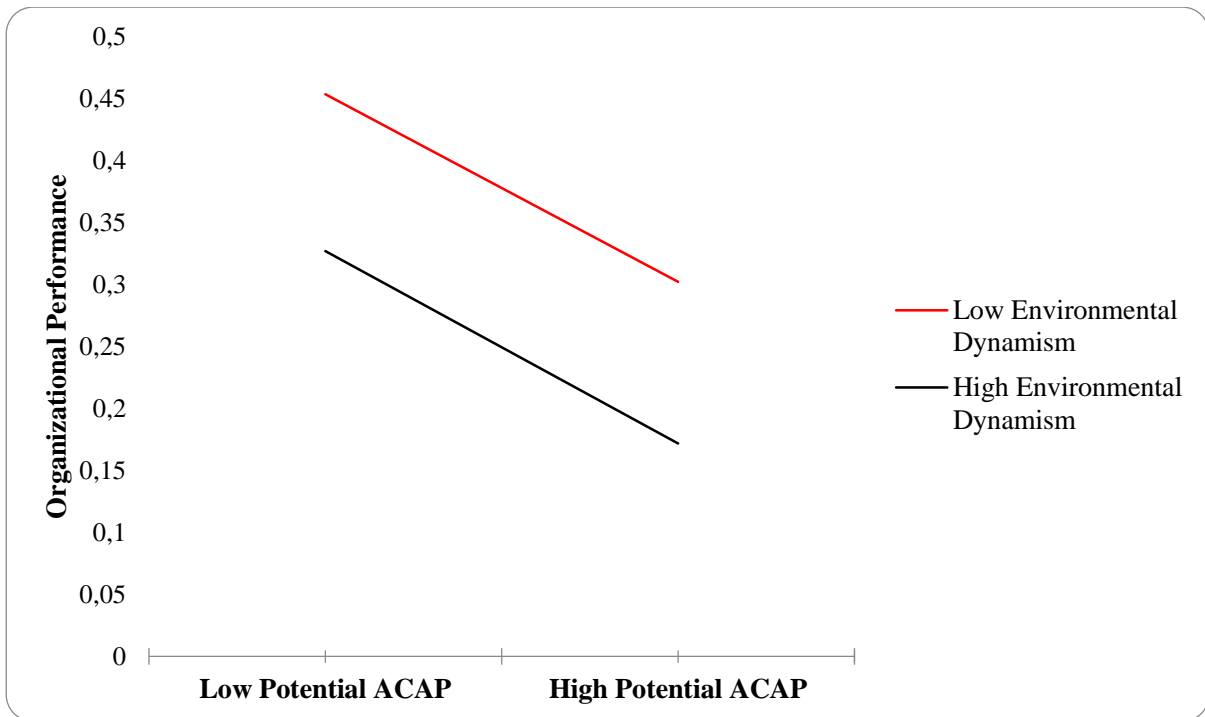


Figure 2a. The indirect effect of potential ACAP on organizational performance via realized ACAP at levels of environmental exposure

