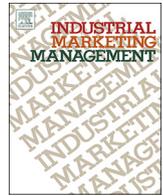




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Research paper

# The relationship between marketing agility and financial performance under different levels of market turbulence

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## ABSTRACT

Marketing agility is an example of dynamic capability that has significant influence on ordinary capabilities leading to superior financial performance. This makes it of interest to marketing managers. Yet the way in which this capability aligns with turbulent market environments to simultaneously influence ordinary capabilities and performance has not been adequately examined and empirically tested. This study seeks to close this gap by positing that marketing agility has both direct and indirect (through innovation capability which is an ordinary capability) impacts on financial performance. However, these relationships are moderated by market turbulence to yield both mediated moderation and moderated mediation effects. The study was undertaken in the Chinese food-processing industry where a sample of 518 companies participated. This provides an opportunity to validate theory developed in the western economies and to generalize some previous findings. Contrary to received literature we found that the impact of innovation capability on financial performance is stronger under low market turbulence; and that market turbulence moderates the indirect relationship between marketing agility and financial performance. The indirect effect is stronger when market turbulence is low than when it is high. Implications for managers and academia are discussed and limitations of the study are pointed out.

## 1. Introduction

In dynamic business environments, firms continuously face challenges of shifting customer demand, intensified competition and technological advancements (Roberts & Grover, 2012). Failure to respond with agility and rapidity to these challenges may result in significant financial losses.

The concept of agility first emerged as a management topic in the early 1990s, mainly referring to agile manufacturing (Iacocca Institute, 1991). Since then, different aspects of agility have attracted interest among researchers in many disciplines such as management, manufacturing, human resource management and marketing (Chang, Gong, Way, & Jia, 2013; Eckstein, Goellner, Blome, & Henke, 2015; Roberts & Grover, 2012). In particular, marketing agility has been identified as one factor that enables firms to identify opportunities and respond rapidly to market changes and thus to compete effectively in dynamic markets. However, marketing agility, the focus of this study, has received little attention (Poolton, 2006). In addition, some researchers consider agility as an important dynamic capability (Blome, Schoenherr, & Rexhausen, 2013), because it is a higher-order capability that “enables firms to acquire, integrate and reconfigure resources and dynamically position themselves competitively” (Vickery, Droge, Setia, & Sambamurthy, 2010, p. 7028). However, limited research has been done to determine whether a dynamic capability, such as marketing

agility, has direct or indirect impacts on financial performance. This study is a direct response to Teece, Peteraf, and Leih (2016) who argue that “understanding agility requires an overall framework...Considering agility within dynamic capabilities framework will help managers make higher-quality decisions” (p.9). Furthermore, the question of whether and how dynamic capabilities affect performance is still open to debate, and empirical research on the mediating effects of dynamic capabilities is scarce.

The dynamic capabilities perspective has been criticized for its ill-defined boundary conditions (e.g., Arend & Bromiley, 2009; Schilke, 2014). Currently, there are different views on the effects of environmental dynamism and on the link between dynamic capabilities and firm performance. The first view posits that dynamic capabilities are more important in dynamic environments (Drnevich & Kriauciunas, 2011; Teece, Pisano, & Shuen, 1997). It is argued that when environmental dynamism is low, the potential benefits of dynamic capabilities is limited because there are too few occasions to exercise them effectively (Schilke, 2014). Another group of researchers has stressed that dynamic capabilities are more strongly associated with competitive advantage in moderately dynamic rather than in stable or highly dynamic environments. It is argued that moderate environments are dynamic enough to create opportunities for change but stable enough for organizations to leverage solutions existing in organizational memory (e.g., Schilke, 2014). Still others believe dynamic capabilities are

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**Table 1**  
Definitions of agility.

Reference	Definitions
Sharifi and Zhang (1999)	The ability to cope with unexpected challenges, to survive unprecedented threats posed by the business environment, and to take advantage of changes and opportunities.
Sambamurthy, Bharadwaj, and Grover (2003)	The ability to detect opportunities for innovation and seize those competitive market opportunities by assembling requisite assets, knowledge, and relationships with speed and surprise.
Setia, Sambamurthy, and Closs (2008)	The ability to: discover new opportunities for competitive advantage; harness the existing knowledge, assets, and relationships to seize these opportunities; and adapt to sudden changes in business conditions.
Roberts and Grover (2012)	The degree to which a firm can sense and respond quickly to customer-based opportunities for innovation and competitive action.
Eckstein et al. (2015)	The ability to sense short term, temporary changes in the supply chain and market environment, and to rapidly and flexibly respond to those changes.

important in both dynamic and stable environments as dynamic capabilities are not restricted to fast-paced environments or what are perceived as radically changing environments (Eisenhardt & Martin, 2000; Helfat & Winter, 2011; Protojerou, Caloghirou, & Lioukas, 2012). Although some previous studies have investigated the moderating role of market turbulence on the direct relationship between dynamic capabilities and performance (Drnevich & Kriauciunas, 2011; Schilke, 2014; Wu, 2010), these studies have not determined whether both the direct and indirect links (through ordinary capabilities) between dynamic capabilities and firm performance will be moderated by market turbulence. This is critical for understanding the mechanism of dynamic capabilities, because many researchers believe an indirect link between dynamic capabilities and performance is prominent (Barreto, 2010). Simply testing the moderating effect on the direct link between dynamic capabilities and performance cannot capture the complexity of these relationships. Therefore, it is valuable to answer the following questions: does marketing agility have a higher impact on financial performance under high market turbulence than under low market turbulence? Do the direct and indirect impacts of marketing agility on financial performance vary under different conditions of market turbulence?

Although the literature has concluded that dynamic capabilities are a set of specific and identifiable routines (Eisenhardt & Martin, 2000; Zollo & Winter, 2002), there is still lack of tools for measuring dynamic capabilities. This creates difficulties for managers to measure and evaluate their organizations' dynamic capabilities and use these capabilities to improve firm performance.

This paper addresses these gaps by testing a model of marketing agility (i.e., a specific dynamic capability), innovation capability (i.e., a specific ordinary capability) and financial performance with market turbulence as the boundary condition.

