

Marketing Performance Measurement Systems and Firm Performance: Are Marketing Capabilities the Missing Links?

Citation:

[Liang, X.](#) and [Gao, Y.](#) (2020), "Marketing performance measurement systems and firm performance: Are marketing capabilities the missing links?", *European Journal of Marketing*, Vol. 54 No. 4, pp. 885-907. <https://doi.org/10.1108/EJM-05-2018-0302>

Abstract

Purpose – Driven by the growing pressure to justify the contributions of marketing activities, marketers have shown considerable interest in improving their marketing performance measurement systems (MPMSs). The objective of this study is to examine the neglected mediating effect of marketing capabilities on the MPMS-firm performance relationship and to focus on specific aspects of MPMSs that have been largely omitted in the prior research, namely the comprehensiveness and uses of MPMSs.

Design/methodology/approach – A survey was conducted with marketing and senior managers from 210 Irish-based companies. The proposed research model was tested using the SPSS Process macro and structural equation modelling in AMOS 24.

Findings – The three characteristics of MPMSs influence firm performance in different manners: while the diagnostic use of MPMSs hinders the development of market-linking capability and thus negatively influences firm performance, the comprehensiveness of MPMSs positively influences firm performance through its impact on architectural marketing capability, and the interactive use of MPMSs via externally-focused learning and market-linking capabilities.

Practical implications – This study provides insights into how companies can use a comprehensive

MPMS to cultivate specific crucial marketing capabilities and thereby enhance firm performance.

Originality/value – This study contributes to the marketing performance measurement literature by proposing and empirically validating the mediating effect of marketing capabilities on the MPMS-firm performance relationship.

Keywords Marketing performance measurement systems, the use of MPMSs, market-linking capability, externally-focused learning capability, architectural marketing capability

Paper type Research paper

1. Introduction

Marketing academics and practitioners have consistently highlighted the measurement of marketing performance as a complex issue and an important challenge for management (Frösén et al., 2016; Katsikeas et al., 2016; Rust et al., 2004). Driven by the demand for greater marketing accountability and the need to strengthen the role of marketing in firm-level strategy, marketers have developed a keen interest in a range of related issues, such as the identification and selection of marketing metrics (Ambler et al., 2004); the investigation of managerial use of marketing metrics (Mintz and Currim, 2015); the examination of relationships between the marketing function or specific marketing metrics and firm value (Edeling and Himme, 2018; Hanssens and Pauwels, 2016); the evaluation of marketing dashboards (Krush et al., 2016); and the development of marketing performance measurement systems (MPMSs; Frösén et al., 2013; O’Sullivan and Abela, 2007).

Although scholars have coherently demonstrated the importance and complexity of the MPMS-firm performance relationship (e.g., Homburg et al., 2012; O’Sullivan and Abela, 2007), outcomes from the very limited empirical studies in this area have been inconclusive. For instance, O’Sullivan and Abela (2007) reveal that the use of a strong MPMS predicts firm performance and chief executive officer satisfaction, while Homburg et al. (2012) find that MPMSs do not directly affect firm performance and note that the inconclusive results may be largely due to previous studies’ overlooking of the indirect effects of MPMSs on firm performance. Katsikeas et al. (2016, p.13) have also pointed out that “there are usually a number of intervening stages in the marketing-performance outcome chain that may introduce a lot of “noise”, potentially making it difficult to empirically confirm an expected performance relationship, even if it exists”. There is, therefore, a need for further examination of the MPMS-firm

performance relationship and specifically to address questions arising from three significant omissions from prior research set out below.

Firstly, a potential explanation for the inconsistent findings from the existing MPMS-firm performance studies is that these studies have overlooked the mediating role of marketing capabilities. Marketing capabilities are “complex bundles of firm-level skills and knowledge that carry out marketing tasks and firm adaptation to marketplace changes” (Moorman and Day, 2016, p. 6). They are viewed as a firm’s ability to use available resources to perform marketing tasks in ways that achieve desired marketing outcomes (Day, 1994; Morgan et al., 2018). In a more general context, empirical studies have provided abundant evidence of the mediating role of capabilities in translating management processes to firm performance (e.g., Chen et al., 2014; Wamba et al., 2017), but the potential mediation relationship has not been examined in a marketing context (Morgan, 2012). Despite an intensified focus on diverse marketing capability-related issues, such as conceptualizing marketing capabilities, empirically examining their role in explaining firm performance, and identifying important new marketing capabilities that will likely emerge (Morgan et al., 2018), it has been recognized that there is a need to examine the mediating effects of marketing capabilities on the relationship between MPMSs and firm performance (e.g., Krush et al., 2016).

Secondly, although prior empirical studies have examined the influence of specific elements of the MPMS (e.g., the selection of marketing metrics) on firm performance, the potential impact of the comprehensiveness of the MPMS has only received scant attention (Frösén et al., 2016; Homburg et al., 2012). The comprehensiveness of MPMSs denotes the diversity of marketing performance measures used to align with marketing strategy and to reflect the cause-and-effect relationships between marketing

activities and performance outcomes (Hall, 2008; Homburg et al., 2012). Theoretical studies have argued that comprehensive MPMSs can be used as a tool for planning and strategy implementation, a source of organizational learning, and an instrument for market-sensing and customer-linking (Clark et al., 2006; Morgan et al., 2002; Pauwels et al., 2009). However, this theoretical argument has not been mirrored in empirical studies. Given the very limited empirical research in the topic, the exact role of comprehensiveness of MPMSs in explaining firm performance remains largely unknown.

Thirdly, previous research has tended to focus on specific characteristics of MPMSs, e.g., the number of metrics used, the breadth of metric scope, and the strategic alignment of metric selection (see Homburg et al., 2012; O’Sullivan et al., 2009). However, there has been an absence of empirical studies that focus on the ways in which information provided by MPMSs is used. Studies in the performance management literature suggest that an enhanced understanding of how performance measurement systems help improve firm performance may be obtained by investigating their uses rather than their mere existence (Henri, 2006; Mintz and Currim, 2015). Especially, with the traditional focus on the benchmarking use of marketing metrics, a growing number of studies have begun to note its deficiency in adding value to firm performance. For instance, Petersen et al. (2009) highlight that when companies use marketing metrics for benchmarking, they rarely show the relationships between marketing investments and returns, which are essential for effective resource re-allocation. Accordingly, scholars have called for deeper insights into how metrics are used within companies (Mintz and Currim, 2015). Moorman and Day (2016, p.19) also stress that “metrics should not be viewed merely as tools of financial accounting or marketing engineering but as innovations that diffuse in a company. We need research to offer insight into that process, its challenges, and its successes”.

