

Marketing Agility and Firm Performance: The Role of Customer Service Performance and Customer Co-Creation

Abstract

Purpose— The effect of marketing agility on customer satisfaction and short- and long-term firm performance has not been empirically examined yet. Drawing on dynamic capability theory, the current study investigates the direct effect of marketing agility on firm performance and its indirect effect through customer outcomes (i.e., customer service performance, co-creation and satisfaction).

Design/Methodology/Approach— Study 1 used cross-industry, multisource data, including survey responses from 609 managers and secondary data on firm performance. Study 2 validated the results of Study 1 with panel data covering 319 firms and fitted the short-term profitability model using 4218 firm-year observations and the long-term profitability model using 957 firm-year observations.

Findings— Marketing agility has a negative direct effect on short-term profitability but a positive direct effect on both long-term profitability and customer satisfaction. Furthermore, customer satisfaction fully mediates this relationship in the short term and partially mediates it in the long term.

Originality/Value—Empirical studies on the firm performance effects of marketing agility are currently lacking, and the few existing studies do not differentiate between short-term and long-term firm performance. Through customer-related outcomes of marketing agility, this study explains the mechanism behind firm performance. Moreover, the current study develops a new measure (the MA index) using a fuzzy mathematical programming approach.

Keywords: marketing agility; firm performance; customer satisfaction; customer co-creation; customer service performance; dynamic capability; firm profitability

1. INTRODUCTION

Digital transformation, and rapid technological advancements have changed the way customers shop, behave and engage with firms (Agag *et al.*, 2025; Swaminathan *et al.*, 2020). In an era where customer behaviours can shift dramatically overnight, and new competitors can emerge from unexpected quarters, the ability to pivot marketing strategies rapidly has become a crucial determinant of success (Agag *et al.*, 2025; Callaghan *et al.*, 2021). In today's rapidly evolving business landscape, characterized by intense competition, geopolitical impacts, and unprecedented uncertainty, managers are increasingly recognizing the critical importance of Marketing Agility (MA hereafter) (Moi and Cabiddu, 2022; Kalaignanam *et al.*, 2021). This concept has gained significant relevance as firms strive to adapt swiftly to changing market conditions, customer preferences, and technological advancements (Homburg *et al.*, 2020; Pinho *et al.*, 2022). Managers who understand and implement MA are better positioned to navigate the complexities of modern markets, seize emerging opportunities, and mitigate potential risks (Cegarra-Navarro and Martelo-Landroguez, 2020; Gligor *et al.*, 2020). In response to these challenges, this study aims to investigate the direct impact of MA on short- and long-term firm performance, as well as its indirect effects through key customer-related outcomes, namely customer service performance, customer co-creation, and customer satisfaction.

The importance of MA extends beyond mere survival in turbulent times. It is also linked to superior firm performance (Agag *et al.*, 2025). MA enables firms to optimize their marketing mix in real-time, allocate resources more efficiently, and capitalize on fleeting market opportunities (Khan, 2020). Moreover, MA fosters a culture of innovation and continuous improvement within organizations, leading to the development of more customer-centric products and services. As such, managers need to understand the mechanisms through which MA translates into tangible business results. Understanding MA is crucial for firms for several

reasons. First, it allows managers to make a compelling case for investing in MA capabilities and technologies (Khan, 2020). Second, it helps in aligning marketing strategies with overall business objectives, ensuring that agility initiatives contribute directly to the firm's strategic goals. Finally, comprehending the link between MA and firm performance enables managers to develop more sophisticated performance measurement systems that capture the full value of agile marketing practices (Roberts and Grover, 2012; Zhou *et al.*, 2019). Despite these benefits which help firms to gain competitive advantage (Vickery *et al.*, 2010; Wu *et al.*, 2017), MA has not been thoroughly investigated, and the MA literature has research gaps that need immediate attention. In the current study we have tried to explore four of these gaps.

The first research gap this study seeks to fill-in concerns the direct and indirect roles of customer service performance and customer co-creation as mediators between MA and customer satisfaction. Due to a lack of clarity about the way in which MA influences firm-related and customer-related outcomes, this needs investigation (Khan, 2020). Previous research has expected that agile firms should have high customer satisfaction (Roy *et al.* 2017), however, such relationships still remain poorly understood and open to question concerning the direct and indirect relationships of MA with customer satisfaction. Recent research supports the Dynamic Capabilities View (DCV) by showing that dynamic capabilities, upon which agility depends, can enhance a wide range of firm performance (Ashrafi *et al.*, 2019; Helfat and Martin, 2015). However, findings so far fail to clearly explain the specific mechanisms/processes and magnitude of MA's relationship with customer-related outcomes (Zhou *et al.*, 2019).

The second research gap we address in this study reflects the lack of researchers' consensus, about the way that MA affects firm performance. For instance, some studies have reported that MA positively impacts on firm performance (Sultana *et al.*, 2022; Khan, 2020; Zhou *et al.*, 2019), while others have found neutral and/or negative correlations (Ambrosini *et*

al., 2009; Drnevich and Kriauciunas 2011; Zahra *et al.*, 2006). However, despite some advances, very little is known about the direct and indirect effects (Zhou *et al.*, 2019) that MA may have on short-term and long-term performance.

The third research gap that the current study addresses is to view MA from several sectors and in several contexts, since the literature on MA is still in its infancy and lacks depth and scope. It is quite evident from Table 1 that efforts have been made by previous researchers to explore the antecedents and consequences of MA, yet most of the current studies focus on either a limited set of sectors or locations or have contextual limitations (Zhou *et al.*, 2019). We believe that comprehensive and rigorous empirical research will help to address this research gap and add to the literature.

Our fourth research gap is based on an extensive review of the previous studies on MA. We found that the existing literature on MA has also predominantly focused on conceptual or qualitative approaches (Osei *et al.*, 2019; Kalaighnam *et al.*, 2021; Moi & Cabiddu, 2022), with limited empirical research examining the relationship between MA and firm performance (please see Table 1). Even the available empirical studies on MA rely on cross-sectional or self-reported data and have not examined the effect of MA on firm performance in terms of short- and long-term effects. We also found that previous MA researchers failed to describe accurately the relationships between MA and its outcomes because of their overreliance on the use of primary data (e.g., Zhou *et al.*, 2019). In the current study, we argue that the direct measurement of phenomena occurring inside a company, such as customer-service performance and customer co-creation, is hindered if only secondary data on customer satisfaction and firm performance are available (e.g., Feng *et al.*, 2015). This gap in the literature underscores the need for more comprehensive empirical studies to investigate MA and firm performance. The present study aims to address this major gap by empirically

examining the proposed relationships using both primary data obtained from managers (Study 1) and secondary data (Study 2) from several firms representing a range of industries.