This study makes four main contributions. First, this article contributes to reducing the scarcity of empirical research on the effects of dynamic capabilities on financial performance (Helfat & Peteraf, 2009). Second, this paper further clarifies the mechanism through which dynamic capabilities influence financial performance. This paper also makes a theoretical contribution by offering a new, integrative position on the relationship between marketing agility, innovation capability and financial performance and setting the boundary conditions for these relationships. Both the direct link and indirect link (through innovation capability) between marketing agility and financial performance are investigated. Third, this paper is one of the few papers to discuss the moderated mediation effects. This study addresses the question as to under what conditions dynamic capabilities are most beneficial. Our findings suggest that the dynamic capabilities approach can be valid and useful in both high and low levels of market turbulence, however the development and deployment of dynamic capabilities is most beneficial under low to moderate market turbulence. Lastly, this study was undertaken in a developing economy (China) and in a relatively under researched industry (i.e., the food processing industry), thus providing an opportunity to validate theory that

originated in developed economies and to generalize some previous findings.

The remainder of this paper is organized as follows. First, Section 2 reviews the existing literature on marketing agility, dynamic capabilities and ordinary capabilities. Second, Section 3 describes the hypotheses and presents a research model. Third, Section 4 discusses the design of this study and the methodological procedures followed. Lastly, after presenting the findings of the empirical analysis in Section 5, Section 6 discusses the theoretical contributions and managerial implications, followed by identifying some of the limitations of the study and directions for future research.

## 2. Theoretical framework

### 2.1. Marketing agility

Numerous studies have provided various definitions of agility (see Table 1) arising from different business disciplines such as manufacturing (Eckstein et al., 2015), management (Chang et al., 2013) and marketing (Roberts & Grover, 2012). Common characteristics emerge from these definitions. First, agility is an organizational capability. Firms with strong agility adapt to market changes better than competitors (Roberts & Grover, 2012). Second, the definitions imply that proactiveness, responsiveness, speed and flexibility are primary attributes of agility (Bessant, Francis, Meredith, Kaplinsky, & Brown, 2001). Third, agility implies sense and response (Eckstein et al., 2015; Roberts & Grover, 2012). Agility is both proactive and reactive. It involves both proactively creating changes, and rapidly sensing and responding to opportunities and threats (Eckstein et al., 2015; Roberts & Grover, 2012). Fourth, agility can be domain-specific. Firms may be agile in one or more domains, such as customer-based processes or product development (Roberts & Grover, 2012).

Discussions on marketing agility are in its early stages. Accardi-Petersen (2011) defined marketing agility as “the ability to outpace a firm's competition in the marketplace by being nimble enough to realign resources as necessary” (p.41). However, this definition is limited in terms of developing frameworks for measuring this concept which is critical at the early stages of these discussions. Accardi-Petersen (2011) suggests that marketing agility enables firms to adapt marketing effort to quickly and effectively respond to changing customer needs, market conditions and strategic growth demands. Firms with high marketing agility plan for change (Accardi-Petersen, 2011). Their marketing departments cooperate with other departments to simultaneously meet customer and firm needs (Accardi-Petersen, 2011). Marketing agility suggests proactivity. Firms anticipate customer demand and the acquisition and retention of customers. Marketing agility also implies active research to understand current and potential needs (Poolton, 2006). Poolton (2006) suggests that marketing agility is an element of agility strategic frame. Both manufacturing agility and marketing agility are critical for firms to compete effectively. Marketing agility subsumes both customer agility and marketing sensing capability.

Customer agility emphasizes firms' ability to sense and respond to customer-based opportunities (Roberts & Grover, 2012), while marketing agility is the ability to anticipate as well as sense and rapidly respond to marketing opportunities. Agile firms do not limit themselves to monitoring customer-related opportunities, but also collect information from competitors, distributors and suppliers.

In light of these notions, this study considers agility from a marketing perspective and defines marketing agility as a firm's ability to proactively anticipate and sense marketing opportunities, and to respond quickly and flexibly to these opportunities to better satisfy customer needs. Sherehiy, Karwowski, and Layer (2007) suggest that the core characteristics of agility are flexibility, responsiveness, speed, culture of change, integration and low complexity. The extant research identifies four central facets of agility: proactiveness, responsiveness, speed and flexibility (Sherehiy et al., 2007; Zhang, 2011). As such, this study focuses on these facets to conceptualize marketing agility. For the purpose of this study, the definitions of these aspects are: Proactiveness is a firm's ability to use marketing approaches to anticipate and stimulate demand (Poolton, 2006). Responsiveness is an ability to identify changes in demands and market opportunities and respond. Speed refers to the ability to anticipate and respond to market opportunities and threats rapidly and effectively. Flexibility is the ability to efficiently and effectively produce different combinations of products at volumes matched to market needs (Braunscheidel & Suresh, 2009).

It is noted that marketing agility differs from market orientation. Market orientation reflects organization-wide generation and dissemination of and response to market intelligence pertaining to customer needs (Jaworski & Kohli, 1993). Market orientation is rooted in information processing. Information is gathered, disseminated across departments, and acted upon, while agility is not necessarily reliant on information processing (Overby, Bharadwaj, & Sambamurthy, 2006). Firms may act with agility without disseminating information across departments. Disseminating information across departments may delay responses and reduce agility (Overby et al., 2006). Agility is the ability to rapidly and creatively reconfigure available options yielding the benefits from unpredictable business changes (Nemkova, 2017), while market orientation does not indicate speed and flexibility.

## 2.2. Dynamic capabilities view

This study develops the model drawing on the dynamic capabilities perspective. Dynamic capabilities are defined as higher-level competences that determine the firm's ability to integrate, build, and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments (Teece, 2012). The resource base includes tangible and intangible resources as well as ordinary capabilities (Helfat & Peteraf, 2009). Some core aspects of dynamic capabilities include: identification and assessment of an opportunity (sensing); mobilization of resources to address an opportunity (seizing) and continued renewal (transforming) (Teece, 2014). Ordinary capabilities are defined as zero order capabilities that allow firms to make a living (Winter, 2003) and execute day-to-day activities (Pavlou & El Sawy, 2011).

Dynamic capabilities and ordinary capabilities differ in many ways (see Table 2). Ordinary capabilities allow firms to operate in the present (Winter, 2003). They are "static" (Morgan, Katsikeas, & Vorhies, 2011), and need dynamic capabilities for renewal or reconfiguration. Dynamic capabilities extend, modify, change, and/or create ordinary capabilities (Pavlou & El Sawy, 2011; Teece, 2014). In addition, dynamic capabilities enable firms to stretch beyond current routines to solve problems in evolving environments (Zahra, Sapienza, & Davidsson, 2006). Thus, they are future-oriented high-order capabilities (Ambrosini & Bowman, 2009). However, dynamic capabilities do not in themselves necessarily lead to a marketable product (Helfat & Peteraf, 2003).

