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# Managing market intelligence: The comparative role of absorptive capacity and market orientation

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## ABSTRACT

Technological knowledge and market knowledge are among the most valuable resources that a firm can utilize for competitive advantage. Absorptive capacity (ACAP) or a firm's ability to acquire, assimilate, transform, and apply knowledge, has long been a central construct in organizational studies. Yet, limited research exists on ACAP in a marketing context. Marketers tend to utilize market orientation (MO) in similar theoretical contexts. This study extends the scope of ACAP beyond a technology-related context and develops a model to compare the performance of both potential and realized ACAP as well as that of MO to assess shared performance in a market-related context. The survey results suggest that ACAP of market knowledge positively influences firm performance by enhancing customer acquisition & retention of the firm. The findings also indicate that market orientation operates through the innovation process to add its effects to that of ACAP. Finally, this study discusses the moderating role of a firm's balance in cost leadership and differentiation strategy, suggesting comparative and distinguishable effects of ACAP of market knowledge and market orientation.

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## 1. Introduction

If firms with superior market knowledge perform better, what is a key performance indicator of the firms' being more knowledgeable in the most useful fashion? Many answers exist to this question. However, key performance indicators must explain the source of knowledge, identify the use of knowledge, and accommodate the context specific to the firm. Considering these criteria, which construct should one use as a key indicator to define the firms' smartness? An even bigger dilemma arises when two similar theories collide on the issue.

Absorptive capacity (ACAP) is a central construct in several research areas in organizational studies. Researchers propose several conceptual models of ACAP (Camison & Fores, 2010; Cohen & Levinthal, 1990). Zahra and George (2002) reformulate a term "ACAP" and further broaden the definition to be a set of organizational routines and strategic processes by which firms acquire, assimilate, transform, and apply knowledge to gain and sustain competitive advantage. Researchers widely use these four dimensions of ACAP to empirically test ACAP's influences on a variety of product and firm performance outcomes (Atuahene-Gima, 1992; Jansen, Van den Bosch, & Volberda, 2005; Lichtenthaler, 2009).

ACAP is evidently an indicator of firm performance and seems to fit the criteria as mentioned above, hence can one conclude that a firm with higher ACAP will be smarter than the others? Unfortunately, the answer remains unclear. Most of the past ACAP literature does not pay much attention to the importance of context specific effects of ACAP. In particular, research studies mainly focus on R&D context rather than marketing context when studying ACAP. Besides technological knowledge, market knowledge—customer and competitor intelligence—is a critical component of a firm's ACAP in a free market economy since a firm's central principle and driving force is a competition (or, in other words, the intensity of the rivalry between sellers for the demand of buyers or customers; Dickson, 1992).

Thus, firms that are most alert to learn directly from competitors' moves and strive hardest in their search for more efficient and effective ways to serve their customers' needs will be the most competitive in the market (Dickson, 1992). Significantly, firms with customer and competitor intelligence ACAP can apply and commercialize opportunities for the use of technological knowledge in creating new products, improving quality, or developing process innovation (Teece, 2007; Van den Bosch, Volberda, & de Boer, 1999).

In order to address this shortcoming and answer the key question of how to identify firms' market knowledge, this study proposes a model, integrating performance-enhancing mechanisms of ACAP in a marketing context. Also, the study provides empirical evidence of and insight into how market orientation (MO) enhances a firm's capability to acquire and apply both competitor and customer intelligence; and how these

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two aspects of MO that echo ACAP operationalization enhance firm performance. The goal is to clarify the essence and the role of ACAP in the marketing context in organizational learning and sustainable competitive advantage.

The result will permit an initial comparison of the relative strength of ACAP versus MO in this particular context. The findings also provide insights for managers and executives in managing their market knowledge ACAP to improve customer acquisition & retention as well as firm performance. This study has five additional sections. Following the [Introduction](#), the second section presents the theoretical background and proposed hypotheses. The third section covers research methodology, and the fourth presents the results. The fifth section discusses the main conclusion and managerial implications. Finally, the sixth section outlines limitations of the study and provides direction for future research.

## 2. Theoretical background and hypotheses

The nature of the issue being investigated in this study compels the conceptual basis for the hypotheses to be drawn from two streams of literature: market orientation and absorptive capacity. The MO literature suggests that the essential component of market orientation is learning, which substantially overlaps with the firm's ACAP of market knowledge (i.e., customer and competitor intelligence). The study proposes that the two mechanisms are comparable but distinctive. Specifically, market orientation drives customer acquisition & retention through firm innovativeness, while the realized absorptive capacity is a necessary vehicle transferring the impact of potential absorptive capacity. Moreover, cost/differentiation balance is a moderator to strengthen both relationship streams. Overall, the effects of both relationship streams motivate sales growth and firm profit through customer acquisition & retention (see [Fig.1](#)).