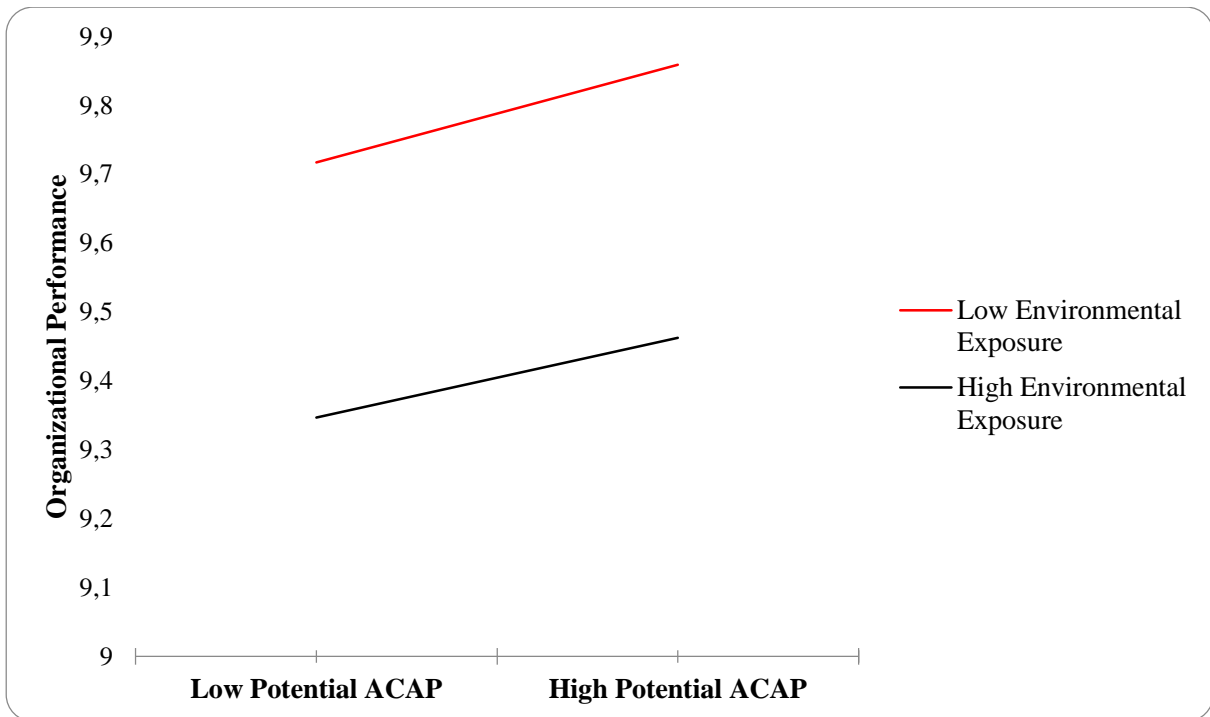


Table 1. Means, standard deviations, and correlations among variables

Variable names	Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. SIZE	Firm size	4.649	0.709	1							
2. EXP	Work experience	3.678	1.130	0.146*	1						
3. EDU	Educational level	2.151	0.561	-0.063	-0.101	1					
4. PACAP	Potential ACAP	5.563	0.811	0.237**	0.121	0.108	1				
5. RACAP	Realized ACAP	5.999	0.942	0.247**	0.041	0.006	0.685**	1			
6. ENVDY	Environmental dynamism	1.800	0.401	0.476**	0.1149*	-0.061	0.210**	0.262**	1		
7. ENVEX	Environmental exposure	5.047	1.308	-0.049	-0.106	0.122	0.083	0.072	0.093	1	
8. OP	Organizational performance	5.506	1.129	0.284**	0.097	-0.045	0.470**	0.416**	0.344**	0.180**	1

Notes:

N= 205 employees nested in 24 banks.

*p<0.05; **p<0.01.

Table 2. Regression Results

Variable	Dependent variable: Organizational performance																								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6			Model 7			Model 8			
	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t	
Intercept	5.28	0.14	37.71**	6.03	0.06	100.50**	4.55	0.40	11.37**	5.78	0.69	8.37**	6.14	1.00	6.14**	4.87	0.71	6.86**	7.11	0.67	10.61**				
SIZE				0.06	0.11	0.54	0.08	0.06	1.33	0.05	0.10	0.5	0.04	0.17	0.23	0.19	0.10	1.9	-0.23	0.12	-1.91				
EXP				-0.02	0.06	-0.33	0.06	0.04	1.50	-0.01	0.06	-0.16	-0.09	0.08	-1.12	0.07	0.07	1	-0.01	0.06	-0.16				
EDU				-0.14	0.11	-1.27	0.14	0.07	2	-0.12	0.11	-1.09	-0.26	0.16	-1.62	-0.17	0.14	1.21	-0.17	0.11	1.54				
<i>Direct effects</i>																									
PACAP	0.48	0.08	6**	0.50	0.08	6.25**																			
RACAP	0.38	0.07	5.43**	0.38	0.07	5.43**																			
<i>Mediation</i>																									
PACAP * RACAP							0.55	0.04	13.75**																
PACAP via RACAP										0.40	0.11	3.45**													
<i>Moderated mediation</i>																									
ENV DY × PACAP via RACAP													0.12	0.15	0.8	0.75	0.14	5.36**							
ENV EX × PACAP via RACAP																			0.15	0.11	1.36	0.28	0.35	0.8	
Level 1 intercept variance (SE)	0.33	0.14		0.4	0.16		0.03	0.02		0.25	0.11		0.73	0.31		0.00	0.03		0.30	0.14		0.00	0.00		
Level 2 intercept variance (SE)	0.76	0.08		0.78	0.08		0.31	0.03		0.75	0.08		0.54	0.09		0.66	0.09		0.63	0.07		0.00	0.00		

Notes:

SIZE: firm size, EXP: work experience, EDU: educational level, PACAP: potential absorptive capacity, RACAP: realized absorptive capacity, ENV DY: environmental dynamism, ENV EX: environmental exposure.

N=200 employees nested in 24 banks.

*p<0.05, **p<0.01.