## 2.3. Marketing agility as a dynamic capability

Agility is an important dynamic capability (Blome et al., 2013; Gligor, Esmark, & Holcomb, 2015; Roberts & Grover, 2012). According to Teece (2007), firms continually reconfigure capabilities to avoid organizational inertia. To achieve this, firms must sense and seize opportunities, avoid threats, and maintain competitiveness through enhancing and reconfiguring assets. Researchers suggest that there are many examples of dynamic capabilities (Eisenhardt & Martin, 2000; Gelhard, von Delft, & Gudergan, 2016). Some dynamic capabilities integrate resources, some focus on reconfiguration, while others gain and deploy resources (Eisenhardt & Martin, 2000). The core aspects of dynamic capabilities include sensing and seizing, reconfiguration, leveraging, learning and knowledge creation as well as integration (e.g., Ambrosini, Bowman, & Collier, 2009; Teece et al., 2016). Agility captures the sensing and responding aspects of dynamic capabilities (Roberts & Grover, 2012). Specifically, marketing agility, as defined in this paper, allows firms to rapidly sense and seize marketing opportunities, to reconfigure resources quickly and flexibly according to customers' needs and market competition. More importantly, "marketing agility encourages companies to develop their marketing so that these can be reconfigured at short notice" (Poolton, 2006, p. 691). Dynamic capabilities may have positive, neutral and negative effects on performance (Ambrosini & Bowman, 2009; Zahra et al., 2006). This means that dynamic capabilities are not tautologically related to business performance and are distinct from ordinary capabilities. Thus, the dynamic capability framework is the most appropriate framing for marketing agility.

## 2.4. Innovation capability as an ordinary capability

Innovation capability is defined as the ability to introduce new products, processes and systems through continuous knowledge and idea transformation (Lawson & Samson, 2001). Firms with high innovation capability consistently bring high quality products to market faster, more frequently and at lower costs than competitors. These firms use marketing and process innovation to add values for customers (Lawson & Samson, 2001).

Previous research indicates that innovation can occur in any value-creating activity, suggesting that it should be conceptualized as covering a broad range of activities (Rothwell, 1992), however, past research on innovation was criticized due to its bias toward technological innovation. Some research suggests that firms undertake both technological and non-technological innovations (Lin, Chen, & Chiu, 2010). Since the purpose of this article is to analyze how marketing agility influences the whole innovation activity of firms, the present study adopts a broad concept of innovation. Specifically, this study examines three most prominent aspects of innovation capabilities: product innovation, marketing innovation and process innovation (Liao, Fei, & Chen, 2007; Lin et al., 2010), including both technological and non-technological innovations. *Product innovation capability* refers to providing differentiated or new products to the market or modifying existing products in terms of function, quality, consistency and appearance (Liao et al., 2007). *Marketing innovation capability* refers to using new approaches in market research, price-setting, market segmentation, advertising and promotions, and retailing channels (Lin et al., 2010). *Process innovation capability* refers to creating and improving production methods and work process, as well as incorporating new operating systems to improve production efficiency (Lin et al., 2010).

Innovation capability has been considered as an ordinary capability (Camisón & Villar-López, 2014; Pavlou & El Sawy, 2011). Zahra et al. (2006) suggest the word 'dynamic' distinguishes ordinary capability (e.g., the ability to develop new products) from dynamic capability (e.g., the ability to reform the way a firm develops new products). In this view, innovation capability is an ordinary capability because it directly creates value through producing new products or services, and

**Table 2**  
Summary comparison of ordinary capabilities and dynamic capabilities.

	Ordinary capabilities (Operational, Substantive)	Dynamic capabilities
Similarities	Collections of routines (Winter, 2003) To some extent both are quite stable phenomena (Ambrosini & Bowman, 2009)	
Differences	Competing today (Ambrosini & Bowman, 2009) Enable a firm to make a living in the present (Winter, 2003) The ability to execute day-to-day activities (Pavlou & El Sawy, 2011) The ability to solve current problems (Zahra et al., 2006) First order capabilities or competencies (Wang & Ahmed, 2007) Technical fitness (Helfat, Finkelstein, Mitchell, & Peteraf, 2007) Example: new product development capabilities (Zahra et al., 2006)	Future oriented (Ambrosini & Bowman, 2009) Enable a firm to alter how it currently makes its living (Teece et al., 1997) Modify ordinary capabilities (Winter, 2003) The ability to change the way the firm solves its problems (Zahra et al., 2006) High-order capabilities (Teece, 2014) Evolutionary fitness (Teece, 2007) Example: the ability to reform the way the firm develops new products (Zahra et al., 2006)

changing marketing activities according to competition. Ambrosini et al. (2009) also argue that the resource base (including ordinary capabilities) is directly linked to rents/profits, but “dynamic capabilities are one step beyond (or two steps beyond) these rent generating activities” (p.19). Similarly, Camisón and Villar-López (2014) argue that technological innovation capability is “the ability to perform any relevant technical function or volume activity within the firm, including the ability to develop new products and processes, and to operate facilities effectively” (p. 2892). Other researchers also suggest that many core processes involved in innovation or new product development (NPD) activities are ordinary capabilities. For example, Pavlou and El Sawy (2011) suggest three operational NPD capabilities are technical NPD capability (i.e., the ability to physically develop new products); customer NPD capability (i.e., the ability to market new products) and managerial NPD capability (i.e., the ability to administer NPD activities). These capabilities allow firms to execute day-to-day activities (Pavlou & El Sawy, 2011). They are “static” in nature (Morgan et al., 2011) and require dynamic capabilities for renewal or re-configuration (Pavlou & El Sawy, 2011).

### 3. Model and hypotheses development

#### 3.1. Marketing agility and financial performance

Agile firms respond to market demands rapidly, thereby gaining greater market share. Agile processes enable better asset usage (Jacobs, Droge, Vickery, & Calantone, 2011). Agility allows firms to exploit their creative potential thus derive greater financial benefits (Roberts & Grover, 2012). While we argue that the relationship between marketing agility and financial performance is mediated by innovation capability, it is acknowledged that innovation capability may not be the only mediator. This leaves the possibility that the direct relationship may still remain significant after controlling for the effects of innovation capability. Thus, hypothesis 1 is consistent with Zhao, Lynch, and Chen (2010).