### 2.1. Potential and realized ACAP

The ACAP literature has grown over the past two decades. The first definition of ACAP by [Cohen and Levinthal \(1990\)](#) is “an ability to learn from external knowledge through processes of knowledge identification, assimilation and exploitation.” [Zahra and George \(2002\)](#) reconceptualize and define the term “ACAP” as a firm's dynamic capability pertaining to knowledge acquisition, assimilation, transformation, and application to gain and sustain a competitive advantage. [Lewin and Massini \(2003\)](#) decompose the concept into two dimensions: internal versus external, where the internal dimension relies on the outside-in process of knowledge and the external dimension relies on the management of absorbed knowledge. Furthermore, [Jansen et al. \(2005\)](#) explicitly name the sub-dimensions as potential (knowledge acquisition and

assimilation) and realized absorptive capacity (knowledge transformation and exploitation/application). In addition, strategy scholars empirically examine and demonstrate different developmental paths of the two dimensions. In this line, [Volberda, Foss, and Lyles \(2010\)](#) recommend that “multidimensional characterizations of AC (ACAP) are important because they can explain more variance.” Following the scholars, this study adopts the two dimensions in a conceptual framework and examines the distinctive effects of potential and realized absorptive capacity.

The empirical studies of absorptive capacity substantially focus on the context of R&D. This study emphasizes the advantage of absorptive capacity in the strategic marketing field, particularly competitor and customer intelligence. Several definitions of competitor and customer intelligence with various dimensions exist. For example, [Wright, Pickton, and Callow \(2002\)](#) define competitor intelligence as the activities by which a company determines and understands its industry, identifies and understands its competitors, determines and understands their strengths and weaknesses, and anticipates customer intelligence through their moves. [Kelly \(2006\)](#) defines competitor intelligence as a comprehensive understanding of customers and their behavior, which will enable more pointed customer contact and a higher degree of customer loyalty. In summary, competitor intelligence is the knowledge that enables us to know what competitors have and their competing strategy, while customer intelligence is the knowledge that enables us to know what the customers need and their buying decision model. For simplicity, potential absorptive capacity refers to the extent of the acquisition and assimilation or, in other words, the exploring activities of customer and competitor intelligence. Likewise, realized absorptive capacity in the marketing context refers to the extent of the transformation and application or, in other words, the exploiting activities of customer and competitor intelligence. In addition, since this study examines the ACAP of customer and competitor intelligence, the expected result is to benefit customer relationship management. Accordingly, as one centric outcome of customer relationship, the study proposes that both dimensions of ACAP have positive relationships with customer acquisition & retention.

A challenging point for managing the firm's ACAP of customer and competitor intelligence is that many firms fail to a) consistently acquire and disseminate competitor and customer intelligence collected from or by the front-line units (e.g., marketing and sales managers), b) transform or integrate this knowledge into the general market intelligence system, or c) successfully apply the intelligence to increase their competitive differentiation and/or customer value delivery, which in turn will enhance superior performance ([Festervand, Grove, & Reidenbach, 1988](#); [Le Meunier-FitzHugh & Piercy, 2006](#)). Accordingly, this study proposes that the processes are sequential and the effects occur in a progressive fashion; thus:

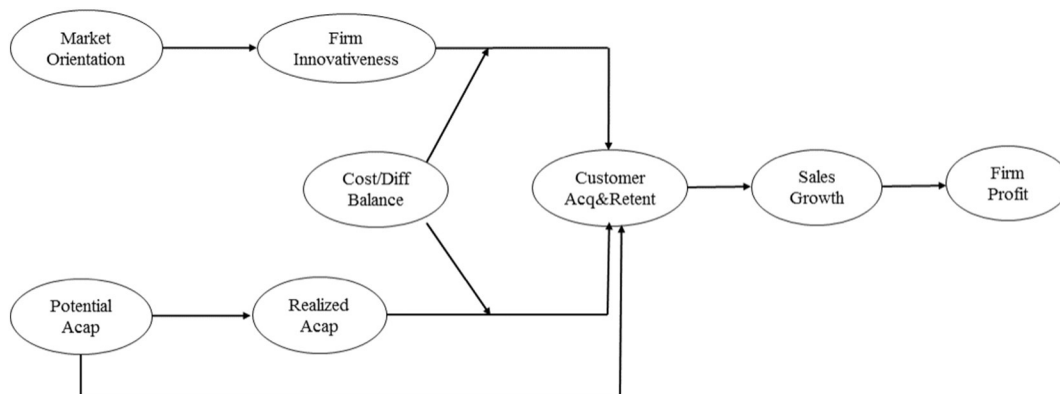


Fig.1. Conceptual framework.

**H1.** Realized absorptive capacity mediates the relationship between potential absorptive capacity and customer acquisition & retention.

## 2.2. Market orientation

Researchers have developed the concept of market and customer orientations for over five decades without a clear distinction among definitions of customer-oriented, market-oriented, and market-driven (Day, 1994). To provide a clearer view, Narver and Slater (1990) conceptualize that market orientation comprises customer orientation, competitor orientation, and inter-functional coordination. In general, front-line units such as marketing, sales, or customer service personnel collect customer and competitor intelligence since personnel in these units have opportunities to directly interact with their customers and to experience competitors' products and services. Organizations manifest a market orientation in several ways with respect to the acquisition, assimilation, transformation, and application of customer and competitor intelligence. The major characteristics and nature of market orientation (e.g., customer and competitor orientation) help stimulate organizational management of intelligence of customers and competitors by increasing the "eagerness to share and help others" (Gupta & Govindarajan, 2000) and encouraging the sharing of intelligence activities either at the individual or group level. However, both customer intelligence and competitor intelligence generated locally by front-line units do not automatically diffuse within the team or throughout the organization due to many barriers such as causal ambiguity, tacit dimension of such intelligence, weak relationships between source and recipient, and lack of motivation to share knowledge (Becker & Knudsen, 2006; Cohendet & Steinmueller, 2000; Osterloh & Frey, 2000; Polanyi, 1962; Reed & DeFillippi, 1990; Szulanski, 1996). Thus, as a strategic complementarity, the essence of market orientation overlaps with absorptive capacity to some extent, but certainly not identical.