After addressing key gaps in the literature, this research contributes meaningfully to theoretical understanding and offers actionable insights for practitioners. First, this research responds to calls for deeper examination of marketing agility (MA) by demonstrating how MA differentially influences short-term and long-term firm performance (Gomes et al., 2020; Kalaighnam et al., 2021). Specifically, we show that while MA can lead to immediate gains in market responsiveness and customer satisfaction (boosting short-term performance), its impact on long-term performance depends on the firm's ability to align agile marketing with strategic objectives and resource allocation. Understanding this nuanced relationship is crucial, as firms increasingly invest in agility initiatives without clear evidence of their long-term value. Second, this study answers calls for research into the mechanisms through which MA impacts firm performance (Zhou et al., 2019). Specifically, we demonstrate that MA enhances firm performance by improving two key customer-related capabilities: customer service performance and customer co-creation. These capabilities mediate the relationship between MA and both short-term and long-term performance. By unpacking this mechanism, our findings clarify how MA translates into tangible business outcomes, offering a more nuanced understanding of MA's value beyond its direct effects. Third, our study contributes to the marketing agility and dynamic capability literatures by demonstrating that MA directly improves both short-term and long-term firm performance and indirectly enhances performance through increased customer satisfaction. These findings position MA as a dynamic capability that enables firms to adapt to changing customer needs while maintaining operational efficiency—thus bridging the gap between strategic flexibility and performance outcomes. Fourth, this study contributes methodologically by introducing a novel MA index, developed using a fuzzy mathematical programming approach. Existing measures of MA often

rely on rigid Likert-scale aggregation, which can oversimplify managers' nuanced assessments of exploratory and exploitative marketing activities. Our index addresses this limitation by capturing the inherent ambiguity and subjectivity in managerial judgments—such as varying degrees of agreement—through fuzzy logic. This approach enables more realistic and flexible modeling of MA as a dynamic, context-sensitive capability, offering both researchers and practitioners a more accurate tool for assessing a firm's marketing agility.

In the next section, we review the existing literature on MA and the dynamic capabilities view; we also develop hypotheses and the research model. In section 4, we demonstrate the study design, methodology and analysis. Section 5 contains the study discussion and conclusion. This is followed by a discussion on the limitations of our study and some suggestions for future researchers.

2. THEORETICAL BACKGROUND

2.1. Marketing Agility

MA was defined 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.” (Zhou *et al.*, 2019, p. 33). Agile firms can take both reactive and proactive marketing decisions in line with the changes in the marketplace (Zhou *et al.*, 2019). From a more process-based point of view, Kalaignanam *et al.* (2021) discussed sensemaking, iteration, speed and marketing decisions as the four main processes of MA. The marketing activities affecting customers which fit MA best are those conducted in uncertain business environments and can be examined to generate learning and allow iterations based on learning. Marketing mix strategies are accepted as ordinary (i.e., static) firm capabilities, whereas MA strategies are accepted as dynamic capabilities (Zhou *et al.*, 2019) because MA “enables firms to acquire,

integrate and reconfigure resources and dynamically position themselves competitively” (Vickery *et al.*, 2010, p. 7028). The relationship between dynamic capabilities and firm performance is still disputable among researchers (Farzaneh *et al.*, 2022; Zhou *et al.*, 2019).

In this paper, following Zhou *et al.* (2019), we treat MA as a dynamic capability of a firm that enables companies to develop their marketing and to be able to reconfigure their marketing decisions at short notice. MA is conceptualized as having dimensions of proactive market sensing, responsiveness, flexibility and speed. Proactive market sensing refers to firms’ ability to identify, sense and foresee market needs in the marketplace (Khan, 2020). Responsiveness indicates firms’ ability to react to changes in the environment (Zhou *et al.*, 2019). Speed brings in the promptness of a firm’s response to market opportunities and threats. Flexibility in a firm produces different offerings efficiently and effectively.

The literature has mostly discussed specific marketing applications of agility, except for three major studies which have discussed conceptualizations of MA: Zhou *et al.*, 2019; Homburg *et al.*, 2020; and Kalaignanam *et al.*, 2021. Some examples of specific marketing applications of agility are customer agility (Roberts and Grover, 2012; Hajli *et al.*, 2020), social media agility (Chuang, 2020), chat-bot agility (Wang *et al.*, 2022) and brand agility (Rego *et al.*, 2022). Although a link between MA and customer satisfaction has already been suggested in conceptual studies on MA (Homburg, *et al.*, 2020; Aghina *et al.*, 2020; Kalaignanam *et al.*, 2021), empirical studies have not investigated this link through customer service capabilities and co-creation, to the best of our knowledge. Studies that examined the link between MA and firm performance have emerged from more than one context: among them are international MA (Asseraf, *et al.*, 2019; Gomes, *et al.*, 2020; Khan, 2020; Nemkova, 2017; Osei *et al.*, 2019; Ozsomer, *et al.*, 2023), tourism (Agag *et al.*, 2025; Moi and Cabiddu, 2021; Zhang *et al.*, 2022), crisis management for B2B firms (Moi and Cabiddu, 2022) or the mediating role of agility on the effect of IT/marketing analytics on firm performance (Liang, *et al.*, 2022; Tallon and

Pinsonneault, 2011). Zhou *et al.* (2019) indicated with their survey data the direct and indirect effects of MA on only one (subjective) measure of firm performance, through innovation capabilities, in manufacturing industries. They called for further studies to consider other firm performance measures.

The literature on MA has been mostly conceptual or qualitative (Nemkova, 2017; Osei *et al.* 2019; Kalaighnam *et al.* 2021; Moi and Cabiddu, 2022) and empirical studies on the relationship between MA and firm performance are scanty (Kalaighnam *et al.*, 2021). As we can see from Table 1, the direct effect of MA on firm performance has hardly been empirically tested except for Zhou, Mavondo, and Saunders (2019) and Asseraf, Lages, and Shoha (2022) where they measured international MA, not MA. Besides, they measured firm performance using subjective measures i.e. manager reported self-firm performance rather than objective measures (i.e. ROA and customer satisfaction) like us. Manager-reported firm performance is open to biases. Existing empirical studies examined the indirect effect of MA on firm performance through innovation capabilities (Zhou, Mavondo, and Saunders, 2019), marketing mix adaptation capabilities (Khan, 2020), but not through customer service (*measuring customer service performance*) and value-creating/innovation (*i.e. measuring co-creation*) capabilities which is the main contribution of this study. A few empirical studies used MA as a mediator between marketing analytics and firm performance (Liang *et al.*, 2022) or as a moderator between international MA and international market performance and new products advantage. We included in Table 1 studies that measured MA empirically and indicated our contribution.

INSERT TABLE 1 HERE

3. RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

3.1. Dynamic Capabilities Theory and Marketing Agility

Dynamic capabilities framework is the overarching theory in this research. Dynamic capabilities are explained as “the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments” (Teece, Pisano, and Shuen 1997, p. 516) and have three core elements: sensing, seizing, and reconfiguring (Pinho *et al.*, 2022). Companies that can detect market opportunities fast and correctly (i.e., sensing), that can pursue the identified opportunities efficiently (i.e., seizing), and that can reconfigure concerns through enhancing/renewing a firm’s existing resources can gain competitive advantage and resilience in the face of shifting market demands, technological advancements, and other external factors. In this article, we expect that MA as a dynamic capability of a firm (Zhou, Mavondo, and Saunders 2019) significantly improves the ordinary capabilities of a firm for renewals and reconfiguration, specifically customer service (consisting of customer orientation and customer response capabilities) and new value-creating capabilities (through co-innovation), and consequently leads to higher customer satisfaction and excellent firm performance in the long term. In addition to these indirect effects of MA, we expect that MA might have a negative direct effect on short-term and positive effect on long-term firm performance because MA requires not only responsiveness and speed of customer demands but also flexibility and proactiveness capabilities. The research model is shown in Figure 1.