**H1.** Marketing agility is positively related to financial performance.

#### 3.2. Marketing agility and innovation capability

There are several reasons why marketing agility facilitates innovation capability. First, agile firms proactively seek latent and emerging customer needs, thus having a greater chance to differentiate themselves from competitors by creating new opportunities (Tsai, Chou, & Kuo, 2008). Second, organizations with high marketing agility are more likely to commit to innovation. Flexible resource management and manufacturing facilitate cultural development that supports innovation (Matthyssens, Pauwels, & Vandenbempt, 2005). Third, marketing agility, as a dynamic capability, facilitates change, reconfiguration and renewal of processes, and promotes innovation to achieve a better environmental fit. It is hypothesized that:

**H2.** Marketing agility is positively related to innovation capability.

#### 3.3. Innovation capability and financial performance

Innovation capability is one of the most important determinants of firm performance (Lee, Lee, & Garrett, 2017). Innovation allows firms to create entry barriers, establish a leadership position, open up new distribution channels, and gain new customers to expand market share (Chandy & Tellis, 2000). Innovative products provide value to customers and differentiate firms from competitors (Sandvik & Sandvik, 2003). Marketing innovation can make incremental products more attractive and competitive through making customers perceive a new product as being novel (Lee et al., 2017). Innovation in marketing activities allows firms to more effectively communicate with customers. Process innovation also improves work efficiency and reduces costs. In other words, markets are often dynamic and require firms to engage in continuous innovations and to create new experiences for customers while increasing causal ambiguity for competitors. Thus, it is hypothesized that:

**H3.** Innovation capability is positively related to financial performance.

#### 3.4. The mediating role of innovation capability

Hypotheses 2 and 3 suggest a link that marketing agility is indirectly associated with financial performance. The mediation perspective specifies the existence of an intervening mechanism between an antecedent variable and dependent variable (Baron & Kenny, 1986). Thus, innovation capability is posited as the intervening variable between marketing agility and financial performance.

Innovation capability is an ordinary capability, while marketing agility is a dynamic capability. A dynamic capability shows its value by constantly changing and renewing current resources and ordinary capabilities (Day, 2011), such as the ways firms innovate. Makkonen, Pohjola, Olkkonen, and Koponen (2014) argue that dynamic capabilities allow changes to product portfolio to better satisfy market and customer needs, in other words, to develop and refine innovation capabilities. Lee et al. (2017) found that innovation capability mediates the relationship between the dynamic capabilities and performance. Hence, it is argued that marketing agility does not directly relate to producing a marketable product but creates value indirectly. Marketing agility allows firms to monitor and respond to marketing environment changes and provide value through renewing and reconfiguring innovation capability, which in turn, directly links to financial performance. It is hypothesized that:

**H4.** Innovation capability mediates the relationship between marketing agility and financial performance.

#### 3.5. The moderating role of market turbulence

Researchers argue that dynamic capabilities are more important in a dynamic environment because they contribute to change (Drnevich &

Kriauciunas, 2011) and the value of dynamic capabilities grows in turbulent environments (Teece, 2007). Agility is the ability to deal with turbulence and capture competitive advantage. However, the literature also presents contradictory situations. Some researchers assert that in highly turbulent environments, it is difficult to predict future developments, thus firms rely on external knowledge (Runyan, Droge, & Swinney, 2008), and dynamic capabilities become experiential and are weakly related to performance (Eisenhardt & Martin, 2000). Consistent with most findings, we note that firms with stronger marketing agility can absorb external knowledge faster, leading to better preparedness and deployment of renewed ordinary capabilities. This leads to superior financial performance. Accordingly:

**H5.** . Market turbulence moderates the direct relationship between marketing agility and financial performance. This relationship is stronger under high market turbulence than under low market turbulence.

Dynamic capabilities' main role is to renew and reconfigure ordinary capabilities. They are more important in highly turbulent markets (Teece, 2007). Wilden and Gudergan (2015) empirically demonstrate that the positive effects of dynamic capabilities on ordinary capabilities are stronger for firms operating in highly turbulent environments. That is, when a market is highly turbulent, the opportunities and potential for capability improvements increase, and engaging in frequent sensing and quickly responding to new information is critical. Under these conditions, the benefits of deploying marketing capability might outweigh the related costs (Wilden & Gudergan, 2015). Turbulent environments demand timely, relevant information if the firms intend to maintain the alignment of their ordinary capabilities with the external environment (Baum & Wally, 2003). Marketing agility plays an important role in enabling firms to connect with the changing environment and reconfigure their innovation capability. Thus:

**H6.** . Market turbulence moderates the relationship between marketing agility and innovation capability.

This relationship is stronger under high market turbulence than under low market turbulence.

Innovation enables firms to deal with turbulence in external environments and, therefore, is one of the key drivers of long-term success, particularly in dynamic markets (Jiménez-Jiménez & Sanz-Valle, 2011). When firms confront more turbulence, they are facing both increased threats and opportunities. On the one hand, market changes bring more opportunities, therefore strong innovation capability enables firms to capture and satisfy consumers emerging new needs. On the other hand, if firms do not keep up with market changes, they can quickly lose market share to competitors. Thus:

**H7.** . Market turbulence moderates the relationship between innovation capability and financial performance. This relationship is stronger under high market turbulence than under low market turbulence.