Market orientation facilitates the firms to have a more clarified strategic focus and vision and enhances firm innovativeness, which consequently leads to higher competitive advantage and superior firm performance (Hurley & Hult, 1998; Jaworski & Kohli, 1993; Kohli & Jaworski, 1990; Kumar, Jones, Venkatesan, & Leone, 2011). In market-oriented firms, the perspective of an outside-in approach to strategy that emphasizes the importance of the market and customers expands the strategy dialog and opens up a richer set of opportunities for competitive advantage and growth (Day, 2014; Day & Moorman, 2010). The relationship of market orientation–firm innovativeness–performance is well-established in the literature. However, the intermediary of competitive advantage is not mentioned yet. The pursuit of satisfying customer dynamic needs primarily motivates firm innovativeness. Accordingly, researchers and practitioners should consider customers' adoption, satisfaction, commitment, and retention as metrics that evaluate the effectiveness and efficiency of firm innovativeness. Therefore, this study proposes that:

**H2.** Firm innovativeness mediates the relationship between market orientation and customer acquisition & retention.

## 2.3. Moderating role of cost/differentiation balance

On the basis of Porter's (1985) work on generic business-level strategies, a firm's balance in cost and differentiation strategies refers to the extent to which the firm focuses on low cost or differentiation strategy or both. When a firm shifts its strategic focus from cost leadership to be more differentiated with regard to products or services, the firm needs to spend more time and resources on acquiring, assimilating, transforming or integrating, and applying market knowledge in an attempt to create uniquely desirable products or services for its target customers. In particular, knowledge about customers' wants and needs including specific competitors' moves that might affect a firm's

competitive position in either the short or long run is of the essence to a firm's strategic shift towards the differentiated standpoint in the market. In terms of customer acquisition & retention, a firm should ideally maintain cost leadership without sacrificing continually providing up-to-date benefits for customers. Thus, this study expects that:

**H3.** The mediation of (a) firm innovativeness and (b) realized absorptive capacity on customer acquisition & retention is stronger when cost leadership and differentiation are relatively balanced.

## 2.4. Mediating roles of customer acquisition & retention

Most studies in this area focus on firms' absorptive capacity of technological knowledge such as new technology acquired from an external technology source (e.g. Cassiman & Veugelers, 2006; Lichtenthaler, 2009), rather than that of market knowledge such as customer and competitor intelligence. For example, most previous operationalizations of ACAP focus on R&D spending, or the proportion of technology or R&D staffs relative to the total number of employees (e.g. Cohen & Levinthal, 1990; DeCarolis & Deeds, 1999). However, previous literature accepts that both technological and market knowledge are critical components of prior knowledge (Lichtenthaler, 2009). In addition, several studies support the claim that a firm's competence in generating and integrating market knowledge can enhance new product advantage (Cooper, 1992; Day, 1994; Griffin & Hauser, 1993) and is a core organizational competence (Hamel & Prahalad, 1994; Li & Calantone, 1998).

Correspondingly, exploratory learning of competitor and customer intelligence facilitates firms in enhancing their capacity to understand changing environments, strengthening creativity, and increasing their ability to spot new market opportunities (e.g., discover a market niche or expand their product lines to preemptively acquire new target segments). Thus, this capacity will contribute to an increase in new customer acquisitions; and thereby enhancing firms' superior performance in meeting emerging needs of customers in the marketplace (Levinthal & March, 1993). Similarly, exploitative learning of competitor and customer intelligence increases a firm's ability to sense the market, retain its incoming market information for accessible retrieval when required, and apply such market knowledge to effectively and efficiently respond to emerging customers' needs, for example, improving product quality or refining after-sale services to retain existing customer bases, thereby improving its customer retention and allowing the firm to reach superior financial and market performance (Day, 1994; Dickson, 1992). Regarding market orientation, understanding customers' dynamic needs and competitive offerings is critical to the success of acquiring new customers. Over time, the switching cost of current customer increases, resulting in higher retention intention and a differential advantage (Kerin, Varadarajan, & Peterson, 1992). Likewise, researchers recognize absorptive capability as a source of competitive advantage. The resultant ambiguity of acquiring, assimilating, transforming and applying customer and competitive intelligence is expected to enhance the competitive advantage in customer relationship, manifested by customer acquisition & retention. Since both market orientation and absorptive capability are promising in developing customer-centric competitive advantage, this study posits that:

**H4a.** Customer acquisition & retention mediates the relationship between absorptive capacity and sales growth.

**H4b.** Customer acquisition & retention mediates the relationship between market orientation and sales growth.

## 3. Methodology

### 3.1. Sample and data collection

To test the proposed model (see Fig. 1), this study deploys a web-based survey with marketing and/or sales managers working for service

and manufacturing companies publicly traded in the U.S. and international stock exchange. Following previous literature (Hult, Ketchen, & Slater, 2005; Slater & Olson, 2001), this study relies on marketing and sales executives to assess the subjective elements of the study since these executives are intensely involved with marketing culture, procedures, and strategic behaviors. Moreover, sales and marketing managers collect and use most of the competitor and customer intelligence. The professional research firm administers the online survey by randomly selecting a sample of 990 qualified respondents from the research firm's proprietary online panel of potential respondents. To ensure the appropriateness and quality of the respondents, this study screens the potential participants based on whether they claim knowledge of the processes and strategy in sales and marketing areas. Participants must fit all of the screening criteria in order to proceed to the survey. This approach is consistent with the selection of key informants knowledgeable about organizational matters by virtue of their position (John & Weitz, 1988). The online survey includes a letter that informs participants about the confidentiality of their responses. To increase the response rate, the respondents received compensation from the marketing research company for participation.