INSERT FIGURE 1 HERE

3.2. Marketing agility and firm performance

MA priority is one of the three dimensions of marketing excellence (Homburg, *et al.*, 2020) and increases financial performance of firms through the increased capacity to innovate (Zhou

et al., 2019) and firm value (Homburg *et al.*, 2020). As a valuable dynamic capability, MA helps firms to attain, incorporate and reorganise their resources dynamically (Blome *et al.*, 2013) and gain greater competitive advantage over time (Vickery *et al.*, 2010). Kalaignanam *et al.* (2021) warned that executing MA is challenging and not suitable for all firms and/or marketing activities. Besides, having MA does not mean that firms should always respond to marketing developments, for no action is sometimes the best decision in certain situations, especially if acting carries a high cost. Proactive market sensing does not imply that a final decision is always appropriate (Kalaignanam *et al.*, 2021, p. 38). We believe that knowledge created too quickly, which might be unstable and speedy decisions and iterations based on unstable knowledge might together produce an outcome of proactive market sensing capability that would reduce the effect of MA on short-term firm performance. Quick responses to marketing trends or hypes come with the risk of misalignment with brand identity and brand reputation damage. For instance, Pepsi quickly responded to the activism trend and launched an ad with Kendall Jenner in 2017 which caused millions of losses for Pepsi.

Learning requires iterative processes and testing, which both require ample time. Zhou *et al.* (2018)'s study on customer agility illustrates that willingness to buy increases when a company responds effectively to its customers' demands. However, they also noted that overresponding to customers' demands increases product development costs (Atuahene-Gima, 2005; Roberts and Grover, 2012). Overly hasty decisions relying on quickly created knowledge in a short time might be unstable and the iterative execution of marketing strategies might cause unpredictable outcomes and could increase costs. Thus, learning and market sensing could be implemented so fast, specifically in high uncertainty markets (because they require markets to be analysed in haste) that adaptations might cause unstable outcomes in the short term which consequently reduces firm profitability in the short-term. For instance, Meta launched Meta Portal, a smart video-calling device in 2018 to capitalize the growing market for home devices

and video calling and to compete with Amazon's Alexa and Google's Assistant devices. Their product didn't have as many features as other similar products. Also, customers weren't ready to start using smart devices at that time. The timing of their launch wasn't good either because it happened during the Cambridge Analytica crisis. Because of this, their quick actions and MA efforts didn't work well since they didn't match what customers wanted or the market situation. As a result, they stopped making the product in 2022. Lee *et al.* (2020) indicated that the relationship between knowledge management capability and firm performance is not significant in the short term (first year performance) and is significantly stronger in the long term (second- and third-year performance). Overall, MA might decrease short-term firm performance because it requires extensive marketing management skills, is more complex to use, increases company costs, might come with risks of mismanaging capabilities or not fully integrating to identify benefits and may result in firms being less able to identify and respond to opportunities and threats in the short-term. Thus, we hypothesize that

H1: *Marketing agility has a negative effect on short-term profitability.*

While dynamic capabilities are future-oriented, ordinary capabilities are about day-to-day firm activities and about competing today (Ambrosini *et al.*, 2009). We expect MA as a dynamic capability to have a positive direct effect on long-term firm performance, apart from influencing customer satisfaction (Roy *et al.*, 2017) through improved service performance (Um, 2017) and co-creation (Al-Omoush *et al.*, 2023) (i.e., indirectly). Companies which prioritise customers, give importance to MA and develop broader and more future-oriented business models (Homburg *et al.*, 2020). Zhou *et al.* (2019) have indicated that MA, both directly and indirectly, influences firm performance and firm value. Homburg *et al.* (2020) stated that trial-and-error learning, fast decision making, and simplified processes and structures are necessary for agile marketing (p. 10). Since MA is a dynamic capability, companies with stronger MA identify market opportunities and threats sooner, sense changes

in customer behaviours and the external environment, respond promptly, re-distribute their resources, re-organize their processes in real time (Mikalef *et al.*, 2021) and respond to new market opportunities in a timely and innovative way (Tallon and Pinsonneault, 2011). Aghina *et al.* (2020) concluded that agile firms introduce new products earlier than non-agile firms. Overall, short-term profitability may not necessarily be positive, but over time with seizing, iteration (i.e., testing) and learning capabilities, marketing agile companies are more likely to respond to market demand swiftly with their ability to shift resources flexibly and on demand, have agile processes to use their assets better (Jacobs, Droge, Vickery, and Calantone, 2011), reduce costs with their simplified and creative processes and structures, and thereby gain high market share and increase their profits (Ashrafi *et al.*, 2019). In sum, viewing MA as a dynamic capability driving firm performance, we suggest the following hypotheses:

H2: *Marketing agility has a positive effect on long-term profitability.*

3.3. Marketing agility and customer satisfaction

Customer satisfaction is a post-purchase decision construct (Matsuoka, 2022), which measures how the offerings of an organization meet/exceed customer expectations and help customers decide whether they want to continue/discontinue their relationship with the company (Koklic *et al.*, 2017). Dynamic capabilities theory provides a robust framework for understanding how MA can positively impact customer satisfaction. Kalaignanam *et al.* (2021) argue that MA, as a dynamic capability, entails rapid iterations between sensing and executing marketing decisions, such as identifying customer needs and helping organizations to create customer value (Zhou *et al.*, 2018). Agility enables organizations to leverage customer data more effectively, fostering a data-driven approach to customer relationship management (Agag *et al.*, 2024). This enhanced understanding of customer needs and preferences, combined with the ability to rapidly respond, creates a strong foundation for enhancing customer value (Cegarra-Navarro and Martelo-Landroguez, 2020; Homburg, *et al.*, 2020) and therefore, higher customer

satisfaction (Gligor *et al.*, 2020). Additionally, the relationship between MA and customer satisfaction is strengthened in turbulent market conditions, as agile firms are better equipped to navigate uncertainties and maintain customer-centric focus (Agag *et al.*, 2024). In the marketing literature, it is also an established fact that prompt responses to customer needs positively impact their satisfaction as they believe that they are heard and understood' (Fornell, 1992; Gloor *et al.*, 2017). Therefore, based on the dynamic capabilities perspective and recent empirical evidence, we hypothesize the following:

H3: Marketing agility has a positive effect on customer satisfaction.

3.4. The mediating role of customer service performance

Research indicates that firm's adept at MA is better positioned to respond promptly to evolving customer needs and market dynamics (Kalaighnam *et al.*, 2021) and execute marketing decisions promptly (Kalaighnam *et al.*, 2021). Such agile organizations excel in leveraging real-time data and insights to tailor their marketing strategies effectively. Although MA and customer satisfaction by themselves are important metrics for organizational success (Homburg *et al.*, 2020; Zhou *et al.*, 2019), the role of customer service performance cannot be ignored. There is ample evidence in the customer equity literature to support the view that customer service performance is a key performance indicator for firms, and positively enhances customer satisfaction (Mithas *et al.*, 2005). Recently, Wang *et al.* (2022) found that agility improves customer service performance by helping employees' interactions with customers and adjusting their performance to handle revised customer demands (Chuang, 2020). This mediating relationship can be understood through the lens of dynamic capabilities theory. MA, as a dynamic capability, allows organizations to continuously adapt their customer service strategies, leading to improved service performance. The ability to quickly iterate between market sensing and executing marketing decisions also allows firms to enhance their customer service performance, potentially leading to increased satisfaction. Recent empirical evidence

also suggests that organizations with higher levels of MA tend to prioritize investments in customer service capabilities (Chuang, 2020; Mithas *et al.*, 2005) which are the operational arm that translates these agile marketing strategies into tangible customer experiences. These investments encompass facets such as personalized customer interactions, streamlined issue resolution, and proactive customer engagement strategies. Consequently, these augmented customer service efforts have consistently demonstrated a positive impact on elevating customer satisfaction levels (Piccoli *et al.*, 2003). Thus, we propose the following:

H4: Customer service performance mediates the relationship between marketing agility and customer satisfaction.