Taken together, the above describes a model in which marketing agility is positively related to innovation capability (H2); innovation capability is positively related to financial performance (H3); and these relationships depend on market turbulence (H6 and H7). In sum, these hypotheses suggest a moderated mediation model (Preacher & Hayes, 2008), in which marketing agility is indirectly related (through innovation capability) to financial performance, with this indirect linkage depending on market turbulence (see Fig. 1). When market turbulence is high (low), strong (weak) linkages between marketing agility and innovation capability as well as between innovation capability and financial performance are predicted. This is also consistent with the argument that dynamic capabilities influence financial performance through influencing ordinary capabilities (Zahra et al., 2006) and dynamic capabilities are more important in dynamic environment (Teece et al., 1997). Thus, it is hypothesized:

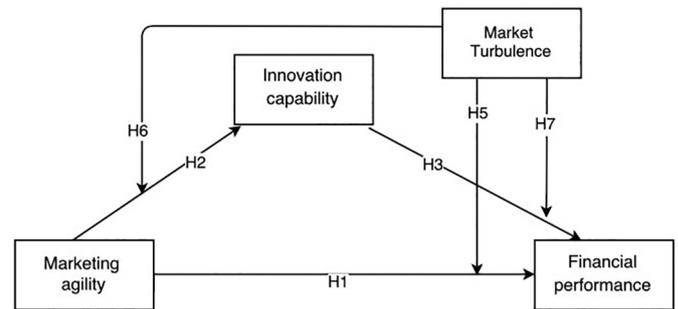


Fig. 1. The conceptual model. Note: The hypotheses of the mediation effects and the conditional mediation effects are not shown.

**H8.** . Market turbulence moderates the indirect relationship between marketing agility and financial performance (through innovation capability). Specifically, the indirect effect will be stronger under high market turbulence than under low market turbulence.

### 3.6. Model overview

The model of relations among the variables is depicted in Fig. 1. First, the figure includes the direct effect of marketing agility on financial performance (H1), the effect of marketing agility on innovation capability (H2), and the effect of innovation capability on financial performance (H3). The model also includes the mediating effect of innovation capability on the relationship between marketing agility and financial performance (H4). Additionally, the model shows the conditional effect of market turbulence on the direct relationship between marketing agility and financial performance (H5), on the relationship between marketing agility and innovation capability (H6), and on the relationship between innovation capability and financial performance (H7). Lastly, the model includes the conditional indirect effect of marketing agility and financial performance (through innovation capability) (H8).

## 4. Methodology

### 4.1. Sample and data collection

This study focuses on the Chinese food-processing industry. In the last 20 years, China has experienced fast economic growth and a rapid rise in the number of middle and high-income consumers. The changing market dynamics and fluctuations in raw material supply create major challenges for the Chinese food processing industry. In this industry particularly, being agile in marketing and having superior innovation capabilities are critical for firms to compete against domestic and international competitors. Government statistics indicate there were 36,140 such firms registered in 2013 with annual core business income above US \$3 million (National Bureau of Statistics of China, 2014). The sample was drawn from the Chinese Economic Census business directory database and the Chinese Food Processing Industry database. The survey questionnaire was translated by the researchers from the English language version to Chinese, and was back-translated to ensure that the original meaning of the questions was maintained. 20 marketing managers were selected to pilot the questionnaire and some items were reworded or deleted due to incompatibility with Chinese expression. 1000 firms from 12 major Chinese cities were randomly selected to participate in the study. Senior managers of these firms were contacted, and their participation solicited.

Over a four-month period, managers were presented with the surveys at their places of businesses or at industry events, such as trade shows and conferences. Completed questionnaires were collected in person or returned by mail.

**Table 3**  
Sample composition ( $N = 518$ ).

Number of employees	Firm age (years)	Regions	Position
< 50 (18.2%)	< 3 (12%)	Eastern China (72.3%)	General manager (18.4%)
50–100 (29.6%)	3–5 (15.7%)	Central China (8.1%)	Director (17.5%)
101–200 (17.2%)	6–10 (20.7%)	Western China (14.6%)	Senior Manager (64.1%)
201–400 (11.4%)	11–15 (21.1%)	Northeastern China (5%)	
401–999 (10.2%)	> 15 (30.5%)		
> 1000 (13.4%)			

In total, 600 firms participated and 558 questionnaires were returned. Thirty-three invalid questionnaires and seven questionnaires that indicated a low level of respondent engagement were discarded. This yielded a sample size of 518 (86%) (see Table 3). Most firms had > 50 employees (81.8%), and were more than three years old (88%). This indicates they have experience with issues of agility, innovation and market turbulence. Most firms were in eastern China (67%). The majority of respondents were senior managers (64.1%) and general managers (18.4%), who were aware of the issues under investigation.

The non-response bias was verified through follow-up telephone interviews. The researcher called 25 nonresponding firms. Only information on the firm size, firm age and business type were requested. Their responses were compared with data from the responding firms. No significant differences were found. Thus, non-response bias may not be an issue in this study.

#### 4.2. Measures

The questionnaire included items adapted from the existing literature and some new items. A seven-point Likert-type response scale was used to measure marketing agility and innovation capability. A four-component measure of marketing agility was used. Scales were from studies by Sharifi and Zhang (1999), Poolton (2006), Sandberg (2002), Hoek, Harrison, and Christopher (2001), Braunscheidel and Suresh (2009), Kritchanchai (2004), Theoharakis and Hooley (2003) and Homburg, Grozdanovic, and Klarmann (2007).

Innovation capability was measured using three components. These items were adapted from Lawson and Samson (2001), Wang and Ahmed (2004) and Nasution, Mavondo, Matanda, and Ndubisi (2011). Two new items were developed to fully and accurately capture the aspects of innovation capability (See Appendix 1).

Financial performance items were based on Moorman and Rust (1999). Managers rated their firms' performance relative to their major competitors over the last three years from 1 "much worse" to 7 "much better".

Market turbulence was measured by two items adapted from Trkman and McCormack (2009) and Lichtenthaler (2009). Restaurant preference (a marker variable) was adapted from the studies of Gupta, McLaughlin, and Gomez (2007) to check for common method variance. Firm size, firm age and business type were examined as control variables.

#### 4.3. Reliability and validity

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used for scale validation. Five items were eliminated due to high cross loadings or low standardized loadings, yielding a measurement model with 36 items.

Reliability and validity were checked. This study used composite reliability and Cronbach's alpha to test reliability. Fornell and Larcker's (1981) formula was used to compute composite reliability for each latent variable. All composite reliabilities were above 0.69 (see Table 4), suggesting the scales for each construct were reliable. All Cronbach's alphas were above 0.74.

Content validity was sought by clearly defining and operationalizing constructs. Most measurement items were from existing literature and had been validated in prior studies. In addition, the questions were pilot tested.