Of the 990 contacts in the sample frame, this study receives 253 responses, yielding a response rate of 25.6%. The study excludes 108 responses due to poor quality or large amounts of missing data on key variables. The final sample consists of 145 usable questionnaires. Following Armstrong and Overton's (1977) procedure to assess non-response bias, the study finds no significant differences between early and late respondents on the scales or the performance indicators. For robustness, the sampling frame comes from multiple industries: chemicals and allied products; industrial, commercial machinery and computer equipment; electronic, electrical equipment and components; electric, gas, and sanitary services; finance, insurance, and real estate services; and others. Respondents have worked with their respective firms for an average of 11.5 years. The independent research firm collects firm information in the survey and verifies the data independently. The study obtains objective firm performance outcomes and firm characteristics (e.g., firm age, number of employees, SIC) from secondary sources—WRDS, annual reports, and company web sites—to avoid common methods bias.

### 3.2. Measures

In general, this study uses well-validated scales or measures adapted from existing scales reported in previous studies (i.e. Jaworski & Kohli, 1993, Lichtenthaler, 2009) to operationalize the key constructs. In addition, the study develops customer acquisition & retention and cost/differentiation balance scales based primarily on Blattberg and Deighton (1996) and Porter (1985), respectively.

#### 3.2.1. Absorptive capacity

Researchers consider the concept of ACAP as a critical determinant for organization learning and innovation (e.g. Cohen & Levinthal, 1990, Lane, Koka, & Pathak, 2006, Zahra & George, 2002). The study adapts the operationalization of this construct from Lichtenthaler (2009). The 14 items tap two dimensions of ACAP: 1) potential ACAP—knowledge acquisition and assimilation and 2) realized ACAP—knowledge transformation and application. Instead of focusing on technological knowledge context as shown in previous literature, this study aims to explore a context of market knowledge (i.e., customer and competitor intelligence) as a critical component of a firm's ACAP. Therefore, the study adjusts the technological context of all 14 items to reflect the market knowledge context. The first seven items address a firm's activities of environmental scanning and monitoring including observing, acquiring, and absorbing market knowledge from external sources. The examples of adjusted items are: "We are the best in our industry at scanning the environment for new market

knowledge."; "We often acquire market knowledge in response to competitive opportunities."; and "We thoroughly observe customer trends and recent competitor strategic efforts." The other seven items capture the firm's proficiency in transforming and applying knowledge. The examples of revised items are: "We are proficient in transforming market knowledge into new products."; "Our employees are capable of sharing their market expertise to develop new products."; and "We regularly apply market knowledge to develop new products." To ensure the respondents' consistent understanding of the term "market knowledge," the questionnaire explicitly shows the definition at the beginning of the ACAP's survey items as follows: "Market knowledge is defined as knowledge of customer and competitors, for example, customer behaviors and their buying decision model, industry understandings, and competitors' strengths and weaknesses."

The use of holistic measurement approach to the ACAP of market knowledge rather than differentiating between customer and competitor knowledge/intelligence is worthy of specific comment. To support this concept, the respondents are asked to evaluate the extent to which the firm's 1) knowledge on customers and 2) knowledge on competitors will be beneficial/essential to the firm's ability to acquire, assimilate, transform, and apply market knowledge. The findings show no significant differences ( $p = .105$ ) in the mean level of the effect on ACAP between knowledge on customers (mean = 6.0,  $sd = 1.12$ ) and knowledge on competitors (mean = 5.8,  $sd = 1.19$ ). Thus, to reduce complexity of the model, this study deploys a more aggregated measure of ACAP of market knowledge.

#### 3.2.2. Market orientation

According to Jaworski and Kohli (1993) and Kohli and Jaworski (1990), a firm's market orientation refers to organization-wide generation and dissemination of market intelligence on current and future customer needs, including organization-wide responsiveness to such information. A major focus of market orientation on customers and competitors facilitates inter-functional coordination (Narver & Slater, 1990). For example, the firm will conduct more frequent meetings with customers, hold more interdepartmental meetings to discuss market trends, or respond more quickly to satisfy changes in customer needs (Calantone & Di Benedetto, 2007); and thus, stimulating both the exploring and exploiting mechanisms of customer and competitor intelligence. On the basis of prior studies (e.g. Calantone & Di Benedetto, 2007, Narver & Slater, 1990, Parry & Song, 1994, Song & Parry, 1992, 1994, 1996, 1997a, 1997b), this study measures market orientation with eight items that tap the extent to which sales and marketing departments interact with customers and other functional areas when developing competitive intelligence. Also, the survey asks the respondents to evaluate the speed with which the firm can respond to competitive changes or to satisfy changes in customer needs (Calantone & Di Benedetto, 2007).