The study was therefore designed to address these specific issues emerging from prior research. It examined the mediating effect of marketing capabilities on the MPMS-firm performance relationship and focused on specific aspects of MPMSs that have been largely omitted from previous studies, namely the comprehensiveness and uses of MPMSs. The paper is structured as follows. The next section presents a summary of relevant literature relating to the MPMS-firm performance relationship. Specifically, it positions the study in the context of three important omissions from prior research which form the motivation for the study. The subsequent sections present hypothesis development and the research design. The data analysis and findings of the study are presented and discussed, followed by theoretical and managerial implications of the study and directions for future research.

2. Theoretical background

2.1 Marketing performance measurement systems: comprehensiveness and uses

Drawing on marketing control theory and prior work of Morgan et al. (2002) and Lamberti and Noci (2010), this study defines an MPMS as an important organizational control system that senior management use to measure marketing performance through a bundle of interrelated key marketing metrics, in order to monitor, control and ensure that marketing resources are allocated, and marketing strategies are implemented to achieve the desired goals of an organization. This definition implies that an MPMS is not merely a set of metrics that measure the inputs and outputs of marketing activities, but also a set of procedures and processes that transform strategies into deliverable actions and monitor the implementation of marketing plans.

One of the key characteristics of an MPMS is its comprehensiveness, which is defined as the diversity of marketing metrics used to align with marketing and business strategies and to reflect the cause-and-effect relationships between marketing activities and performance outcomes (Hall, 2008; Homburg et al., 2012). Thus, this definition of comprehensiveness of MPMSs consists of three dimensions, namely, breadth, strategic fit, and the cause-and-effect relationships. Measurement breadth is conceptualized as “the extent to which the MPMS provides a diverse picture of the marketing function through a variety of financial and nonfinancial as well as leading and lagging measures of marketing performance” (Homburg et al., 2012, p. 59). The marketing discipline has long expanded from measuring only financial outputs to evaluate multi-dimensions of marketing performance (Ambler et al., 2004). Marketing metrics are selected to reflect business strategies so that marketing strategies can be communicated and understood throughout the organization (Kaplan and Norton, 2008). Thus, the strategic fit refers to the extent to which MPMSs reflect strategic marketing targets (Banker et al., 2004). The cause-and-effect relationships describe the extent to which MPMSs provide companies with information to determine the underlying relationships between marketing metrics and firm performance. Understanding the business impact of marketing activities allows companies to show the effectiveness of a specific marketing campaign (Frösén et al., 2013; Katsikeas et al., 2016).

Despite the potential benefits that a comprehensive MPMS might bring to a firm, some studies have questioned the universal need for comprehensive measurement (Frösén et al., 2016; Frösén and Tikkanen, 2016). For instance, Frösén et al. (2016) find that comprehensiveness is essential for large but not small companies. Given the inconclusive findings from the scant empirical literature, there is a clear need to attain a better understanding of the comprehensive nature of MPMSs.

Another key characteristic of an MPMS is how it is used. Recently, scholars have called for deeper insights into how metrics are used within companies (e.g., What individual marketing leader and employee characteristics influence the use of metrics? How marketing excellence can be furthered through the use of controls and incentives?) (Moorman and Day, 2016). The concept of the use of MPMSs is borrowed from the management control literature (e.g., Simons, 1995; Henri, 2006). The literature suggests that companies generally use performance control systems for two purposes: the diagnostic and interactive uses (Ling-ye, 2011; Simons, 1995). The diagnostic use of MPMSs refers to using MPMSs to provide feedback on marketing performance, monitor the progress of marketing strategy implementation, and benchmark actual marketing performance against pre-defined goals (Pauwels et al., 2009; Simons, 1995). This diagnostic use of MPMSs enables companies to benchmark actual marketing performance against pre-defined goals, and provides them with feedback that can be used for internal reporting and external disclosure to stakeholders (Ambler et al., 2004; Henri, 2006). However, some studies contend that a mere diagnostic system cannot guarantee the effectiveness of an MPMS because it may lead to their overreliance on pre-defined financial objectives and their ignorance of exploring new opportunities (Simons, 1995). For instance, Petersen et al. (2009) stress that simply using marketing metrics for benchmarking may fail to generate explicit relationships between marketing activities and resulting performance, thus failing to provide insights into resource allocation.

Therefore, scholars suggest to balance the diagnostic use of an MPMS by using it interactively to encourage communication with organization and expand opportunity-seeking throughout the organization (Simons, 1995). This interactive use of MPMSs refers to companies' usage of MPMSs to foster organizational dialogue and direct organizational attention to crucial performance issues (Henri,

2006; Petersen et al., 2009). In so doing, the interactive use of MPMSs can provide assistance for decision-making and facilitate continuous marketing performance improvement (Lilien et al., 2004; Petersen et al., 2009). Thus, it is argued to be more beneficial to companies (Henri, 2006). For instance, Hupp and Powaga (2004) demonstrate that by using consumer-related metrics to value brands, companies can make better strategic decisions, e.g., the exploration of new market opportunities. It is worth noting that empirical research on the performance implications of the uses of MPMSs is still a relatively new area (Frösén and Tikkanen, 2016; Mintz and Currim, 2015). In this study, we take findings of the diagnostic or interactive use from performance management studies and apply them in a marketing context.

2.2 Marketing capabilities

Dynamic capabilities (DC) theory¹ is a dominant theory that explains firm performance variance by addressing the interaction between various resources or capabilities and the changing environment (Morgan et al., 2018; Teece et al., 1997). It advocates that competitive advantages come not only from the exploitation of existing firm-specific resources or capabilities, but also from the exploration of new capabilities that enable companies to respond to changes in their business environment (Day, 2011; Teece et al., 1997). In other words, DC theory addresses the balance between exploration- (e.g., externally focused learning) and exploitation-based capabilities (Barreto, 2010; Weerawardena et al., 2015).

Marketing capabilities have been studied extensively in the literature, ranging from conceptualizing

¹ Scholars have used DC view (e.g., Kachouie et al., 2018), DC framework (e.g., Teece, 2007) or DC theory (e.g., Lee et al., 2017) with no distinctive differences. This article adopts the term of DC theory as it helps highlight the theoretical grounding of this study.

marketing capabilities (Day 1994; Morgan, 2012), linking marketing capabilities to firm performance (Morgan et al., 2018; Tan and Sousa, 2015), and investigating the development of dynamic marketing capabilities (Kachouie et al., 2018). However, despite the rich marketing capabilities studies and abundant evidence of the mediating role of organizational capabilities on firm performance (e.g., Chen et al., 2014; Wamba et al., 2017), the mediation effects of marketing capabilities remains less explored, especially within the MPMS-firm performance research stream. Therefore, the present study intends to examine specifically the role of marketing capabilities in the MPMS-firm performance relationship.