CFA results suggest adequate convergent and discriminant validity. Convergent validity was achieved as all standardized factor loadings were greater than the minimum acceptable level of 0.5 and were significant. The measurement model provided a good fit ( $\chi^2 = 473.9$ ,  $df = 174$ ,  $\chi^2/df = 2.72$ ,  $p = .001$ ,  $RMSEA = 0.06$ ,  $GFI = 0.92$ ,  $AGFI = 0.90$ ,  $CFI = 0.95$ ,  $TLI = 0.94$ ). For each pair of constructs, the square root of Average Variance Extracted (AVE) was greater than the correlation between the constructs, satisfying Fornell and Larcker's (1981) discriminant validity specification.

#### 4.4. Common method variance bias test

Common Method Variance bias (CMV) can be controlled for through both procedural and statistical remedies. For procedural remedies, researchers minimized the likelihood of CMV bias by ensuring the anonymity and confidentiality of the participants; improving scale items; informing participants that there is no preferred or correct answer; avoiding complicated wording; and providing clear instructions for completing the questionnaire (Reio, 2010).

The marker-variable technique was used to check CMV bias (Lindell & Whitney, 2001). An unrelated variable (restaurant preference) was designated as the marker variable. The CMV-adjusted correlations among the constructs were computed, using the restaurant preference - firm performance correlation ( $r = 0.11$ ) as a proxy for CMV. All of the significant correlations remained significant after the adjustment. The correlation matrix adjusted for CMV was used to re-analyze the data. The findings were not different from the original.

### 5. Analysis and results

A Structural Equation Model (SEM) (tested in AMOS 24.0) was used to test the H1-H4. Next, a moderated mediation test (Model 59), provided by Hayes' (2012) PROCESS macro, was used to test H5-H8. This macro uses a regression-based framework to analyze statistical models involving moderation, mediation, and their combination, which is termed conditional process modeling. Firm size, firm age and business type were used as control variables.

The SEM model with 5000 bootstrap samples was used. The model fitted the data well ( $\chi^2 = 168.88$ ,  $df = 48$ ,  $\chi^2/df = 3.52$ ,  $p < .001$ ,  $RMSEA = 0.07$ ,  $GFI = 0.95$ ,  $AGFI = 0.91$ ,  $CFI = 0.96$ ,  $TLI = 0.93$ ). As can be seen in Table 5, the direct effect of marketing agility on financial performance ( $\beta = 0.45$ ,  $t = 3.72$ ,  $p < .001$ ), marketing agility on innovation capability ( $\beta = 0.88$ ,  $t = 16.37$ ,  $p < .001$ ), and innovation capability on financial performance ( $\beta = 0.25$ ,  $t = 2.18$ ,  $p < .05$ ) were all significant. Therefore, H1, H2 and H3 were all supported. The indirect effect of marketing agility on financial performance was 0.22 and significant ( $t = 3.70$ ,  $p < .001$ ). Thus, H4 was supported.

As can be seen from the results of PROCESS macro in Table 6, the interaction between marketing agility and market turbulence on financial performance was positive and significant ( $\beta = 0.12$ ,  $t = 2.17$ ,  $p < .01$ ). Thus, H5 was supported. Using innovation capability as the

**Table 4**  
Correlations and descriptive statistics.

Variable	Mean	SD	CR	1	2	3	4	5
1. Marketing agility	5.14	0.96	0.83	0.86				
2. Innovation capability	4.97	1.07	0.87	0.72***	0.91			
3. Financial performance	4.89	1.22	0.83	0.41***	0.42***	0.89		
4. Market turbulence	4.69	1.30	0.70	0.24***	0.28***	0.24***	0.85	
5. Restaurant preference	6.26	0.93	0.83	0.20***	0.22***	0.11*	0.17***	0.78
Cronbach's alpha				0.84	0.87	0.75	0.86	0.80

Note: \*\*\* $p < .001$ , \*\* $p < .05$  (two-tailed test). Zero-order correlations appear below the diagonal. Bold numbers on the diagonal show the square root of AVE; CR = Composite reliability.

**Table 5**  
SEM results of the mediation model.

	Innovation capability	Financial performance
	$\beta$	$\beta$
Firm size	0.05	0.03
Firm age	-0.03	0.02
Business type	-0.01	-0.02
Marketing agility	0.88***	0.45***
Innovation capability		0.25*

Note: unstandardized regression weights are shown.

\*\*\*  $p < .001$ .  
\*  $p < .05$ .

**Table 6**  
Model coefficients for the conditional process models.

Predictor	$\beta$	SE	t	CI
Innovation capability (IC)				
Constant	-0.66	0.67	-0.99	-1.97, 0.65
Firm size	-0.01	0.03	-0.30	-0.05, 0.04
Firm age	-0.03	0.03	-1.21	-0.09, 0.02
Business type	0.01	0.01	0.34	-0.02, 0.03
Marketing agility (MA)	1.02***	0.012	8.32	0.78, 1.26
Market turbulence (MT)	0.37**	0.14	2.61	0.09, 0.64
<b>MA <math>\times</math> MT(H6)</b>	-0.05	0.03	-1.92	-0.01, 0.01
Financial performance				
Constant	1.90	1.01	1.87	-0.09, 3.90
Firm size	-0.07	0.03	-2.06	-0.02, 0.14
Firm age	0.06	0.04	1.52	-0.02, 0.14
Business type	0.03	0.02	1.88	-0.01, 0.06
Innovation capability (IC)	0.70**	0.25	2.82	0.21, 1.19
Marketing agility (MA)	-0.24	0.27	-0.90	-0.78, 0.29
<b>IC <math>\times</math> MT(H7)</b>	-0.10	0.05	-1.91	-0.19, 0.01
Market turbulence (MT)	-0.02	0.22	-0.11	-0.45, 0.40
<b>MA <math>\times</math> MT(H5)</b>	0.12*	0.05	2.17	0.01, 0.23

Note:  $n = 518$ , CI = 95% confidence interval. Unstandardized regression coefficients were reported. Bootstrap samples = 5000. One tail t-test was used for interaction terms.

\*\*\*  $p < .001$ .  
\*\*  $p < .01$ .  
\*  $p < .05$ .

dependent variable, the interaction of marketing agility and market turbulence was not significant ( $\beta = -0.05$ ,  $t = -1.92$ ,  $p = .06$ ). Thus, H6 was not supported. However, since this was a directionally stated hypothesis, using a one-tail t-test, this could be argued to be significant. The results also indicated that when financial performance was the dependent variable, the interaction coefficient of innovation capability and market turbulence was negative and not significant ( $\beta = -0.10$ ,  $t = -1.91$ ,  $p = .06$ ). Thus, H7 was not supported. Similarly, since this was a directionally stated hypothesis, using a one-tail t-test, this could be argued to be significant.