#### 3.2.3. Firm innovativeness

Innovative firms, especially the successful ones, consistently search for and analyze innovation opportunities within or outside the firm or industry. For example, industry and market changes, demographic changes, changes in perception can all present opportunities for a firm (Drucker, 1998). This study conceptualizes firm innovativeness from two perspectives. The first perspective views firm innovativeness as the rate of adoption or generation of new, timely, and creative products and/or services by the firms, while the second views this term as the firms' openness to new ideas, products, and processes, including their willingness to change and adapt to emerging technologies and market trends (Acur, Kandemir, & Boer, 2012; Calantone, Cavusgil, & Zhao, 2002; Deshpande, Farley, & Webster, 1993; Hurley & Hult, 1998; Zaltman, Duncan, & Holbeck, 1973). Thus, this study uses four items based upon the work of Calantone et al. (2002) to tap these two perspectives of firm innovativeness.

3.2.4. Cost/differentiation balance

On the basis of Porter's (1985) generic business-level strategies of cost leadership and differentiation, this study measures a firm's balance in cost and differentiation strategies with a single item that asks respondents to indicate the extent to which their firms focus on low cost or differentiation strategy or both. The item uses an 11-point scale anchored by "100% Focus on Low Cost Strategy (-5)," "Balance Strategy with Cost and Differentiation Equally Pursued (0)," and "100% Focus on Differentiation Strategy (5)." The study then operationalizes the construct by 5 minus the absolute value of the raw value; thereby recoding the scale from 0 to 5, where 5 indicates "balanced" and 0 indicates "not balanced at all."

3.2.5. Customer acquisition & retention

Blattberg and Deighton (1996) define customer acquisition as a proportion of the prospects that a firm can convert into customers, while referring to customer retention rate as a proportion of the customers that a firm succeeds in keeping. Based upon these definitions, this study develops two subjective items to assess: 1) how well a firm can perform in converting prospects into customers during the past two years, using a 7-point scale anchored by "Very Poor (1)" and "Excellent (7)," and 2) its customer acquisition performance relative to major competitors, using a 7-point scale anchored by "Much Worse than Competitors (1)" and "Much Better than Competitors (7)." Similarly, the study measures customer retention by using two items to assess a firm's performance in retaining existing customers and how a firm performs in keeping customers relative to major competitors.

3.2.6. Firm performance

Consistent with previous research in the broader marketing literature (e.g. Coviello, Winklhofer, & Hamilton, 2006, Homburg & Pflesser, 2000), measurement of firm performance relies on two aspects: 1) sales growth and (2) profitability. Sales growth during the past two years consists of two items: one of which is subjective (sales growth relative to competitors) and the other is objective (change in sales). This study deploys three items to capture firm profitability during the past two years. Two are objective measures (ROI and ROA), and one is subjective (firm profitability). The approach of combining subjective and objective measures is common in the marketing literature (e.g., Calantone et al., 2002).

3.2.7. Control variables

Several factors influence the extent of ACAP and performance outcomes. Consistent with previous literature, this study identifies firm size and age as the exogenous control variables. Firm size, defined as the number of employees, can affect a firm's performance. Larger firms tend to possess more resources and market power, as compared to smaller firms, which allows enhanced performance (Chandy & Tellis, 1998). Firm age, referred to as the number of years in operation since establishment, is another control variable that can affect a firm's performance since more complementary resources are likely to be built or acquired with increasing firm age (Teece, 1986). Moreover, this study includes the lagged firm profit, indicated by lagged profit, lagged ROA and lagged ROI as the endogenous control variables to partially account for the causal effects of this cross-sectional study.

4. Data analysis and results

4.1. Assessing the reliability and validity of measures

This study estimates the equations in the proposed model simultaneously using partial least squares, the most accepted variance-based structural equation modeling technique (PLS-SEM). The main reason for using PLS-SEM is that a research objective of this study is to identify and predict key driver constructs in an exploratory manner. PLS-SEM estimates the path relationships with the objective of minimizing the

error terms and maximizing R<sup>2</sup> values of the target endogenous constructs; thus, this feature helps achieve the prediction and theory development objectives of this study (Hair, Hult, Ringle, & Sarstedt, 2013). In addition, other reasons to choose this method include: 1) PLS-SEM has no identification issues with small sample sizes, 2) the method is a non-parametric method that does not require multivariate normal distribution, thereby placing minimum requirements on measurement levels, and 3) this method can handle complex relationships as contained in the proposed model (Chin, 1998; Hair et al., 2013; see Fig. 1). To ensure adequate sample size, this study conducts a power analysis together with a 10 times rule as suggested by Barclay, Higgins, and Thompson (1995). Since the maximum number of independent variables in the measurement and structural model of this study is seven, a significant level ( $\alpha$ ) of 0.05 (one-tailed) and a desired statistical power (1- $\beta$ ) of 0.80 for detecting R<sup>2</sup> value of at least 0.25 or 0.10 would require a minimum sample size of 72 or 135 accordingly (Hair et al., 2013, p.21). This figure is within the bound of the sample size (N = 145) obtained in the study.

With PLS-SEM path modeling, this study assesses the psychometric properties of the measurement instruments including reliability, convergent validity, and discriminant validity using approaches that Fornell and Larcker (1981) develop for a PLS-SEM context. Table 2 provides a correlation matrix, together with details of each construct's composite mean and standard deviation. To assess the reliability of the measures using composite reliability (CR) and average variance extracted (AVE), all scales have CR greater than 0.88, which exceeds the cut-off value Nunnally and Bernstein (1994) suggest; and all scales return AVE values greater than 0.61 in excess of the 0.5 minimum threshold value Bagozzi and Yi (1988, 2012) suggest. To demonstrate convergent validity, all factor loadings, ranging from 0.60 to 0.96, exceed

Table 1  
Validity composition.