3.5. The mediating role of customer co-creation

Customer co-creation is defined as “a demand-centric and interactive process that involves at least two willing resource-integrating actors who are engaged in specific forms of mutually beneficial collaboration that results in value creation for them” (Buonincontri *et al.*, 2017, p. 1). The concept of customer co-creation is based on the assumption that, without the active participation of customers, organizations cannot independently create value (Al-Omoush *et al.*, 2023; Navarro *et al.*, 2016). In the literature, findings suggest that agile firms, characterized by MA, are more inclined to facilitate customer co-creation (Carayannis *et al.*, 2015; Dabić *et al.*, 2021). Since MA helps an organization to sense customer needs/expectations (Teece, 2014), organizations can redirect/redeploy their scarce resources (Homburg *et al.*, 2020; Cegarra-Navarro and Martelo-Landroque, 2020) and involve customers as collaborative partners (Navarro *et al.*, 2016; Lusch *et al.*, 2007) to enhance customer satisfaction (Navarro *et al.*, 2016; Woratschek *et al.*, 2020). Similar findings were shared by others who argued that collaboration with customers leads to favorable outcomes and creates new value for the firm and all the parties involved (Al-Omoush *et al.*, 2023; Baah *et al.*, 2022; Wu *et al.*, 2017). Furthermore, previous research has shown a positive correlation between increased customer

co-creation and elevated levels of customer satisfaction (Navarro, *et al.*, 2016). This alignment is rooted in the concept that active participation in co-creation processes empowers customers, fostering a sense of ownership and value from their contributions, ultimately leading to heightened satisfaction (Woratschek, *et al.*, 2020; Vega-Vazquez, *et al.*, 2013). We argue that firms embracing MA are more likely to encourage customer co-creation (Carayannis *et al.*, 2015; Dabić *et al.*, 2021), and consequently, customers actively participating in co-creation processes are more likely to experience heightened levels of satisfaction (Navarro *et al.*, 2016; Woratschek *et al.*, 2020). Therefore, we argue:

H5: Customer co-creation mediates the relationship between marketing agility and customer satisfaction.

3.6. Customer satisfaction and firm performance

Previous studies have validated the relationship between satisfaction and profitability (Eklof *et al.*, 2020; Golovkova *et al.*, 2019; Sun and Kim, 2013; Otto *et al.*, 2020; Williams and Naumann, 2011). Bernhardt *et al.* (2000) as well as Nelson *et al.* (1992) have suggested that the performance measures of any firm are very closely linked with customer satisfaction since the latter affect a firm's future sales and, thereby, affect future profitability since satisfied customers stay loyal, spread positive word-of-mouth, are easy to retain and repeat their purchase habits, in contrast to dissatisfied customers (AbuRaya *et al.*, 2023; Golovkova *et al.*, 2019; Otto *et al.*, 2020). Reichheld and Sasser (1990) argued that satisfied customers help organizations to generate 60% of sales and profits, due to their word-of-mouth. Golovkova *et al.* (2019) studied the relationship between customer satisfaction and firm's financial performance in the banks of seven European countries and emphasized the need to enhance customer satisfaction to boost profits. Recently, AbuRaya *et al.* (2023) made use of stakeholder theory to justify the positive relationship between customer satisfaction and firm performance and found that customer satisfaction improves firm performance (in terms of profits). Williams

and Naumann (2011) studied five years of data from a large Fortune 100 company using a longitudinal approach and found that higher customer satisfaction scores are positively associated with short term profitability (Guo *et al.*, 2004; Otto *et al.*, 2020) and long-term profitability (Mittal *et al.*, 2005; Otto *et al.*, 2020). Mittal *et al.* (2005) found that customer satisfaction drives short-term as well as long-term profits with his longitudinal study. Similar relationships were reported in previous studies from other sectors such as hospitality and tourism (Bernhardt *et al.*, 2000; Denizci and Li, 2009; Sun and Kim, 2013), banking (Eklof *et al.*, 2020) and hospitals (Nelson *et al.*, 1992). All unanimously supported and validated the proposition that customer satisfaction is a positive predictor of a firm's future profitability. On the basis of the above arguments and supporting studies, we argue that customer satisfaction has a positive effect on short-term as well as long-term profitability.

H6: Customer satisfaction has a positive effect on short-term profitability.

H7: Customer satisfaction has a positive effect on long-term profitability.

4. Studies

We test our hypotheses and the research model using two studies. The purpose of Study 1 is to examine the direct influence of MA on short-term profitability, MA on customer satisfaction, and customer satisfaction on short-term firm profitability. Study 1 also investigates the mediating role of customer service performance, customer co-creation and customer satisfaction on these relationships. For Study 1, we used cross-sectional data derived from an online survey of managers and directors of UK firms operating in various industries. On the other hand, Study 2 was conducted to meet two objectives. First, Study 2 focused on examining the relationship between MA and long-term profitability using a multisource panel dataset. Second, Study 2 aimed to validate the results of Study 1 by testing and confirming those findings. A key distinction in Study 2 was its approach to measuring customer satisfaction.

Study 2 utilized secondary data for a more objective assessment. Additionally, Study 2 extended the scope by exploring the link between MA and both short-term and long-term profitability.

4.1. Study 1

4.1.1. Data collection and sample

Data collection for Study 1 occurred over two weeks around the beginning of January 2019. We employed a reputable market research company in the UK to collect the required data. The database of this research company includes over 54,000 firms operating in different industries (e.g., banking, chemicals, fixed telecoms, machine building, energy, travel agencies, paper, metal mining, holiday parks, airlines, supermarkets, department stores, foods and online booking) in the UK. The firm information was manually extracted from the website by a research assistant and subsequently verified by the authors to verify data consistency. The respondents were contacted by phone and email to participate in the study. This approach produced verified contact information of senior managers responsible for sales and marketing in 1500 companies. The respondents were invited to participate in the online survey with reminders in the third and the fifth week following the initial request. We received 621 responses out of which 12 questionnaires were dropped as they failed to meet the quality checks leaving us with a final sample size of 609 questionnaires.

Each firm provided a single respondent, resulting in a 40.60% response rate. 75.30% of the firms in the sample had more than 50 employees and 81% of them were more than five years old. Most of the respondents were senior (59%) or general managers (23%) who were responsible for decision-making in their firm, so they were highly knowledgeable about the research model constructs of our study. To ascertain key informant competency, we asked participants regarding their knowledge and engagement with the survey variables, as well as their confidence in answering the questions. Their responses yielded an average score of 4.6

on a five-point scale. Moreover, key informants had been employed at their firm for an average of 12.6 years and held their current position for an average of 8.2 years. They occupy senior roles with duties in marketing and sales. Homburg *et al.* (2011) assert that the accuracy of key informants markedly improves with their hierarchical status and duration of employment within the organisation. The descriptive statistics and recommendations from previous literature reveal that the key informants in the study possess extensive knowledge regarding their firms' MA and customer satisfaction.