Since it is beyond the scope of this study to include every possible capability that can explain the relationship between MPMSs and firm performance, this study identifies distinct marketing capabilities that are rooted in the use of MPMSs and are viewed as contributing to business performance. Given that MPMSs are deemed a tool for decision-making and strategy implementation, a source of market-focused organizational learning, and an instrument for market-linking (Clark et al., 2006; Morgan et al., 2002), it seems logical to expect that their use may improve companies' architectural marketing (i.e., planning and implementation-related capabilities), externally-focused learning (i.e., a firm's capacity to acquire, distribute, and use market information learnt from external networks for organizational changes and market opportunity exploration; Weerawardena et al., 2015), and market-linking capabilities (e.g., market-sensing and customer linking), respectively. In addition, as Morgan (2012) has argued, while marketing capabilities have attracted considerable attention, most studies have focused on a firm's overall capabilities but failed to explore the impact of specific marketing capabilities. As such, there is a dearth of research on the performance implications of specific marketing capabilities and how companies can cultivate these capabilities. Moreover, market-linking and architectural marketing

capabilities represent exploitation-based capabilities; while externally-focused learning capability represents exploration-based capabilities (Day, 2011; Morgan, 2012). The inclusion of these three capabilities also echoes the advocate of balancing exploitation- and exploration-based capabilities in DC theory as well the recent emphasis on market-based assets and capabilities, e.g., market-linking and market-focused learning (Ramaswami et al., 2009; Vorhies et al., 1999).

Figure 1 illustrates the research model with the hypothesized paths displayed. Synthesizing the marketing performance measurement and the marketing capabilities literature, this study proposes that architectural marketing, externally-focused learning, and market-linking capabilities mediate the impact of MPMSs on firm performance. Moreover, this study also includes six control variables – that other studies have found to have a potential impact on firm performance – firm size, firm age, trade status, industry, business focus, and business strategy.

Insert Figure 1 The conceptual model

3. Model and hypotheses

3.1 Architectural marketing capability and MPMSs

Architectural marketing capability is conceptualized as a firm's capacity to effectively make and implement its marketing strategies (Morgan, 2012; Slotegraaf and Dickson, 2004). Marketing planning and strategy implementation are believed to be a cross-functional practice (Morgan, 2012; Morgan et al., 2003). For instance, companies are required to gather valuable information from the environment to facilitate the development and implementation of marketing plans (Morgan, 2012). This study proposes

that the comprehensiveness and interactive use of MPMSs are positively related to architectural marketing capability, while the diagnostic use of MPMSs is negatively associated with such capability.

Comprehensive MPMSs help translate strategies into measurable objectives and communicate these strategies throughout the organization (Ambler et al., 2004). As a result, personal goals may be connected to organizational objectives, creating a shared vision within the firm (Eker and Eker, 2009).

This improved strategic alignment enables companies to develop and carry out strategies more effectively (Kaplan and Norton, 2008). The explicit presentation of the business impact of marketing activities can also provide insights into how marketing activities lead to firm performance variances, allowing marketing decision-makers to evaluate various decision alternatives and make better decisions (Van Bruggen et al., 2001), as well as change the course of action along the strategy implementation process. Thus, this study formulates the following hypothesis:

H1a. The comprehensiveness of MPMSs has a positive effect on architectural marketing capability.

An extensive use of MPMSs for benchmarking may jeopardize two-way communications and constrain the cross-functional collaboration (Malina and Selto, 2001), resulting in a poor architectural marketing capacity. Using MPMSs for one-way reporting purposes may also generate distrust, demotivation, and dysfunctional behavior among employees (Malina and Selto, 2001). Consequently, conflicts between management and employees may arise and potentially hinder the involvement of employees in the planning and implementation process. Moreover, when companies heavily rely on MPMSs for benchmarking purposes, they may fail to pay constant attention to strategy implementation (Simons, 1995) and hamper a continuous strategy process (Kaplan and Norton, 2008), leading to an inferior architectural marketing capability. Accordingly, this study contends that:

H1b. The diagnostic use of MPMSs has a negative effect on architectural marketing capability.

On the contrary, the interactive use of MPMSs may raise the status of the marketing department and improve inter-departmental relationships and collaborations (Park et al., 2012), thus improving the inputs required for the formulation of marketing plans. To make better decisions, management teams can also interactively use MPMSs to investigate and understand the variations between actual and expected outcomes. For instance, financial metrics allow them to develop a better understanding of marketing outputs, while non-financial metrics can better reflect marketing processes (Henri, 2006). By analyzing and comparing possible options, companies can identify flawed or obsolete strategies or campaigns, challenge underlying assumptions, and adjust marketing strategies (Kaplan and Norton, 2008), resulting in better strategy implementation. Following this rationale, this study hypothesizes that:

H1c. The interactive use of MPMSs has a positive effect on architectural marketing capability.

3.2 Externally-focused learning capability and MPMSs

Externally-focused organizational learning is closely associated with the networking activities of companies, which are believed to be pivotal to their discovery of new opportunities and creation of novel ideas (Lee et al., 2001). The development of a comprehensive MPMS can be seen as a formal mechanism for companies to collect market information to expand their information processing capacity (Clark et al., 2006). For instance, companies can collect vital market information from external networks to enrich their own market knowledge. In return, they share insightful information with these partners to facilitate their decision-making. This information exchange process leads to improved two-way communications between companies and their networks, resulting in a superior externally-focused

learning capacity. In addition, Homburg et al. (2012) stress that comprehensive MPMSs enable companies to generate market knowledge, allowing them to build knowledge capacity and improve market-focused learning capability (Zairi and Ahmed, 1999). Accordingly, this study posits that:

H2a. The comprehensiveness of MPMSs has a positive effect on externally-focused learning capability.

However, a firm's extensive use of MPMSs for benchmarking purposes is assumed to constrain its externally-focused learning capability because of the negative impact on information flow within the organization. A higher level of the diagnostic use of MPMSs may lead to tighter controls over the marketing department and an organization-wide focus on target fulfilment (Ambler et al., 2004; Henri, 2006). Auh and Menguc (2013) suggest that if employees are mainly praised for achieving financial targets, it may cultivate a less participatory culture and subsequently discourage employees/departments to share market information with one another, leading to inferior market-focused learning. The tighter controls may also hamper the relational trust between companies and their external partners (Selnes and Sallis, 2003) and constrain the information exchange between them. Hence, this study hypothesizes that:

H2b. The diagnostic use of MPMSs has a negative effect on externally-focused learning capability.

When MPMSs are used interactively, continuous two-way and open-channel discussion, and frequent market information exchange occurs within the firm, improving externally-focused learning capability (Azofra et al., 2003; Petersen et al., 2009). When companies interactively use MPMSs in decision making, they can carry out strategic analysis and environmental scanning, which are part of market-focused learning (Morgan and Turnell, 2003). Studies also show that the interactive use of MPMSs leads to an improved status of the marketing department in the organization, thus resulting in a more

collaborative culture (Park et al., 2012; Verhoef and Leeflang, 2009) and closer relationships with external partners (Cousins et al., 2008). These cooperative and partner-based relationships are vital in the development of relationally-focused learning capability (Lee et al., 2001). Therefore, this study posits that:

H2c. The interactive use of MPMSs has a positive effect on externally-focused learning capability.