Scales	Variables	Factor loadings
Potential absorptive capacity AVE = 0.71 CR = 0.95	PotentAcap1	0.86
	PotentAcap2	0.91
	PotentAcap3	0.89
	PotentAcap4	0.88
	PotentAcap5	0.71
	PotentAcap6	0.81
	PotentAcap7	0.83
Realized absorptive capacity AVE = 0.74 CR = 0.95	RealizAcap1	0.91
	RealizAcap2	0.90
	RealizAcap3	0.88
	RealizAcap4	0.77
	RealizAcap5	0.85
	RealizAcap6	0.85
	RealizAcap7	0.86
Market orientation AVE = 0.61 CR = 0.90	MO1	0.83
	MO2	0.78
	MO3	0.80
	MO4	0.62
	MO5	0.82
	MO6	0.81
	MO7 <sup>a</sup>	
	MO8 <sup>a</sup>	
Firm innovativeness AVE = 0.75 CR = 0.92	FirmInnov1	0.88
	FirmInnov2	0.89
	FirmInnov3	0.86
	FirmInnov4	0.84
Customer acquisition & retention AVE = 0.77 CR = 0.93	CusAcq1	0.89
	CusAcq2	0.91
	CusRetent1	0.82
	CusRetent2	0.87
Sales growth (sales) AVE = 0.83 CR = 0.91	SubGrowth	0.90
	ObGrowth	0.92
Profit AVE = 0.71 CR = 0.88	Profit	0.61
	ROI	0.94
	ROA	0.94

<sup>a</sup> Items are dropped from the scale after measurement purification.

the 0.5 guideline (Bagozzi & Yi, 2012; Peterson, 2000). Table 1 displays details of factor loadings, CR, and AVE. The study assesses discriminant validity by examining: 1) inter-construct correlations, which should significantly depart from 1.0 (Bagozzi, Yi, & Phillips, 1991) and 2) the square root of AVE (i.e., the diagonal values in Table 2), which should exceed the correlations among constructs (i.e., the off-diagonal values in Table 2). According to Table 2, all correlations are significantly smaller than 1.0 and the square root of AVE or diagonal values are significantly higher than the construct correlations or off-diagonal values, indicating that each construct shares more variance with their measures than with other constructs in the model (Fornell & Larcker, 1981). These results collectively support the reliability, convergent validity, and discriminant validity of all constructs. These psychometric properties are sufficiently strong to enable an interpretation of structural model parameters.

Finally, since the collected survey data are cross-sectional, this study undertakes a test for common method variance effects, using Lindell and Whitney's (2001) marker variable assessment test. Results show that for all significant effects of the antecedents and their consequences on the dependent variable, the corresponding bivariate correlation coefficients remain statistically significant at  $p < 0.05$  when partialling out an unrelated "marker variable" (Lindell & Brandt, 2000; Lindell & Whitney, 2001). Thus, the effects due to common method bias are negligible. The above analysis and the fact that this study deploys secondary data from Compustat, annual reports, and company web sites for firm performance outcomes and control variables, provide confidence that common method bias does not compromise the results of the proposed model.

#### 4.2. Structural model

This study tests the hypotheses using PLS-SEM with SmartPLS 3.2.3 software (Ringle, Wende, & Becker, 2015). To assess nomological validity, the study deploys the variance explained and the sign including significant level of path coefficients, even though PLS-SEM does not attempt to minimize residual item covariance, and thus, does not provide summary statistic to measure the overall fit of the proposed model (Hair et al., 2013; Smith & Barclay, 1997). Fig. 2 shows the proposed path model.

Recent studies on the methodology of testing mediation suggest only one requirement to establish mediation, that the indirect effects from X to M and from M to Y be significant (Hayes, 2009; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher, Rucker, & Hayes, 2007; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010). Consistent with these previous studies, this study focuses on examining the significance of indirect effect, resulting from bootstrapping, as the fundamental criteria examining mediations. For indirect effects in PLS-SEM, the study obtains total, direct, and indirect effect estimates and significance using a bootstrapping estimation procedure with 500 resamples (Hair et al., 2013). This study compares the difference in the size of total and indirect effects to justify full or partial mediation.

**Table 2**  
Correlation matrix and descriptive statistics of measures.

	MO	F_Inov	CosDif	PotentAcap	RealizAcap	AcqRet	S_Grow	Profit
MO	<b>0.78</b>							
F_Inov	0.59	<b>0.81</b>						
CosDif	0.09	0.03	<b>N.A.</b>					
PotentAcap	0.51	0.65	0.02	<b>0.84</b>				
RealizAcap	0.65	0.76	0.04	0.80	<b>0.86</b>			
AcqRet	0.49	0.59	−0.05	0.50	0.58	<b>0.88</b>		
S_Grow	0.10	0.26	−0.05	0.17	0.21	0.23	<b>0.91</b>	
Profit	0.10	0.21	−0.12	0.18	0.17	0.20	0.45	<b>0.84</b>

Note: The diagonal elements are square root of the AVE.  
N.A. = not applicable.