4.1.2. Measures

A multisource data set was used in this study to test the suggested hypotheses. Primary data on MA were collected from the respondents in a survey, with details of customer service performance, customer co-creation, and customer satisfaction. We used measurements established in previous studies to measure MA (Zhou *et al.*, 2019). Following guidelines provided by Khan (2020), the score for MA is the average of the scores for proactiveness (four items), speed (four items), responsiveness (four items), and flexibility (three items). Customer satisfaction was evaluated using a scale developed by Fornell *et al.* (1996) and Shaalan *et al.* (2022). Customer service performance was measured using three items from Setia *et al.* (2013). Customer co-creation was assessed using six items adapted from Khanagha, Volberda, and Oshri (2017) and Chuang (2020). Secondary data were used to assess firm performance and control factors at the industry level. Finally, short-term profitability was operationalised as the return on assets (ROA) in the analysis of the focal year (*t*). Previous research in the field of marketing (e.g., Bamberger *et al.*, 2021; Feng *et al.*, 2015) has established ROA as a reliable measure of profitability. We adjusted the ROA by industry to account for any industry impacts in the sample as a whole. More precisely, we deducted the average ROA of all businesses in the sample frame ("derived for each two-digit SIC code"). To keep data in chronological order, firms' MA was measured one year before the focal year of analysis.

To reduce omitted variable bias, our study includes several control factors that were commonly recognized in prior studies as influencing agility and firm performance (e.g., Rutz and Watson, 2019). At the firm level, firm size was included in our proposed model. Firm size was measured as the firm's annual revenue and firm age was assessed as the number of years the firm has been in business (Connelly et al. 2016; Messersmith, Kim, and Patel 2018). The previous year's performance was assessed as "industry-adjusted ROA at t-1" (Bamberger et al., 2021). At the industry level, we included various control factors, such as industry concentration, industry stability (Cobb and Lin 2017; Connelly et al. 2016) and industry growth (Cobb and Lin 2017; Connelly et al. 2016). To confirm that MA is a precursor and to mitigate the concern of reverse causation, we assessed this measure at t-1. Table 2 demonstrates the operationalisation of our study constructs and Table 3 indicates the measurement items.

INSERT TABLE 2 HERE

INSERT TABLE 3 HERE

We followed the guidelines and recommendations proposed by Podsakof *et al.* (2003) in the design of our survey. Initially, we employed a methodical strategy in the creation of the survey instrument. We modified existing measures and validated the clarity of the scales and instructions in the pilot test. The pilot test also validated the suitability of employing top managers as key informants. Secondly, despite the challenges posed by the nonlinear main effect, moderation effects, and the implementation of temporal separation, which complicated informants' ability to anticipate relationships among the study constructs, we designed the questionnaire to avoid speculation. We also asked six professors of marketing and five

marketing managers to pre-test the study questionnaire for relevance, ease of comprehension, and completeness.

4.1.3. Measurement properties

Partial least squares structural equation modelling (PLS-SEM) with SmartPLS was used to validate the measurement model and test the proposed hypotheses (Ringle *et al.*, 2015). We employed PLS-SEM because it utilizes higher-order constructs without significantly increasing sample size, and because it can easily handle multiple mediation analyses, assessing each mediation path, while “controlling for all other included mediators” simultaneously (Hair *et al.*, 2021; Sarstedt *et al.*, 2022). A confirmatory factor analysis was conducted to assess the reliability and validity of our study variables (see Table 3). Table 4 indicates that the composite reliability values of all the study variables were between 0.84 and 0.89. These values were above the cut-off value of 0.70, indicating that the internal validity of the variables was evident. We used average variance extracted values (AVE) to assess convergent validity. All AVE values were above 0.50 (Fornell and Larcker, 1981), confirming that the convergent validity of the study’s variables was established. We used the heterotrait–monotrait (HTMT) ratios approach to assess the discriminant validity (Henseler *et al.*, 2015). Our analysis indicated that all HTMT values were less than 0.85. In addition, the square root of each AVE value was greater than the correlation between pairs of constructs (Fornell and Larcker, 1981), demonstrating the existence of discriminant validity.

INSERT TABLE 4 HERE

4.1.4. Endogeneity

We performed various checks to eliminate concern over omitted variable bias (Rutz and Watson, 2019). First, a time-trend analysis was used to assess the chance of nonresponse bias (Armstrong and Overton, 1977). Two subsamples from early and late responders were selected. The analysis revealed no significant differences between the two groups. Therefore, the possibility of nonresponse bias was excluded. Second, the potential for simultaneity between MA and its outcomes was diminished by developing temporal order (Rutz and Watson, 2019). We selected prior-year profitability as a kind of simultaneity that might affect MA in the year under review. This scale was operationalised at $t-1$ to confirm that MA was a driver and to reduce the potential for reverse causality. Firm profitability data were gathered in the analysis focal year (t). Third, partial least squares structural equation modelling (PLS-SEM using SmartPLS) was employed to adjust for measurement errors. Inaccurate estimates of construct connections may come from the incomplete measurement of any focal construct (Rutz and Watson, 2019). SEM allows us to model the error component and compensate for any distortion produced by measurement errors. PLS-SEM has advantages over covariance-based SEM in terms of the possibility of using the non-normal data, small sample sizes, formative measurement of latent variables (Hair *et al.*, 2021). Fourth, a marker variable approach was used to assess common method bias (Lindell and Whitney, 2001). We used questions to gauge economic confidence (e.g., “How much confidence do you have in your national economy today?”) which were not related to our study constructs. Our analysis indicated that the links between the marker variable and the study constructs went from -0.24 to 0.09. This result revealed that there is no significant association ($p < 0.05$), indicating that common method bias was not a concern in this research.

First, we checked if there were any critical collinearity issues with the structural model by making sure the inner VIF values were less than 5, as suggested by Hair *et al.* (2021). PLS-SEM differs from covariance-based structural equation modelling in that, rather than

evaluating “goodness of fit indices”, the quality of the model is dependent on the model’s explanatory and predictive strength (Hair *et al.*, 2021). Our model had an overall R^2 value of 0.731 for the primary endogenous factor and an increased R^2 value of $R^2 = 0.759$ when the control factors were included in the analysis. The range of R^2 values from 0.10 to 0.50 made this an acceptable result (Hair *et al.*, 2021). Therefore, our model was deemed to have high level of predictive power.

Finally, we followed the procedures suggested by Shmueli *et al.* (2019) and used the PLSpredict module in SmartPLS to assess our model’s predictive power in “an out-of-sample setting”. To simulate “a hold-out sample”, PLSpredict divides the study sample into k similar subsets (called “folds”) and then uses the findings of the first “ $k-1$ folds” to make predictions about the results of the last k folds. With 609 responses, our sample size was large enough to use the suggested number of folds (“ $k = 10$ ”). The first step in our evaluation was to check the “Q2 predict statistic” for each indicator of our endogenous factors to make sure that all values were higher than zero, suggesting that “they outperform the most I benchmark (the training sample’s indicator means)” (Shmueli *et al.*, 2019, p. 2334). After observing “the non-symmetrical distribution of predictive errors in our model”, we utilized the “mean absolute error” (MAE) prediction statistic to evaluate accuracy. We compared the mean of the “training sample” to the “MAE” prediction of our model for each endogenous indicator. High predictive power is indicated when the model’s predictions for all indicators are better than the mean of the training samples.