3.3 Market-linking capability and MPMSs

A firm's market-linking capability denotes its ability to sense market changes (market-sensing), and maintain durable relationships with customers (customer-linking) and channel members (channel-bonding) (Day, 1994; Song et al., 2007). Market-linking requires companies to take initiatives to learn about customers, competitors, channel members, and the market (Morgan et al., 2009). Through comprehensive MPMSs, companies can acquire useful information needed for their market-linking activities, e.g., timely and accessible feedback on customer and competitor performance (Day, 1994). Comprehensive MPMSs can also provide companies with valuable feedback on the status of their marketing efforts. Such information is requisite for linking with the market (Morgan et al., 2003). For instance, customer metrics allow companies to better target their key customers (Ling-ye, 2011), while competition metrics (e.g., relative price, market share, and relative quality) help companies understand their market position and improve their market knowledge (Homburg et al., 2012), thus leading to a superior capacity to link with the market. Hence, the following hypothesis is proposed:

H3a. The comprehensiveness of MPMSs has a positive effect on market-linking capability.

If MPMSs are extensively used to monitor marketing performance and benchmark performance against objectives, this can lead to tight control over operations, marketing strategies and marketing outcomes (Ambler et al., 2004). In this case, companies may be more target oriented and ignore other crucial performance issues, e.g., problematic customers. As a result, they may use MPMSs less effectively in monitoring customer changes, competitor movement, and market changes, which in turn leads to an inferior market-linking capability. In addition, the diagnostic use of MPMSs is found to constrain market orientation (Henri, 2006). Less market-oriented companies are less likely to stay alert to competitive activities or changes in customer preferences (Hooley et al., 2005). As a result, these companies may possess a poor market-linking capacity. Thus, this study contends that:

H3b. The diagnostic use of MPMSs has a negative effect on market-linking capability.

The market-sensing process follows the common sequence of information processing activities: information acquisition, distribution, interpretation, and utilization (Day, 1994). Since the interactive use of MPMSs facilitates the information sharing process within the organization (Clark et al., 2006), it will exert a positive impact on market-sensing capability. The interactive use of MPMSs also improves channel-bonding capability through the creation of mutual dialogue, information sharing, and problem-solving with channel members (Cousins et al., 2008). Moreover, when companies interactively use MPMSs in decision making, they are found to be better able to target customers and connect with them, leading to superior customer-linking capability (Hooley et al., 2005). Thus, this study hypothesizes that:

H3c. The interactive use of MPMSs has a positive effect on market-linking capability.

3.4 Marketing capabilities and firm performance

Companies with a superior architectural marketing capability can better coordinate their specialized marketing capabilities, optimize the compatibility between their resources and the marketplace, and effectively deploy their resources to implement marketing strategies (Morgan et al., 2003; Pulendran et al., 2003). Thus, these companies are reported to outperform others with regard to market effectiveness and profitability, adaptability, and competitive performance (Chang et al., 2010; Morgan et al., 2003).

Thereby, this study hypothesizes that:

H4a. A firm's architectural marketing capability is positively related to firm performance.

Externally-focused learning capability allows companies to effectively collect and disseminate market information. Such information increases the match between new product development and customer preferences, leading to more successful product innovation (Kim and Atuahene-Gima, 2010; Weerawardena et al., 2006). Companies' external networks also provide valuable information concerning technological advancement and market opportunities so that companies can gain wider access to potential customers and channel members (Lee et al., 2001), leading to better market segmentation. Consequently, such companies perform better than others with respect to brand, innovation, market, and financial performance (Weerawardena et al., 2015). Thus, the following hypothesis is formulated:

H4b. A firm's externally-focused learning capability is positively related to firm performance.

Maintaining good relationships with customers is beneficial to companies because customers who have a good relationship with the company are more likely to respond to its marketing efforts and less likely to purchase from its rivals (Rapp et al., 2010). Companies thus can shorten their sales cycles, lower

service costs, and gain competitive advantages (Srivastava et al., 1998). Market-driven companies can also respond to market changes more quickly than their competitors (Morgan et al., 2009) and achieve higher product availability through well-established channel relationships (Ramaswami et al., 2009). Hence, market-linking capability is found to positively influence firm performance, such as revenue growth rate, market share, and profitability (Cousins et al., 2008; Morgan et al., 2009; Song et al., 2007).

Accordingly, this study hypothesizes that:

H4c. A firm's market-linking capability is positively related to firm performance.

3.5 The interrelationships between marketing capabilities

The marketing literature has long advocated the investigation into the interrelationships between marketing capabilities (e.g., Kachouie et al., 2018; Rapp et al., 2010; Vorhies and Morgan, 2005). For instance, Kachouie et al. (2018) reveal that a firm's ability to anticipate market changes allows it to develop superior operational marketing capabilities, and thereby improve firm performance. Following the literature, this study posits that a firm's externally-focused learning capability lays the foundation for the development of its architectural marketing and market-linking capabilities.

Organizations need cross-functional collaboration and coordination to improve their architectural marketing capability (Morgan et al., 2003). Thereby, a firm's externally-focused learning capability allows it to cultivate a superior architectural marketing capability through enhanced inter-functional coordination (Hughes et al., 2008). Moreover, a firm with a superior externally-focused learning capability is more likely to calibrate the information about its customers, competitors, and the market to inform strategy-making (Lee et al., 2001). For instance, Knight (2000) suggests that externally-focused

learning capability allows companies to develop better marketing mix strategies to reach the intended market. Other empirical studies also suggest that organizational learning, especially with respect to learning from the market and social networks, contributes to the formulation and implementation of marketing strategies (O’Cass et al., 2012). Taken together, this study hypothesizes that:

H5a. A firm’s externally-focused learning capability is positively related to its architectural marketing capability.

Externally-focused learning capability can positively influence market-linking capability for several reasons. First, by actively collecting, disseminating, and using information gathered from the market and external networks, companies become more market-oriented (Hughes et al., 2008). Market orientation allows companies to respond to market changes more quickly and create strong bonds with their customers and channel members (Rapp et al., 2010). Second, A firm’s ability to learn from the market is also found to positively influence its resource investment in building and maintaining its relationship between customers (Perez et al., 2013). In other words, if companies are good at learning from the market or their external partners, they are more likely to invest resources to improve their relationships with customers, which ultimately leads to a superior market-linking capability. Third, a firm’s external networks also provide valuable market knowledge with respect to customer preferences and new market opportunities (Lee et al., 2001), leading to superior market-linking capability (Bell et al., 2002; Fang et al., 2014). Based on these prior findings, the following hypothesis is formulated:

H5b. A firm’s externally-focused learning capability is positively related to its market-linking capability.