#### 4.3. Effects of absorptive capacity

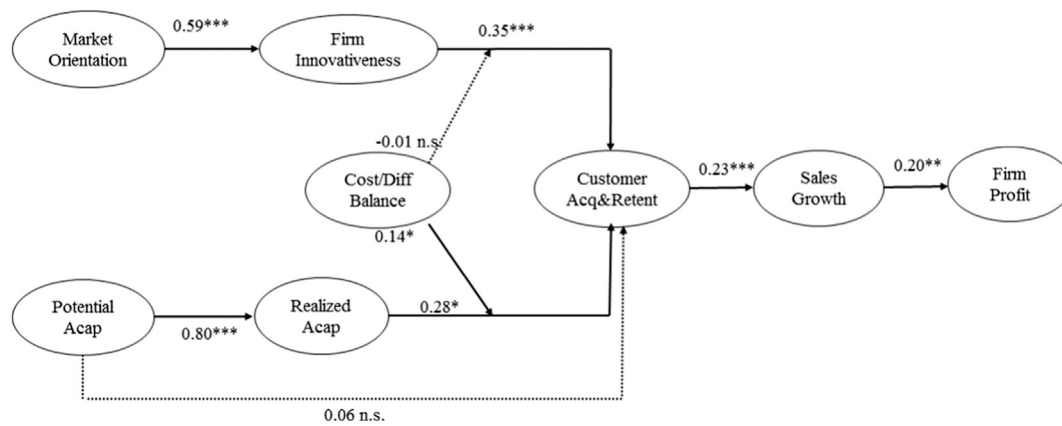
The path model indicates that the relationship between potential absorptive capacity and customer acquisition & retention is not significant, while the relationship between realized absorptive capacity and customer acquisition & retention is significant and positive ( $b = 0.28$ ;  $t$ -statistic = 1.87,  $p$ -value < 0.05). Moreover, the mediation test indicates that the total effect of potential absorptive capacity is 0.28 ( $t$ -statistic = 2.99,  $p < 0.05$ ), and this total effect is equal to its indirect effect. Thus, the results suggest that realized absorptive capacity fully mediates the effect of potential absorptive capacity, thereby supporting Hypothesis 1. Although this study links potential absorptive capacity to customer acquisition & retention when conducting the analysis, the result shows that the direct path is not significant. This result implies that the process of intelligence transformation and application is sequential and required to achieve strategic goals. The R-square of realized absorptive capacity is 63.04%, indicating the rest unexplainable amount of unexplained variance by potential absorptive capacity. Therefore, the findings suggest that separation of potential and realized absorptive capacity is empirically legitimate.

#### 4.4. Effects of market orientation

Hypothesis 2 posits that firm innovativeness mediates the relationship between market orientation and customer acquisition & retention. The results indicate that the total effect of market orientation on customer acquisition & retention is significant and positive ( $b = 0.21$ ;  $t$ -statistic = 3.38,  $p$ -value < 0.001). In addition, the indirect effect of market orientation on customer acquisition & retention through firm innovativeness is significant and equal to its total effects, suggesting a full mediation of firm innovativeness. Thus, the findings support Hypothesis 2.

#### 4.5. Moderating effects of cost/differentiation balance

Hypothesis 3 posits that cost/differentiation balance moderates the mediations of (a) realized capacity and (b) firm innovativeness. The main effect of cost/differentiation balance on customer acquisition & retention and the interaction between firm innovativeness and cost/differentiation balance are not significant, suggesting that the desired impact of firm innovativeness is probably orthogonal to the cost/differentiation balance. However, the interaction between realized capacity and cost/differentiation is significant and positive ( $b = 0.14$ ;  $t$ -statistic = 1.74,  $p$ -value < 0.05). The result demonstrates that cost/differentiation balance strengthens the effect of realized capacity on customer acquisition & retention. The distinctiveness of the moderations suggests that the impacts of market orientation and absorptive capacity on customer acquisition & retention are comparable but not identical. Therefore, the findings lend support to Hypothesis 3a but negate Hypothesis 3b.



\*  $p < .05$  (one-tailed test for hypotheses, and two-tailed test for control variables).

\*\*  $p < .01$  (one-tailed test for hypotheses, and two-tailed test for control variables).

\*\*\*  $p < .001$  (one-tailed test for hypotheses, and two-tailed test for control variables).

Fig.2. Path model.

#### 4.6. Mediating effects of customer acquisition & retention

Market orientation ( $b = 0.05$ ;  $t$ -statistic = 2.17,  $p$ -value < 0.05), potential ( $b = 0.06$ ;  $t$ -statistic = 2.17,  $p$ -value < 0.05) and realized absorptive capacity ( $b = 0.06$ ;  $t$ -statistic = 1.52,  $p$ -value < 0.05) all demonstrate significant and positive total effects on sales growth. To further examine the mechanisms, this study finds that both potential absorptive capacity and realized absorptive capacity have significant indirect effects on sales growth and such indirect effects are equal to their total effects on sales growth. Thus, this study concludes that customer acquisition & retention fully mediates the effect of absorptive capacity on sales growth. Likewise, the indirect effect of market orientation on sales growth is significant and equal to its total effects, implying a full mediation. Thus, the results confirm both Hypotheses 4a and 4b.

In addition to hypotheses testing, this study finds that customer acquisition & retention does not directly link to firm profits but through sales growth, but with a significant indirect effect ( $b = 0.05$ ;  $t$ -statistic = 1.99,  $p$ -value < 0.05). The entire set of full mediations demonstrates strong empirical evidence of the proposed relationship and that “an underlying process can completely account for  $X \rightarrow Y$  relationship” (Rucker, Preacher, Tormala, & Petty, 2011). Overall, except for Hypothesis 3a, the findings support all the proposed hypotheses.