As can be seen in Table 7, results indicated the conditional indirect effects of marketing agility on financial performance (through

innovation capability) were significant at low and moderate values of market turbulence (boot indirect effect = 0.32; 95% boot CI = 0.14, 0.51;  $p < .001$ ; boot indirect effect = 0.20; 95% boot CI = 0.09, 0.31;  $p < .01$ ), but not at higher value of market turbulence (boot indirect effect = 0.07; 95% boot CI = -0.04, 0.25;  $p > .05$ ). Therefore, H8 was not supported. Table 8 summarizes all the hypotheses tested.

## 6. Discussion

Drawing on the dynamic capabilities perspective, this study examined the links among marketing agility, innovation capability and financial performance. We also investigated the moderated mediation effects of market turbulence in the relationship between marketing agility and financial performance. Hypotheses 1–5 were supported. More specifically, we found marketing agility both directly and indirectly influenced financial performance. The direct relationship between marketing agility and financial performance was stronger under high market turbulence. However, contrary to the hypothesis, we found that the relationship between marketing agility and innovation capability was weakest at high market turbulences (H6). Thus, high market turbulence minimizes the impact of marketing agility on innovation capability. This finding is consistent with Eisenhardt and Martin (2000) that dynamic capabilities become experiential and are weakly related to performance in high turbulent market. The relationship between innovation capability and financial performance was stronger under low market turbulence than under high market turbulence (H7). Market turbulence moderated the indirect relationship between marketing agility and financial performance (through innovation capability). The indirect effect was stronger when market turbulence was low than when it was high (H8).

### 6.1. Theoretical contributions

This study contributes to the marketing agility literature and the dynamic capabilities perspective in the following ways.

First, this article enriches existing dynamic capabilities theory on the performance implications of dynamic capabilities. Most extant research into dynamic capabilities has remained largely theoretical (Wilden & Gudergan, 2015). This study empirically tests the relationships among dynamic capabilities, ordinary capabilities and financial performance.

Second, this research answered a critical question: do dynamic capabilities directly or indirectly influence ordinary capabilities? This is important because the discussion of whether and how dynamic capabilities affect performance is still open to debate (Schilke, 2014; Zhou, Zhou, Feng, & Jiang, 2017) and measuring dynamic capabilities and their effects is difficult (Easterby-Smith, Lyles, & Peteraf, 2009). Specifically, the findings of this study show that marketing agility has both direct and indirect effects on financial performance. The significance of the direct link between marketing agility and financial performance may suggest the existence of other mediators which were not included in the model. We speculate that other ordinary capabilities, such as market orientation, learning orientation and entrepreneurial

**Table 7**

The conditional direct effect of marketing agility to financial performance and indirect effect of marketing agility on financial performance through innovation capability.

	Direct effect				Indirect effect (H8)			
	Direct	SE	t	CI	Boot indirect	Boot SE	P	Boot CI
–1 SD (–1.30)	0.16	0.11	1.48	–0.05, 0.37	0.32	0.09	< 0.001	0.14, 0.51
M (0)	0.32***	0.08	3.96	0.16, 0.47	0.20	0.06	< 0.01	0.09, 0.31
+1 SD (1.30)	0.47***	0.11	4.49	0.26, 0.67	0.09	0.07	> 0.05	–0.04, 0.25

Note: n = 518, CI = 95% confidence interval. Unstandardized results are reported. Bootstrap sample size = 5000. M = mean value of market turbulence (market turbulence was mean centered); –1 SD = one standard deviation below the mean value of market turbulence; +1 SD = one standard deviation above the mean value of market turbulence.

\*\*\*  $p < .001$ .

**Table 8**

A summary of all the hypotheses tested.

Hypotheses	See Tables	Support
H1 Marketing agility→Financial performance	Table 5	Yes
H2 Marketing agility→Innovation capability	Table 5	Yes
H3 Innovation capability→Financial performance	Table 5	Yes
H4 Innovation capability mediates the relationship between marketing agility and financial performance.	Table 5	Yes
H5 Market turbulence moderates the direct relationship between marketing agility and financial performance. This relationship is stronger under high market turbulence than under low market turbulence.	Table 6	Yes
H6 Market turbulence moderates the relationship between marketing agility and innovation capability. This relationship is stronger under high market turbulence than under low market turbulence.	Table 6	Significant, but opposite direction
H7 Market turbulence moderates the relationship between innovation capability and financial performance. This relationship is stronger under high market turbulence than under low market turbulence.	Table 6	Significant, but opposite direction
H8 Market turbulence moderates the indirect relationship between marketing agility and financial performance (through innovation capability). The indirect effect will be stronger under high market turbulence than when it is low.	Table 7	Significant, but opposite direction

orientation, could be potential mediators.

Third, this study adds to the discussion on the relevance of dynamic capabilities across different environments (Helfat & Winter, 2011) by including the impact of market turbulence in the model. There seems to be confusion in the literature whereby some scholars tend to equate the presence of dynamic capabilities with environmental conditions. For example, in their seminal article, Teece et al. (1997) identify a dynamic capability as the firm's ability to address rapidly changing environments. However, Ambrosini and Bowman (2009) and Zahra et al. (2006) argue that one should not confound external conditions with organizational capabilities. In addition, although some researchers explore the contingent effect of dynamic capabilities and firm performance relationships (Schilke, 2014; Wilden, Gudergan, Nielsen, & Lings, 2013), fewer researchers critically explore the mechanism through which dynamic capabilities influence performance such as identifying specific ordinary capabilities under different market turbulence (Karna, Richter, & Riesenkampff, 2016). The results of the simultaneous moderation and mediation test show that our results contradict early findings from Drnevich and Kriauciunas (2011) and Karna et al. (2016), who argue that dynamic capabilities are more important in dynamic environments. The main reason for the different findings is that this study was able to investigate both mediated moderation and moderated mediation effects. Our findings support the emerging consensus that dynamic capabilities are needed in all environmental conditions (Zahra et al., 2006), but their greatest benefit may appear to be when the degree of turbulence is low or moderate. On the other hand, Wilden and Gudergan (2015) only discussed the moderating effect of market turbulence on the relationship between dynamic capabilities and ordinary capabilities. Drnevich and Kriauciunas (2011) only tested how environmental dynamism moderates the relationship between dynamic capabilities and firm performance. Thus, we argue that their models were under specified.