4. Method

4.1 Sample and data collection

This study applied a single-informant approach to collect survey data from marketing managers or members of top management teams in Irish-based companies. The Irish Times Top 1000 Companies database and members of a research institute were used as the sampling frame. The latter database was comprised of Small and Medium-Sized Enterprises (SMEs) and used to supplement the former and to better represent the Irish economy. Before conducting the survey, the researchers contacted each company in the two databases via telephone. The purpose was to identify key informant(s) in these companies and compile their contact information. After this procedure, Dillman's (2011) tailored design method was used to send the survey to 870 Irish companies. Other companies were excluded either because there was no marketing department in Ireland or because they refused to disclose the information of key informant(s) due to organization policy.

A total of 235 responses were received with 210 completed and qualified surveys, yielding a response rate of 27.01% and a completion rate of 24.14%. To check the competence of key informants, they were asked to indicate their level of involvement in decision making and their knowledge of MPMS- and capabilities-related issues on a seven-point Likert scale. Following Weerawardena et al. (2006), only those who scored more than 5 were considered competent and qualified. In general, the average scores of respondents' involvement in decision making and their knowledge of MPMS- and capabilities-related issues are 5.81, 6.18, and 5.95 (out of 7), respectively. A comparison between early and late responders was performed to check potential non-response bias (Armstrong and Overton, 1977). The results show no significant difference, indicating no serious concern for non-response bias.

4.2 Survey design

All measures used in this study were adopted from existing studies and were modified to the Irish context.

The survey was pre-tested by eight academic experts and eleven marketing or senior managers from different industries. Minor changes were made to minimize the difficulty of responding and motivate participants to respond accurately (Podsakoff et al., 2003).

Independent variables. The measurements of the comprehensiveness of MPMSs were borrowed from Homburg et al. (2012). Respondents were asked to indicate their agreement with the statements with regard to the breadth, strategy fit, and cause-and-effect relationships of their MPMSs on a 7-point Likert scale (1=strongly disagree, 7=strongly agree). Two items were added from Burney and Widener (2013) to supplement Homburg et al.'s (2012) measurement items on strategy fit and causal relationship of MPMSs. These two items were “our MPMS includes measures that are chosen to track marketing strategy” and “our MPMS shows how marketing strategy is to be achieved”.

The uses of MPMSs were measured with items adopted from Henri (2006), original items being used to measure the diagnostic and interactive uses of performance measurement systems. Respondents were asked to evaluate the extent to which their top management team currently uses marketing performance measures to 1) track progress towards goals, 2) review key measures, 3) monitor results, and 4) compare outcomes with expectations. Seven items, such as “enable the organization to focus on common issues”, “enable the organization to focus on critical success factors”, and “develop a common vocabulary in the organization”, were used to measure the interactive use of MPMSs. Since almost all pilot respondents thought that item 7 “develop a common view of the organization” was too vague and made little sense in the Irish context, the question was removed in the final version of the survey. All variables were

measured on a 7-point Likert scale with response categories varying from 1 (not at all) to 7 (to a great extent).

Mediators. The measurement of marketing capabilities followed the suggestions from Song et al. (2007). Respondents were asked to indicate how their company performed in architectural marketing, externally-focused learning, and market-linking capabilities, as opposed to their major competitors. Pilot test results showed that respondents had no difficulty in identifying their major competitors or evaluating their relative performance. This study used nine items to measure architectural marketing capability (Chang et al., 2010). Externally-focused learning capability was captured with items from Weerawardena et al. (2006) and Weerawardena et al. (2015). Respondents were asked to evaluate their relative competences in searching for, collecting, learning, sharing, and using market information internally and externally. Market-linking capability was measured with ten items adopted from Morgan et al. (2009) and Song et al. (2007). These questions were associated with a firm's relative competence in linking with customers, bonding with channel members, and sensing market changes. All items were measured on a 7-point Likert scale (1=much worse, 7=much better).

Dependent and control variables. In line with previous studies (Verhoef and Leeflang, 2009; Vorhies and Morgan, 2005), the dependent variable – firm performance – was measured by subjective items: customer satisfaction, market share, new customer acquisition, return on investment, sales, and profitability. Our study also includes six control variables: firm size (the number of full-time employees), firm age (the number of years since establishment), trade status (public or private), industry type (manufacturing, service/trade, and other), business focus (B2B or B2C), and strategy (differentiation, cost leadership, and other).

4.3 Measurement model validation

This study conducted a confirmatory factor analysis (CFA) in AMOS 24 to assess the validity of the measurement model and conducted a series of reliability tests in SPSS 24 to evaluate the reliability of the measures. A 7-factor confirmatory measurement model results in a satisfactory model fit: χ^2 (1551)=2621.37, $p=.00$. Other goodness of fit statistics are all favorable: CMIN/df=1.69, below the threshold of 3.00; CFI= .90, IFI=.91 and TLI=.91, all larger than the cut-off of .90; RMSEA=.06 and SRMR=.06, both below the benchmark of .08 (Hair et al., 2010). The Cronbach's alphas and composite reliability (CR) scores for all the measures were above the recommended .70 level, demonstrating good internal reliability. One measurement item of the diagnostic use of MPMSs (i.e., "track progress toward goals") was deleted due to cross-loading, while another firm performance item (i.e., customer satisfaction) was also deleted due to low factor loading. The remaining items were loaded onto their expected construct, with factor loadings larger than .63. Thus, the convergent validity was secured (Bagozzi and Yi, 1988). The average variances extracted (AVE) values all exceeded the recommended .50 level and larger than the respective maximum shared variances (MSV) and average shared variance (ASV) scores, indicating that the constructs are distinctly different from each other (Fornell and Larcker, 1981). Thus, the discriminant validity was secured.

Common method bias was addressed using three techniques (Podsakoff et al., 2003). First, the items of all the focal constructs were factor analyzed together, using principal components analysis. The results show that there was no dominant factor in these items. Second, Harman's single factor test was conducted in AMOS 24 to check whether a single latent factor accounted for all manifest variables. Compared to the measurement model used in this study, the fit of the single-factor model was

significantly worse, suggesting that common method bias may not be a serious concern. Third, objective performance data were collected one year after conducting the survey to validate subjective performance data. Following O'Sullivan and Abela (2007), three-year average ROA and profit margin were used as proxies for objective firm performance. We were able to collect the data of ROA for 55 companies and profit margin for 50 companies. Highly significant correlations are found between subjective measures and profit margin (.61, $p < .001$) and ROA (.75, $p < .001$), further confirming that common method bias may not be a serious concern in this study².

5. Analysis and results

The model was examined using structural equation modeling (SEM) and maximum likelihood estimation in AMOS 24 given that SEM is appropriate to estimate multiple relationships among variables (Bagozzi and Yi, 1988). Composite variables were created using the factor score regression weights after CFA in AMOS 24 and used in the analysis³. The standardized coefficients are presented in Table 1.