4.1.6. Analytical Approach

Our study utilized Partial Least Squares (PLS) in the package WarpPLS 7.0 to conduct the data analysis. PLS is suitable for this exploration as it evaluates a measurement model for the theoretical framework, imposes no assumptions about data normality, and deals with a large sample size (Mueller and Hancock, 2018). PLS is an effective method for estimating composite

models, particularly suitable for complex models with multi-dimensional features (Hair *et al.*, 2021). Recently, the Partial Least Squares (PLS) approach has gained significant popularity among scholars in marketing due to its variance-based methodology, as opposed to covariance (Hair *et al.*, 2021; Hayes *et al.*, 2017). PLS-SEM is more appropriate than CB-SEM for exploratory investigations when examining the link between dependent and independent constructs (Hair *et al.*, 2021). Moreover, normally distributed data is not a prerequisite for PLS-SEM (Hair *et al.*, 2021). Given the nature of this investigation, PLS-SEM is the more appropriate technique for data analysis.

4.1.7. Results

The analysis indicated that MA had a positive indirect influence on short-term profitability ($\beta = 0.29$, 95% CI: [0.02, 0.36]; see Table 5). As we suggested, MA has a negative influence on short-term profitability ($\beta = -0.18$, $p < 0.05$), supporting H1. MA has a significant effect on customer satisfaction ($\beta = 0.09$, $p = 0.15$); thus, H3 was supported. Findings also reveal that MA was a significant and strong driver of customer service performance ($\beta = 0.57$, $p < 0.001$) and customer co-creation ($\beta = 0.32$, $p < 0.001$). The analysis indicated that customer service performance and customer co-creation had a significant positive effect on customer satisfaction ($\beta = 0.26, 0.34$, $p < 0.01$, respectively).

INSERT TABLE 5 HERE

We employed the MODEL 4 using SPSS PROCESS macro (Hayes, 2013) to test the mediating effects for H4 and H5. Consistent with previous research, we performed the mediation analysis using a bootstrapping sample of 10,000. Table 5 presents the bootstrap findings for the indirect impacts of customer service performance, indicating a substantial mediating effect as the zero is excluded from the confidence interval range (CI) (effect = -0.07 ;

95% CI [-0.16, -0.02]). Therefore, Hypothesis 4 is supported. Furthermore, the analysis revealed that customer co-creation mediates the link between MA and customer satisfaction as the zero is excluded from the confidence interval range (CI) (effect = -0.09; 95% CI [-0.14, -0.03]). Therefore, Hypothesis 5 is supported.

The analysis revealed that MA has a significant indirect effect on customer satisfaction through customer outcomes ($\beta = 0.29$, 95% CI: [0.02, 0.36]). The analysis revealed a significant indirect effect of MA on short-term firm profitability through customer co-creation ($\beta = 0.13$, 95% CI: [0.02, 1.49]). Also, the indirect effect of MA on short-term firm profitability through customer service performance was found statistically significant ($\beta = 0.04$, 95% CI: [0.06, 1.20]). Finally, as we hypothesised, customer satisfaction has a positive influence on short term profitability ($\beta = 0.42$, $p < 0.001$). Thus, H6 was supported. The findings indicated that MA has an indirect effect on short-term profitability through customer satisfaction ($\beta = 0.16$, 95% CI: [0.04, 1.68]).

Previous studies revealed that customer co-creation is significantly related to customer service performance (Tseng and Chiang, 2016). Consequently, the SEM analysis was repeated, incorporating links from customer co-creation to customer service performance ($\beta = 0.05$, $P = 0.26$). All the suggested relationships remained robust in the expanded research model.

4.1.8. Robustness checks.

Several checks were conducted to ensure the robustness of the findings. Three additional models were estimated using different measures of firm profitability and control factors. Table 6 shows the main results of the proposed relationships of the robustness checks. First firm performance was operationalised using “industry-adjusted return on sales” instead of the ROA (“Model 1”). Second, industry level effects were operationalised using industry dummies instead of adjusting the ROA (“Model 2”). Third, the previous year’s performance was excluded from our model (“Model 3”). The analysis revealed that the suggested relationships

were robust to different operationalisations of firm performance and control factors, offering additional support for the study findings.

INSERT TABLE 6 HERE

4.2. Study 2

4.2.1. Data collection and sample

For Study 2, data were collected from various sources (i.e., Compustat and CSI) during 2000-2021. All companies on the Financial Times Stock Exchange 350 in the United Kingdom served as the study's sample frame. This initial sample was manually matched with the CSI, a common technique for measuring customer satisfaction used by marketing research (Rego *et al.*, 2013). Our method successfully collected 319 companies from different industries (as shown above, p.16). We included three years of firm-year Compustat-dependent factor data (2019-2021) to measure future financial performance. The short-term firm performance model was based on 4,218 firm-year observations and the long-term firm performance model was based on 957 firm-year observations.

All firms in the sampling frame were contacted by telephone. Email addresses and phone numbers of the relevant individuals were provided. Via targeted direct mail, managers were requested to fill out an online questionnaire on a single occasion within the span of one year, then subsequently at a consistent time each year throughout the entirety of the sampling period. A reminder was given to the respondents again after three weeks following the original mail. The effective response rate was 75%, with 319 businesses having their key informants return full questionnaires (319 of 421 firms). Previous research suggestions and the descriptive statistics of our sample demonstrated that the respondents in our study were highly knowledgeable about MA. 72.5% of the firms have > 50 employees and are greater than five

years old (84%). These statistics reveal that these firms have experience with issues of MA. Most of the respondents are senior managers (58%) and general managers (29%).

4.2.3. Measures

The same measures as in Study 1 were used to measure the Study 2 variables (i.e., short-term firm performance (t), MA, firm age (t), firm size (t), industry instability (t - 2, t - 1, t), industry concentration (t), and industry growth (t - 2, t - 1, t). MA was measured one year before the focal year of analysis (t - 1) to develop a chronological order for all data. Each online survey included fifteen statements that were directly associated with measuring MA using a Likert scale ranging from 1 “strongly disagree” to 5 “strongly agree” (“see Table 3 for more details on MA measure”).

Consistent with previous research (e.g., Hendiani and Bagherpour, 2019), a fuzzy mathematical technique was used to develop an MA index. A unique feature of the fuzzy technique is its capability for taking the main dimensions of MA (i.e., “proactiveness, responsiveness, flexibility, and speed”) simultaneously into consideration. Furthermore, the fuzzy technique incorporates uncertainties associated with activities, which in turn enhance the measurement accuracy (Hendiani and Bagherpour, 2019). The main idea behind this method is to create fuzzy mathematical equations that can be employed to the technique and then use those equations to combine all dimensions of MA and their respective parameters to derive a measure of MA. The following stages will provide solutions to all these issues (Zadeh, 2015): First, we developed the study questionnaire including the main dimensions of MA (i.e., “proactiveness, responsiveness, flexibility, and speed”). The study questionnaires were distributed to the managers of firms. To establish temporal order, MA was measured in the year before the focal year of analysis (t - 1).

Second, we estimated the fuzzy membership functions of both the most fundamental and most abstract qualities. All attribute membership fuzzy functions are assumed to be triangular. The alternative values (raw data) in this study may be normalized with respect to the best and worst values for a certain criterion by use of a transformation procedure. Third, we determine the degree of fuzziness in each dimension separately (i.e., proactiveness, responsiveness, flexibility, and speed). Fourth, we assessed the total fuzziness across all dimensions.