Finally, this study was undertaken in a developing economy (China) and the food processing industry, thus allowing generalization of theory across contexts. The measures were as robust as in prior studies and the

findings could be explained using extant theories. We examine dynamic capabilities in food processing industry as this industry has its unique dynamic environment due to evolving customer expectations for food safety and rapid socio-demographic changes in China. All these factors require strong innovation capability for firms to remain competitive. Additionally, the study of the food processing industry is important as previous research on innovation and dynamic capabilities mainly focused on industries, such as the high-tech and R&D-intensive industries (Tzokas, Kim, Akbar, & Al-Dajani, 2015), upstream oil industry (Stadler, Helfat, & Verona, 2013) and retail sector (Yu, Ramanathan, & Nath, 2014).

## 6.2. Managerial implication

This study has a number of potential implications for managers. First, the study indicates that dynamic capabilities can be identified and measured, and their effects on ordinary capabilities and financial performance can be assessed. The challenge is to assess organizations' dynamic capabilities and develop them before they are actually needed since dynamic capabilities are future oriented. Second, the relationship between dynamic capabilities and financial performance is complex. It can be direct or indirect. Because the predominant relationship is indirect, firms need to develop dynamic capabilities specifically to renew their existing ordinary capabilities not only for their possible direct impacts on financial performance. Our findings suggest that the development and deployment of dynamic capabilities is most beneficial in low to moderate market turbulence to enhance, renew and refresh ordinary capabilities and to keep them fit for purpose. In highly turbulent environments, deploying dynamic capabilities is still required because in such environments existing ordinary capabilities (such as innovation capability) may become less commensurate with the challenges facing the business and may even be outdated (Pavlou & El Sawy, 2011).

Success in deploying dynamic capabilities is to use them more fortuitously, more timeously and ahead of competitors. Since dynamic capabilities are learned and patterned processes, they need to be

embedded in organizational processes and may take time to develop. Implementing marketing agility has implications such as the need for senior management support, having a culture of fast reaction to changing circumstances, fluid structural reconfiguration, decision making delegated where actions need to be taken, and rapid allocation of individuals and resources to priority areas.

## 7. Limitations and future research

This study has several limitations that suggest directions for future research. The use of cross-sectional data limits the rigor of the study since researchers cannot establish cause and effect relationships. A longitudinal study could address this deficiency. This research only investigates one measure of firm performance (i.e., financial

performance). It would be desirable to investigate other marketing performance metrics such as growth in sales, successful launch of new products, customer retention etc. The benefits of marketing agility may extend beyond innovation capability, and we speculate other potential mediators, such as market orientation, learning orientation and entrepreneurial orientation, could be investigated. In this study, we only examine one potential moderator. Future studies could examine others potential moderators, such as technological turbulence, business size and industry type. The agility measurement used in this study reflects manufacturing industries context. However, with minor modifications, future research can use this measurement for service industries. This would greatly enhance theory building and our understanding of the boundary conditions of the examined relationships.

## Appendix 1. Final measurement instruments

Construct	Measurement	Loadings
To what extent your organization undertakes the following practices. Likert scale: 1("not at all") to 7 ("to a very great extent").		
<i>Marketing agility</i>		
Proactiveness $\alpha = 0.86$	We can spot the first indicators of new market threats.	0.80
	We are often the first to seize new market opportunities.	0.83
	We can anticipate new opportunities for market growth.	0.81
Responsiveness $\alpha = 0.81$	We create new preferences by informing customers about new benefits of our products.	0.69
	We can respond to changes in demand without overstocking or losing sales.	0.67
	We can respond quickly to supply volume fluctuations by having suppliers in many regions of the world.	0.69
Flexibility $\alpha = 0.80$	When an unexpected threat emerges, we are able to adjust through resource reconfiguration.	0.75
	We can react to fundamental changes with respect changing the competitor landscape.	0.82
	We can market a wide variety of products within our portfolio.	0.69
Speed $\alpha = 0.87$	We can offer different products through minor modifications to existing ones.	0.75
	We can adjust what we offer to match market needs.	0.79
	We can meet customer's changing needs faster than our competitors.	0.79
Innovation capability Product innovation $\alpha = 0.88$	We compress time from product concept to marketing to respond quickly to the changes in customer needs.	0.75
	We can quickly change our product mix in response to changing market opportunities.	0.87
	We are fast at changing activities that do not lead to the desired effects.	0.78
	We continuously transform market knowledge and ideas into new products.	0.71
	Our product innovation keeps us ahead of the market.	0.86
Marketing innovation $\alpha = 0.87$	We can constantly introduce new products ahead of competition.	0.87
	Our firm introduces new products faster than our competitors. <b>(New)</b>	0.79
	Managers always come up with novel marketing approaches.	0.78
	We regularly review our marketing programs to ensure all market segments are effectively reached.	0.80
	Top managers constantly explore potential new market opportunities.	0.75
Process innovation $\alpha = 0.87$	We constantly implement innovative marketing programs.	0.81
	We constantly benchmark our operating systems to world-class standards.	0.80
	We invest heavily in developing new operating systems.	0.78
	Work processes are constantly updated to increase productivity.	0.75
The extent to which you agree or disagree with each of the statements. Likert scale: 1("strongly disagree") to 7 ("strongly agree"). <i>Market turbulence</i> $\alpha = 0.86$	We adjust processes to changing market demands. <b>(New)</b>	0.81
	In our markets, customer preferences change quickly.	0.71
	New customers we serve are different from our traditional customers.	0.73
	It is very difficult to predict demand for our products.	0.55
<i>Restaurant preference</i> $\alpha = 0.80$	The friendliness of service personnel	0.70
	The availability of healthy meals	0.80
	The cleanliness of the place	0.86
	The presentation of the meal	0.52
Relative to your competitors, in the last three years (or shorter if you are new to the industry) how do you rate your firm's performing on: 1: much worse 2: worse 3: somewhat worse 4: on par 5: somewhat better 6: better 7: much better		
<i>Financial performance</i> $\alpha = 0.75$	Cost	0.66
	Profitability	0.85

Note: Loadings are standard loadings from CFA.  $\alpha$  = Cronbach's alpha.

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