Insert Table 1 The SEM results

H1a, H1b, and H1c predict the relationship between MPMSs and architectural marketing capability. As shown in Table 1, only the comprehensiveness of MPMSs is found to positively influence such

² Following Lindell and Whitney (2001), this study also used marketing complexity (Homburg et al., 2012) as a marker variable and tested its correlation with the key variables of interest. This variable was chosen because, given the best knowledge of the authors, we believe it is not theoretically or empirically correlated with the focal variables. The results show that the correlation coefficients between the marker variable and key variables range from -.11 to -.03, none of which is statistically significant. The results further indicate no serious concern for common method bias.

³ Following reviewers' comments, we ran an SEM with all latent variables in AMOS 24. The path estimations show very similar results as reported in the paper, confirming the robustness of our analysis.

capability ($\beta=.43, p<.01$), whereas the diagnostic ($\beta=.04, p>.10$) and interactive ($\beta=-.06, p>.10$) uses of MPMSs do not influence such capability. Thus, H1a is supported, but H1b and H1c are rejected. As expected, the comprehensiveness ($\beta=.18, p<.10$) and interactive use ($\beta=.33, p<.01$) of MPMSs have a positive impact on externally-focused learning capability, whereas the diagnostic use of MPMSs does not exert any impact on such capability ($\beta=-.10, p>.10$). Therefore, H2a and H2c are supported, whereas H2b is rejected. The results also show that the interactive use of MPMSs has a positive impact on market-linking capability ($\beta=.33, p<.01$), yet the diagnostic use ($\beta=-.28, p<.01$) of MPMSs exerts a negative impact on such capability. Surprisingly, the comprehensiveness of MPMSs does not influence market-linking capability ($\beta=.07, p>.10$). Thus, H3b and H3c are supported but H3a is rejected. One possible explanation of this insignificant relationship (H3a) is that companies may not be able to benefit from a wide range of information due to the lack of cognitive capacity to process the information (Kelly, 2007). H4a, H4b, and H4c hypothesize the relationship between marketing capabilities and firm performance. The results show that architectural marketing ($\beta=.18, p<.01$) and market-linking capabilities ($\beta=.63, p<.01$) positively affect firm performance, while externally-focused learning capability does not influence firm performance ($\beta=.00, p>.10$). Thus, H4a and H4c are supported, but H4b is rejected. H5a and H5b propose the interrelationship among architectural marketing, externally-focused learning, and market-linking capabilities. The results show that externally-focused learning capability enhances architectural marketing ($\beta=.50, p<.01$) and market-linking capabilities ($\beta=.67, p<.01$). Thereby, H5a and H5b are both supported. The findings imply that capabilities are related with one another. Figure 2 reports the SEM results with the standardized estimates of significant paths displayed.

Insert Figure 2 The quantitative research results

As suggested by Zhao et al. (2010), to test the mediation effects, researchers only need to test whether an indirect effect is significant. If the bias-corrected percentile method generates a confidence interval that includes zero, the indirect effect is insignificant. Otherwise, a confidence interval that does not include zero suggests that the indirect effect is significant. To distinguish the individual mediation effects of three marketing capabilities on the MPMS-firm performance relationship, this study followed the approach of Preacher and Hayes (2008) and used the Process macro in SPSS to conduct a bias-corrected bootstrapping procedure with 5000 re-samples. We conducted a serial mediation analysis (Model 6 in Process macro, Hayes, 2013) to test the sequential paths presented in Figure 2. The standardized effect sizes and respective statistics are summarized in Table 2.

Insert Table 2 The mediation analysis of marketing capabilities

As shown in Table 2, only architectural marketing capability is found to mediate the relationship between the comprehensiveness of MPMSs and firm performance (effect size=.08, bootstrap standard errors (BSE) = .03, 95% bias-corrected bootstrap confidence interval (BCBCI): [.03; .16]). The results suggest that comprehensive MPMSs improve architectural marketing capability, thus driving firm performance. Similarly, the results show that market-linking capability mediates the relationship between the diagnostic use of MPMSs and firm performance (effect size=-.09, BSE = .04, 95% BCBCI: [-.17; -.02]) and between the interactive use of MPMSs and firm performance (effect size=.10, BSE = .04, 95% BCBCI: [.02; .17]). This implies that the diagnostic use of MPMSs hinders the development of market-linking capability, thus negatively influencing firm performance; whereas the interactive use of MPMSs fosters the development of such capability, thereby driving firm performance. However, the

externally-focused learning capability does not seem to play any mediation role in the MPMS-firm performance linkage, except that it mediates the impact of the interactive use of MPMSs on market-linking capability and thereby firm performance (effect size=.06, BSE = .03, 95% BCBCI: [.01; .13]). The results underscore that the interactive use of MPMSs can foster a firm's externally-focused learning capability, thus cultivating its market-linking capability and subsequently improving firm performance. This is partially in line with Henri (2006) that suggests that firm can only facilitate organizational learning through interactively using performance metric data.

6. Discussion

6.1 Theoretical contributions

This study contributes to the marketing performance measurement literature in several ways. First, since no previous study has examined the indirect effects of MPMSs on firm performance through a marketing capabilities lens, this study contributes to the literature by proposing and validating a new MPMS-capability-performance framework that helps to explain the indirect effects of MPMSs on firm performance. This study finds that comprehensive MPMSs contribute to firm performance by positively affecting architectural marketing capability. In congruence with the extant literature (e.g., Morgan et al., 2002; Pauwels et al., 2009), this finding highlights the role of MPMSs in facilitating strategy formulation and implementation. It endorses the argument that informational and knowledge resources can be leveraged to develop marketing capabilities (Moorman and Slotegraaf, 1999; Morgan et al., 2003). Moreover, while previous studies have provided support for the link between MPMSs and the

antecedents of marketing capabilities (e.g., Homburg et al., 2012), this study extends the literature by establishing the direct link between MPMSs and marketing capabilities. In addition, it also provides evidence that the diagnostic and interactive uses of MPMSs can also influence firm performance through their impact on market-linking capability, market-linking and externally-focused learning capabilities, respectively, further confirming the mediating role of marketing capabilities in the MPMS-performance relationship.

Second, given that little empirical work has been devoted to confirm the theoretical assumption that comprehensive MPMSs can lead to improved performance outcomes, this study contributes to the literature by empirically validating the indirect effect of the comprehensiveness of MPMSs on firm performance. By confirming that comprehensive MPMSs enhance a firm's architectural marketing capability, this study also provides solid empirical evidence for the argument that comprehensive MPMSs are more beneficial than partial systems (Ambler et al., 2004; CMO Council, 2009). On the other hand, the insignificant relationship between the comprehensiveness of MPMSs and market-linking capability suggests that, for companies that aim to develop a superior market-linking capability, they also need to consider how to complement a comprehensive MPMS design with an appropriate use in order to reap full benefits of the MPMS.

Third, little is known about the potential performance implications of the uses of MPMSs (Mintz and Currim, 2015). In congruence with previous arguments (e.g., Simons, 1995), the results suggest that the excessive use of MPMSs for merely diagnostic purpose hampers the development of market-linking capability, thereby negatively affecting firm performance; while the interactive use of MPMSs positively influences the development of externally-focused learning and market-linking capabilities,

thus driving firm performance. This study extends our understanding of how the diagnostic and interactive uses of MPMSs lead to different performance outcomes and points to a need for companies to use MPMSs in a more balanced manner, as suggested by the performance management control literature (Simons, 1995).