Finally, the lagged firm profit, indicated by the subjective measure, ROI and ROA in the previous year, strongly relates to firm profit ( $b = 0.72$ ;  $t$ -statistic = 13.05,  $p$ -value < 0.001). Nevertheless, the results show that the two exogenous control variables – age and size – do not have significant impact on firm profits. This result suggests that when assessing the change of firm profit, driven by market orientation and absorptive capacity, firm characteristics (e.g., age and size) are not quite mandatory.

## 5. Summary

Despite extant research in ACAP of technological knowledge, previous studies do not explicitly address a broader scope of ACAP to accommodate more general business and diverse industry contexts. This study uses a multi-industry sample ranging from hi-tech manufacturing firms to non-technical service firms in order to increase the generalizability of the benefits of absorptive capacity to a variety of business contexts. In line with the shift of conceptualizing absorptive capacity into two

dimensions – potential and realized – this study further empirically examines the two sub-constructs and the sequential mechanism.

Among researchers and practitioners, the argument that some sort of a dual strategy of both ACAP and MO strategies can mutually enhance innovation and firm performance has gained wide acceptance. The comparative effects of ACAP and MO are surprising indeed. Drawing upon both managerial and marketing strategy streams, this study simultaneously examines the relationship between market orientation and absorptive capacity and how this relationship comparably leads to firm performance through customer acquisition & retention. Both constructs overlap in gaining, internalizing, developing and employing customer and competitor intelligence. Nevertheless, market orientation is more apparent and straightforward. Several research studies examine market orientation by activities and how organizations attain capabilities through practice; while many studies recognize absorptive capacity as more static capabilities and strategic state goals that organizations endeavor to accomplish. Therefore, the study findings support the contention that the two concepts are analogous and distinguishable. Based on the definitions of these two constructs, one would expect both discriminant validity problems in the CFA (measurement model) as well as multicollinearity difficulties in estimation. However, the coupling of market orientation and the operation of the cost versus differentiation strategic vector provide unique effects in the acquisition and retention of customers. This result reveals that rather than being competitive in real applications, these conceptual approaches to the strategy of the learning (knowledge-based) firm are complementary.

In the perspective of this paper, the findings suggest that market orientation and absorptive capacity motivate performance through customer acquisition & retention. The full mediation suggests that customer acquisition & retention completely accounts for the effects of market orientation and absorptive capacity. Blending this strategic framework with a resource-based view, customer acquisition & retention serves as the competitive advantage of a firm. Although several empirical studies extensively measure the benefits of customer acquisition & retention, no study has yet explicated the theoretical base of recognizing customer acquisition & retention as a competitive advantage.

For top executives, this study raises the important role of a firm's ACAP in supporting the market orientation–performance relationship and digs deeper into how a balance in low cost and strong differentiation strategies can facilitate a firm's emphasis on market orientation. The study calls on managers to consider that though a balance of

marketing strategy is important, managers need to pay attention to continuously increase both exploration and exploitation levels. Both the levels and the balance of resource allocation and attention focusing on specific strategies influence a firm's market orientation. The findings suggest that lower levels of both ACAP and MO could incur more risks associated with a firm's innovation processes. For instance, a small amount of resource allocation and attention might allow a firm to have only one or two new product development or quality improvement projects, or explore a possibility of a narrow product line or enter into a single market segment. A firm's limited resource and attention allocation on probe and learn strategy will also make the firm more vulnerable to environmental hostility. On the contrary, a larger volume of resource and attention allocation on both explorative and exploitative strategic focuses allows a firm to be more diversified, and thus enhancing its customer and competitor focuses and encouraging intra-firm coordination, which in turn will make a firm become more flexible and less vulnerable to environmental threats.

## 6. Limitations and future research directions

This study contains some limitations which highlight several avenues for future research. First, one limitation is rooted in the cross-sectional nature of the results, which prevents the establishment of the causal effects of absorptive capacity over time, although the study includes the lagged firm performance as a control variable taking account for the variation in firm performance initially. Second, this study emphasizes the consequences of market knowledge ACAP, its complementary function in addition to market orientation on firm performance, and the intermediary role of customer acquisition & retention, but this study does not address strategic antecedents of absorptive capacity of customer and competitor intelligence.

Several issues, which may highlight worthwhile avenues for future research, arise from this study. First, the model does not purport to represent all possible consequences of market knowledge ACAP. This study contributes to existing ACAP literature by investigating ACAP in a broader business context. The contribution is important because the study moves the concept of ACAP beyond a technology-oriented focus. Further research may also account for other organizational and marketing consequences, such as the success of multi-national organization and international business, as more proximate managerial and marketing consequences of ACAP. Second, this study investigates the different effects between two dimensions—potential and realized—of ACAP. Though these two dimensions prove to be crucial in previous ACAP research, other dimensions of ACAP (e.g., routines versus non-routines (or extra work)) are also worth exploring.

Finally, although the samples include firms publicly listed in the U.S. and international stock exchange, key informants are limited to managers who primarily work in the U.S. Thus, future research should examine the generalizability of the results in different cultural contexts. A study of cultural interactions between two groups of entities (e.g., firms and countries) may offer insight into how firms manage, control, and reward their ACAP-related processes.

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