We employed the fuzzification interface to transform “crisp data” into “fuzzy data” utilising the following equation:

$$\mu(xi) = \frac{Zi - WV}{BV - WV} \quad (1)$$

where $\mu(xi)$ refers to the linear transformation index value, Zi: represents the raw value of each attribute or each question, BV: Best Value: 5, WV = Worst value: 1.

The fuzziness (f) measure of each dimension (i.e., proactivity (pro), responsiveness (rsp), flexibility (flx), and speed (spd) can be calculated as follows:

$$f(\text{pro})_j = 1 - \frac{\left[\sum_{i=1}^{n_{\text{pro}}} (2\mu_{\text{pro.}}(x_i) - 1)^2 \right]^{1/2}}{\|n_{\text{pro}}\|} \quad (2)$$

$$f(\text{rsp})_j = 1 - \frac{\left[\sum_{i=1}^{n_{\text{rsp}}} (2\mu_{\text{rsp.}}(x_i) - 1)^2 \right]^{1/2}}{\|n_{\text{rsp}}\|} \quad (3)$$

$$f(\text{flx})_j = 1 - \frac{\left[\sum_{i=1}^{n_{\text{flx}}} (2\mu_{\text{flx}}(x_i) - 1)^2 \right]^{1/2}}{\|n_{\text{flx}}\|^{1/2}} \quad (4)$$

$$f(\text{spd})_j = 1 - \frac{\left[\sum_{i=1}^{n_{\text{spd}}} (2\mu_{\text{spd}}(x_i) - 1)^2 \right]^{1/2}}{\|n_{\text{spd}}\|^{1/2}} \quad (5)$$

Where,

j: “status of fuzzy member triangle (pessimistic, optimistic, and most likely)”.

n pro: “number of attributes regarding the proactiveness dimension”.

n rsp: “number of attributes regarding the responsiveness dimension”.

n flx: “number of attributes regarding the flexibility dimension”.

n spd: “number of attributes regarding the speed dimension”.

To calculate the MA index (MAI) at this stage, we use a global measure of all dimensions (dims), as shown below:

$$f(MAI)_j = 1 - \frac{\left[\sum_{i=1}^{n_{\text{dims}}} (2\mu_{\text{infr}}(x_i) - 1)^2 \right]^{1/2}}{\|n_{\text{dims}}\|^{1/2}} \quad (6)$$

Furthermore, to assess customer satisfaction we included the U.K. Customer Satisfaction Index and operationalised long-term firm performance “as the future three-year average industry-adjusted ROA for years t , $t+1$ and $t+2$ ” (Feng *et al.*, 2015). The data were winsorized at the 1% level to make sure that outliers did not skew the findings (Rego *et al.*, 2013). The descriptive statistics and relationships between constructs are shown in Table 7.

INSERT TABLE 7 HERE

4.2.4. Analytical Approach

We used fixed-effects regression to model the data, which controls for time-invariant factors at the firm and the industry level (Connelly *et al.*, 2016). It also lessens concern over autocorrelation and heteroskedasticity and offers a conservative assessment of the proposed hypotheses (Connelly *et al.* 2016). The results of the Hausman (1978) test ($X^2 / \text{d.f.} = 26.09$, $p < 0.01$) revealed that a fixed-effects regression is appropriate, unlike a random-effects regression. The heteroskedastic error term was decreased by using “robust standard errors” in our analysis.

4.2.5 Results

The results indicated that the direct influence of MA on firm performance appears in the long term ($\beta = 0.37$, $p < 0.01$), confirming H2. The analysis also revealed that MA has a negative influence on short-term profitability ($\beta = -0.24$, $p < 0.01$), providing further support for H1. But MA does have a significant positive influence on customer satisfaction ($\beta = 0.49$, $p < 0.01$) and the link between customer satisfaction and short-term firm performance was significant ($\beta = 0.31$, $p < 0.01$), providing support for H3 and H6. Our analysis also revealed that the indirect influence of MA on short-term firm performance through customer satisfaction was significant. This result revealed that customer satisfaction partially mediated this relationship in the short term. These results provide additional support for the results in Study 1. The link between customer satisfaction and long-term firm performance was significant ($\beta = 0.12$, $p < 0.01$), providing support for H7.

Furthermore, we employed the Baron and Kenny (1986) method for testing the mediating role of customer satisfaction on the link between MA and firm performance. The analysis revealed that customer satisfaction partially mediated this relationship. The results in Table 8 were consistent with the results of our main analysis, providing additional support for the results of Study 1. The summary of the results from Study 1 and Study 2 is as shown in Table 9 and Figure 2.

INSERT TABLE 8 HERE

INSERT TABLE 9 HERE

INSERT FIGURE 2 HERE

5. DISCUSSION

While prior research suggests a link between MA and firm performance (Agag *et al.*, 2025; Liang *et al.*, 2022; Asseraf *et al.*, 2019), the mechanisms behind this relationship remain underexplored. Findings from Study 1 confirmed that MA positively affects customer service performance, co-creation, and customer satisfaction (Baah *et al.*, 2022; Gligor *et al.*, 2020; Um, 2017; Wang *et al.*, 2022; Wu *et al.*, 2017) that, in turn, positively influence firm performance. Although MA had a negative direct effect on short-term performance, it showed a positive indirect effect on short-term performance through increased customer satisfaction. Study 2 reaffirmed the indirect effect of MA on short-term firm performance and additionally found that MA has both direct and indirect positive effects on long-term firm performance. Customer satisfaction again played a key mediating role, strengthening the relationship between MA and firm outcomes. The results suggest that while MA may not boost short-term performance directly, it does so indirectly via improved customer outcomes, specifically strong customer service performance and co-creation. Thus, these capabilities help to explain the positive relationship between MA and overall firm performance.

5.1. Theoretical implications

This research offers several theoretical contributions to (i) the MA and (ii) the dynamic capabilities literature. A noteworthy contribution of the present study is the adoption of the concept of agility in the marketing domain (Zhou *et al.*, 2019; Khan, 2020) and empirically assessing the MA outcomes for firms. The findings augment the MA literature by adding to

current studies and help firms to better understand the positive outcomes of MA, i.e., enhanced customer satisfaction and improved firm performance measured as short-term and long-term performance. The use of cross-industry, multisource data sets and two studies involving managerial responses (Study 1) and objective data on customer satisfaction and firm performance (Study 2) further adds to the robustness and reliability of our findings. This is an area which was lacking in the existing studies in the MA as well as dynamic capabilities literature. To begin with, the findings of the current study add to the existing literature and validates the direct positive relationship between MA and customer satisfaction, as previous studies infer indirectly (Cegarra-Navarro and Martelo-Landrogue, 2020; Gligor *et al.*, 2020). We further add that customer service performance and customer co-creation are equally important factors in the MA literature for achieving the desired degree of customer satisfaction and firm performance. We conceptualise and empirically validate, the mechanism by which MA affects customer satisfaction and investigated the mediating role played by customer service performance and customer co-creation. The findings of the current study provide much-needed insights into the way that MA boosts customer satisfaction and the circumstances in which this occurs, thereby resolving the theoretical puzzle regarding the mechanisms in terms of exploring the association between MA and customer satisfaction (Homburg *et al.*, 2020).