6.2 Practical implications

First, the research findings provide insights into how the characteristics of MPMSs are beneficial to companies. The results indicate that comprehensive MPMSs contribute to firm performance by enhancing a firm's architectural marketing capability, pointing to a need for adopting comprehensive marketing performance measurement practices. Therefore, it is recommended that companies design a comprehensive MPMS that is characterized by a combination of marketing metrics, such as financial, customer behavior-, competition-, and innovation-related metrics, to provide a holistic view of marketing performance. When designing a comprehensive MPMS, the selection of marketing metrics should be aligned with a firm's overall business strategies and marketing objectives. In addition, companies should also endeavour to establish the impact of marketing activities on firm performance to understand the effectiveness of marketing strategies and assist future strategic decision-making.

Second, the supported positive impact of the interactive use of MPMSs on market-linking and externally-focused learning capabilities implies that the design of MPMSs is important, but their use is also critical. The results strongly suggest that MPMSs can enhance marketing capabilities and drive firm performance, but only if they are utilized properly. The empirical results highlight that, if companies heavily rely on marketing metrics to benchmark performance against objectives or track whether marketing functions achieve the targets, they may fail to explore the full potential of their MPMSs. One

implication here is that, in addition to using MPMSs to track and review marketing performance periodically, companies should also apply them in a way that directs organizational emphasis on critical issues, shows continuous awareness of market uncertainty, and meets the critical balance between short- and long-term priorities. For instance, companies should analyze the impact of marketing campaigns on firm performance to understand whether or to what extent a specific campaign is effective so that they can determine whether they should continue or terminate such campaign.

Third, this study reinforces the importance of marketing capabilities in driving firm performance. Morgan et al. (2018, p. 62) underscore that “from a managerial perspective, managers want to know both what types of marketing capabilities may be appropriate for their companies and how to build, maintain, and leverage them”. Our study recommends that managers pay increasing attention to developing critical marketing capabilities that can help boost firm performance. The results suggest that companies can use MPMSs interactively to develop marketing capabilities. For instance, companies can use multiple marketing metrics to regularly monitor customer and market performance. By doing so, they are more capable of responding to changes in customer preferences and identifying market opportunities. In addition, the interrelationship between marketing capabilities is also supported in this study: externally-focused learning capability mediates the relationship between the interactive use of MPMSs and market-linking capability, whereas market-linking capability mediates the relationship between externally-focused learning capability and firm performance. This finding implies that companies with a superior externally-focused learning capability can foster their architectural marketing and market-linking capabilities, thereby achieving firm performance.

6.3 Limitations and future research directions

This study has several limitations, some of which may lead to potential future research opportunities. The first limitation lies in the use of cross-sectional design. One potential future research direction to address this concern is to adopt a longitudinal research design, which allows researchers to make more convincing claims of the causality between dependent and independent variables. Second, though this study validated subjective firm performance data with objective firm performance data, the use of single-informant and self-reported measures may be a concern as the strong relationships between variables may be due to single-informant bias. This can be improved by using multiple informants for data collection. Third, since the data were collected from a single country, the ability to generalize these findings to other contexts may be limited. Thus, it would be worthwhile to replicate this study by conducting a large-scale and cross-cultural study.

This study points to several important new areas for future research. First, the finding that the comprehensiveness and uses of MPMSs can differently influence marketing capabilities and firm performance stresses that the role of MPMSs warrants future research. Especially, the insignificant impact of the diagnostic use of MPMSs on architectural marketing and externally-focused learning capabilities merit further investigation. Future research could also investigate how other attributes of MPMSs (e.g., contextuality, Morgan et al., 2002) influence firm performance, how other variables can mediate the relationship between MPMSs and firm performance, and how MPMSs might interact with other resources (e.g., market orientation, Frösén et al., 2016) to enhance firm performance. Second, this study only applies DC theory to explore how MPMSs lead to superior firm performance. Thus, future research may apply other theories to examine the indirect effects of MPMSs on firm performance. For instance, institutional theory can be applied to investigate how the institutional outcomes resulted from

the adoption of MPMSs can influence firm performance (Homburg et al., 2012), while strategy-focused organization theory can be used to examine the role of MPMSs in implementing marketing strategies (Kaplan and Norton, 2008). Third, this study proposes investigation of how contingent factors (e.g., competitive intensity) may influence the effectiveness of MPMSs. For instance, Frösén et al. (2016) demonstrate that large companies and market leaders generally benefit from comprehensive MPMS, whereas smaller ones benefit from a selective or focused MPMS. The inclusion of contingencies in this research area may also address the argument in the DC literature that the impact of marketing capabilities on firm performance is also contingent on environmental factors (e.g., Moorman and Slotegraaf, 1999).

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Table 1 The SEM results

Hypothesis	Estimate	Supported?
H1a Comprehensive MPMSs → Architectural marketing capability	.43**	Yes
H1b The diagnostic use of MPMSs → Architectural marketing capability	.04	No
H1c The interactive use of MPMSs → Architectural marketing capability	-.06	No
H2a Comprehensive MPMSs → Externally-focused learning capability	.18 [†]	Yes
H2b The diagnostic use of MPMSs → Externally-focused learning capability	-.10	No
H2c The interactive use of MPMSs → Externally-focused learning capability	.33*	Yes
H3a Comprehensive MPMSs → Market-linking capability	.07	No
H3b The diagnostic use of MPMSs → Market-linking capability	-.28**	Yes
H3c The interactive use of MPMSs → Market-linking capability	.33**	Yes
H4a Architectural marketing capability → Firm performance	.18**	Yes
H4b Externally-focused learning capability → Firm performance	.00	No
H4c Market-linking capability → Firm performance	.63**	Yes
H5a Externally-focused learning capability → Architectural marketing capability	.50**	Yes
H5b Externally-focused learning capability → Market-linking capability	.67**	Yes

Model fit indices

$\chi^2(73) = 130.55, p = .00; CMIN/df = 1.79; CFI = .96; IFI = .96; TLI = .96; RMSEA = .06; SRMR = .07$

The estimations reported are standardized coefficient values.

The model has been tested with cost leadership strategy (baseline = other strategy), differentiation strategy (baseline = other strategy), business focus (B2B=0, and B2C=1), trade status (Public company=0, and private company=1), firm size (log-transformed), manufacturing industry (baseline =other industry), service/trade industry (baseline =other industry), and firm age (log-transformed) as control variables. However, only firm age ($\beta = .10, p < .10$) and trade status ($\beta = .08, p < .10$) are positively related to firm performance at the .10 level, while other control variables (cost leadership: $\beta = -.02, p > .10$; differentiation strategy: $\beta = -.05, p > .10$; firm size: $\beta = .05, p > .10$; business focus: $\beta = -.07, p > .10$; manufacturing: $\beta = .01, p > .10$; service: $\beta = .03, p > .10$) are not significantly related to firm performance.