Second, we complement the agility literature by establishing the relationship between MA and firms' performance. This was an area that needed investigation (Kalaighnam *et al.*, 2021; Zhou *et al.*, 2019). Our study fills the void generated as a result of the mixed findings from previous works on MA and firm performance. This study conceptualizes and empirically validates an integrative model that examines the direct and indirect relationships, via firm-related actions and customer satisfaction, between MA and firm performance. We expand on previous studies in the agility literature and confirm the findings of Zhou *et al.* (2018), Zhou *et al.* (2019) and Khan (2020) that MA does affect short-term firm performance negatively if there

is no increase in customer satisfaction, service performance, and co-creation but has a positive significant effect on long-term firm performance (Homburg *et al.*, 2020; Ashrafi *et al.*, 2019). In addition, we shed more light on this relationship by empirically validating the mechanism and the role played by customer-related outcomes and customer satisfaction with firm performance as a result of MA. This research offers agility researchers and managers a new perspective and helps them to understand the mechanism through which MA affects both the short-term and long-term performance of firms. Such an understanding can give them additional prospects of increasing a firm's profits.

Third, our extensive review of the literature revealed that empirical research on the link between marketing agility and firm performance remains scarce, despite growing theoretical interest in this area (see Table 1). This study responds to that gap by empirically validating the theorized relationship between MA and firm performance, and by distinguishing its effects on short-term versus long-term outcomes. Specifically, we find that while MA has a significant impact on short-term performance, it also has a strong impact on long-term performance. These insights extend existing theory by demonstrating that MA is not only a strategic imperative but also a differentiated capability that affects performance horizons in distinct ways. Our findings provide a more grounded understanding of MA's performance implications and offer practical guidance for firms seeking to balance responsiveness with sustained innovation.

Fourth, our study has moved one step further and developed a new index to measure MA, which is an additional contribution to the agility literature. We built on the work of Zadeh (2015) and used a fuzzy mathematical method to develop a new MA index. Fuzzy mathematical equations were used, and all the proposed dimensions of MA (i.e., proactivity, responsiveness, flexibility, and speed) were combined to derive a measure of MA via an index. We developed an MA index using a fuzzy mathematical programming approach, offering a novel methodological contribution to the MA literature. Such an index will help future

researchers/practitioners to understand MA on a granular level by enabling them to use the proposed index to strengthen MA arguments/applications for enhancing customer-oriented outcomes and firm performance.

5.2. Managerial implications

Our study offers significant insights for managers who are considering a fresh approach to MA as a strategic imperative to enhance customer satisfaction and firm performance. The findings suggest that MA is more likely to have a negative effect on short-term profits when customer satisfaction, co-creation, and service performance were not considered. Hence, managers who are short-term oriented might contend that being agile in marketing does nothing to help create immediate benefits for a firm. The findings also revealed that managers who are long-term oriented should keep in mind that MA has a favourable direct influence on long-term performance and also a persistent indirect benefit through customer satisfaction. The implications of this research are highly significant for policymakers since they reveal the potential of MA to influence customer satisfaction and firm performance and in turn improve economic growth.

The total effect of MA on long-term performance is substantial, but MA also drives customer service performance, customer co-creation, and customer satisfaction. Positive externalities may result from these consequences. For instance, customer service performance can lead to customer satisfaction. Similarly, firms that improve co-creation as a result of MA are more likely to achieve high levels of customer satisfaction. Our study suggests that managers should not expect a simple direct link between MA and firm performance. The processes through which the benefits of dynamic capabilities are translated into performance outcomes include improvements in customer service performance, customer co-creation, and

customer satisfaction. Because MA is a patterned and learned capability, it must be ingrained in all aspects of a business for its full advantage to be realized.

Our study revealed that a firm's dynamic capabilities (i.e., MA) can be defined and assessed and their influence on customer-oriented outcomes (i.e., customer service performance, customer co-creation, and customer satisfaction) and firm performance can be measured. The challenge for businesses is to anticipate their future needs and evaluate and enhance their dynamic capacities accordingly. Dynamic capabilities and firm performance have a convoluted connection. It could be either direct or indirect. Due to the indirect nature of the relationship, it is essential for businesses to strengthen their dynamic capabilities in order to provide better customer-oriented outcomes.

This study also offers implications for policymakers to take note of. Our study indicated that MA could benefit businesses in the long run. The short- and long-term profit gains of businesses produced by MA are increased by the indirect influence of MA via customer satisfaction. More precisely, Study 2 revealed that an increase in MA by 1%, would have caused an increase in profit gains of US\$ 5 million over the next three years ("0.03% change in ROA"). As a result, businesses may benefit from MA. Therefore, this finding offers policymakers a fresh and credible reason for seeking management support if they invest in MA as a strategic approach to the improvement of business performance. Furthermore, governments should provide incentives, e.g., low-cost financing for businesses that adopt a "more agile marketing model". Governments should provide training programmes for employees and provide resources for businesses to explore new projects if such agile businesses are to contribute to economic growth. At last, marketing educators should teach about the importance of MA and achieving good coordination between chief marketing officer (CMO) and chief information officer (CIO).

5.3. Limitations and future research directions

This study has some limitations, but these offer avenues for future studies to take. First, our study focuses on exploring the direct and indirect effects of MA on firm performance in a single country. This can have implications for the limited external validity of our findings. To address this issue, future studies should aim to include multiple countries in their investigations. Additionally, exploring different cultural contexts, countries development level and market conditions can provide valuable insights (Khan, 2020).

Second, further research could explore the main drivers and constraints of MA. For instance, a prior study by Kalaignanam *et al.* (2021) identified factors that might affect MA such as managing data privacy concerns and hiring marketing leaders. Therefore, we advise future studies to include these variables in their research model to explore their effects on MA. Third, our research examined how MA affects firm performance and adds to the existing findings of Zhou *et al.* (2019), Homburg *et al.* (2020). Further examination could include some moderators into the research model, such as market turbulence, to explore when this relationship is stronger or weaker.

Fourth, previous studies have revealed that ordinary capabilities (i.e., market orientation, firm innovation, entrepreneurial orientation and absorptive/learning orientation) mediate the link between MA and firm performance (Chaudhary and Batra, 2018; Yildiz and Aykanat, 2021). Thus, future research could explore the mediating role of these variables in such relationships. Prior research revealed that customer loyalty is a key driver of firm performance (Gok and Peker, 2017). Where possible, future studies should include customer loyalty along with customer satisfaction to explore their mediating role on the links between MA and firm performance.

Fifth, our study employed a fuzzy mathematical programming approach (Zadeh, 2015) to develop an MA index. A unique feature of the fuzzy technique is its capability for taking the

main dimensions of MA simultaneously into consideration, which in turn enhance the measurement accuracy (Hendiani and Bagherpour, 2019). Future studies should be cautious due to the limitations inherent to it. They could use secondary research data on MA to reflect the actual value of MA. Next, fixed-effects panel regression models are acknowledged as effective and robust instruments for longitudinal data analysis; yet unobserved heterogeneity arising from unmeasured time-varying factors is a significant restriction, and generalized method of moments (GMM) or dynamic panel data models can be used in future for model estimations (Wooldridge, 2010).

Finally, a key area for future research in agile marketing is the role of artificial intelligence (AI) (Wang et al., 2022; Wamba, 2022), especially Generative AI (Ameen et al., 2024). Future research in MA should explore how AI can enhance agile practices, customer service performance, and customer co-creation. Studies could investigate how AI tools help marketers respond faster to market changes, create personalized content quickly (Ameen et al., 2024), and make data-driven decisions more efficiently impacting firm performance.

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