[†] $p < .10$; * $p < .05$; ** $p < .01$

Table 2 Mediation analysis of marketing capabilities

Paths and mediators	Production of coefficients		Bootstrap corrected 95% CI bias-	
	Effect size	Standard error	lower	upper
<i>Mediation effects of comprehensiveness on firm performance via capabilities</i>				
Comprehensiveness → market-focused learning → firm performance	.00	.01	-.03	.01
Comprehensiveness → architectural marketing capability → firm performance	.08	.03	.03	.16
Comprehensiveness → market-linking capability → firm performance	.04	.03	-.02	.11
Comprehensiveness → externally-focused learning → architectural marketing capability → firm performance	.00	.01	-.02	.02
Comprehensiveness → externally-focused learning → market-linking capability → firm performance	-.05	.03	-.12	.00
<i>Mediation effects of the diagnostic use on firm performance via capabilities</i>				
The diagnostic use → market-focused learning → firm performance	.00	.01	-.01	.03
The diagnostic use → architectural marketing capability → firm performance	.01	.02	-.02	.05
The diagnostic use → market-linking capability → firm performance	-.09	.04	-.17	-.02
The diagnostic use → externally-focused learning → architectural marketing capability → firm performance	.01	.01	-.00	.04
The diagnostic use → externally-focused learning → market-linking capability → firm performance	-.02	.03	-.07	.04
<i>Mediation effects of the interactive use on firm performance via capabilities</i>				
The interactive use → market-focused learning → firm performance	.00	.01	-.02	.03
The interactive use → architectural marketing capability → firm performance	-.01	.02	-.06	.02
The interactive use → market-linking capability → firm performance	.10	.04	.02	.17
The interactive use → externally-focused learning → architectural marketing capability → firm performance	.00	.01	-.02	.02
The interactive use → externally-focused learning → market-linking capability → firm performance	.06	.03	.01	.13

Please note that the effect sizes reported are standardized effect sizes.

Figure 1 The conceptual model

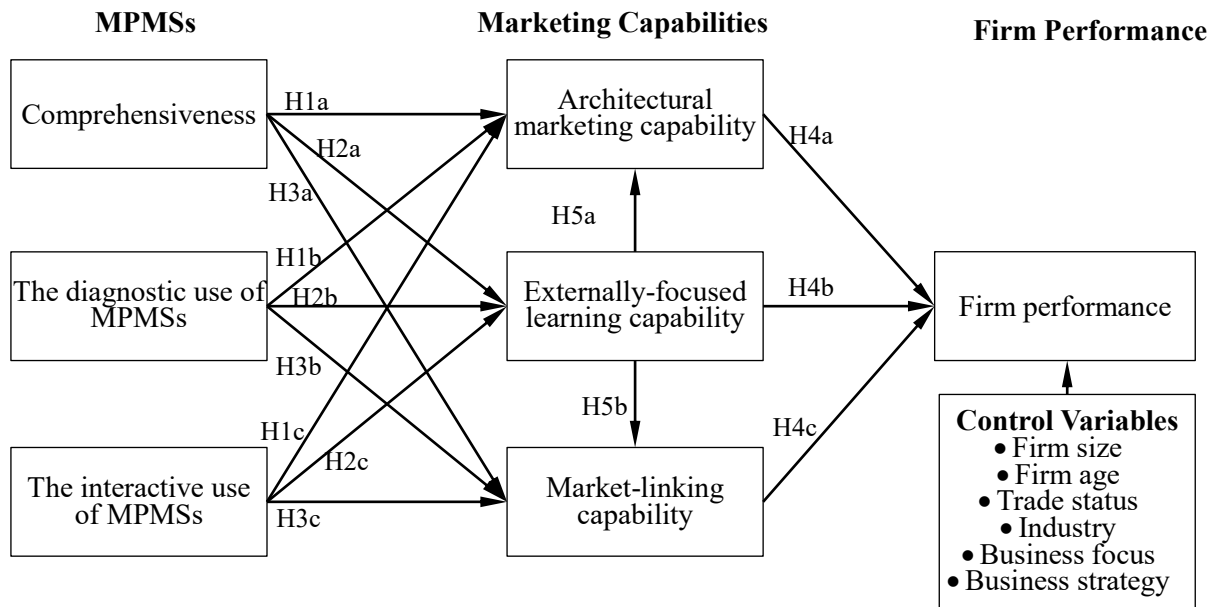
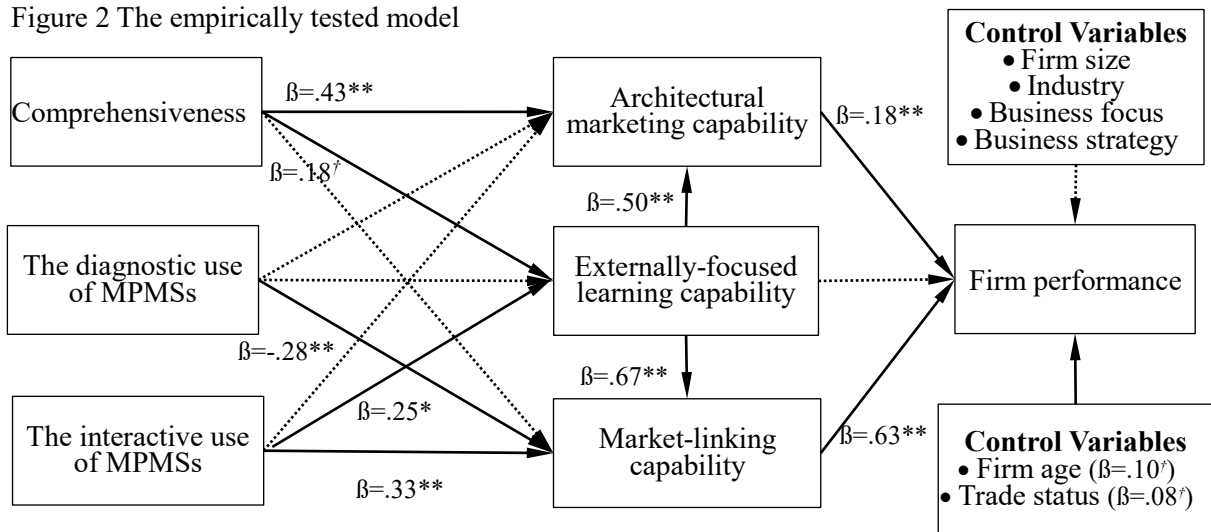


Figure 2 The empirically tested model



Standardized coefficient values are reported in this figure.

Dashed lines represent unsupported hypotheses, while the solid lines represent supported hypotheses.

** $p < .01$; * $p < .05$; $\dagger p < .10$