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Market orientation and SME performance: Moderating role of IoT and mediating role of creativity

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ABSTRACT

SMEs, the most vital but vulnerable part of an economy, necessitate crucial resources and capabilities to succeed. Structuring on the resource-based theory (RBT) and market orientation (MO), as a fundamental capability for SMEs, this paper examines the moderating effects of the Internet of Things (IoT) and mediating effects of individual creativity on the MO and firm performance relationship. Using structural equation modeling (SEM), the analysis of data obtained from 229 SMEs indicates that IoT moderates the positive relationships between MO and firm performance, and MO and creativity but not between creativity and firm performance. In contrast, creativity partially mediates MO and firm performance linkage.

KEYWORDS

SMEs; resource-based theory (RBT); market orientation (MO); Internet of Things (IoT); creativity

Introduction

Strategic orientations are challenging to translate into organizational capabilities, that is, they are deeply rooted; and constitute a complex bundle of skills (Day, 1994) that generate sustained competitive advantage (Lonial & Carter, 2015), ultimately resulting in innovation and superior firm performance (Hult & Ketchen, 2001). Market orientation (MO), identified as the most relevant strategic orientation (Acosta et al., 2018; Mu et al., 2017), is a combination of generation, dissemination, and being responsive to market intelligence (Kohli & Jaworski, 1990). It has been studied extensively (Cake et al., 2020) and is predominantly identified as a robust determinant of firm performance (Lonial & Carter, 2015).

Congruently, the development in digitalization has renovated the nature of uncertainty and the ability of entrepreneurs to deal with such uncertainty (Nambisan, 2017). With "data" becoming one of the most valuable assets of modern (Albergaria & Jabbour, 2019; Dubey et al., 2020) and extensively digitalizing organizations (Frank et al., 2019), the emergence of the "Internet of Things" (IoT) has

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a fundamental role in enhancing business performance (Nambisan, 2017). IoT is the network of devices interconnected via the internet or local network (Hansen & Bøgh, 2021) to obtain, interact, and share data (Ahmed et al., 2021; Islam et al., 2020). It is a central part of the "digital artifacts" (Zaheer et al., 2019), one of the three elements of digital technology (Nambisan, 2017) which has surfaced as a novel disruptive technology, influencing daily activities, business operations, and global economic systems (Akhtar et al., 2018; Atif et al., 2021).

Furthermore, creativity is the backbone of marketing, contributing to economic development (Obeidat, 2016; Sutapa et al., 2017). Creativity is a key requirement of digital firms to stand out within the market (Masa'deh et al., 2018). Digitalization, including IoT, is remodeling people's behaviors and is therefore becoming attractive for organizations (Tariq et al., 2020). Digital technologies enable companies to reduce the cost of iteration and experimentation, which are essential components of creative work, opening new possibilities for individuals and businesses (Alhakimi & Mahmoud, 2020).

Since MO leads to superior performance (Morgan et al., 2009), the market knowledge generated through IoT serves as a unique capability to outperform rival firms. Structuring on the "resource-based theory" (RBT), the utilization of IoT and creativity in the application of MO, can provide a unique combination of capabilities, resulting in improved firm performance (Barney, 1991). IoT products allow customers to control and manage their activities and enable value co-creation mechanisms (Tariq et al., 2020) by promising ease of access to customer data and establishing personal contact with the customer (Masa'deh et al., 2018). In addition, marketing experts can manipulate this data to create a one-to-one relationship with the customers, thus grasping every need of the customer and marketing more effectively and efficiently (Obeidat, 2016). Moreover, market orientation, creativity, and technological innovation can boost a firm's competitive ability (Sutapa et al., 2017).

Despite the importance of the three key capabilities (that is, MO, IoT, and creativity) discussed above, the small and medium-sized enterprises (SMEs) literature is scarce. We describe SMEs as any business that employs up to 249 employees and has an annual turnover below €50 million and an annual balance sheet below €43 million (The European Commission, 2015). We have categorized SMEs into three parts on the basis of employees' number that is, micro (<10), small (10 to 49), and medium (50 to 249).

Research on MO conducted in different contexts reveals that MO impacts performance directly and indirectly (see, Abbu & Gopalakrishna, 2019; Alhakimi & Mahmoud, 2020; Lonial & Carter, 2015; Sutapa et al., 2017; Wang & Miao, 2015). In addition, most work on creativity takes on traditional ways of stimulating creativity (Mikalef & Gupta, 2021; Neto et al., 2019), lacking the interactive outcome of creativity and MO. This brings forth the discussion about the role of IoT concerning creativity, especially in the context of simultaneously modeled relationships between creativity, IoT, MO, and firm performance.

This study initiates the empirical testing of the effects of MO, IoT, and creativity on SMEs' performance in Scotland. Since SMEs are renowned for having limited resources and capabilities (Cenamor et al., 2019; Hansen & Bøgh, 2021), they are largely hindered from utilizing IoT effectively and are attributed as less creative. This in turn could impact the SMEs' implementation of MO. In an evolving era of IoT, the necessity for SMEs' to be creative while simultaneously maintaining a focused market orientation is vital. Existing studies have primarily applied a distinct approach to investigate MO, IoT, and creativity (see, for example, Akhtar et al., 2018; Hansen & Bøgh, 2021; Islam et al., 2020; Nambisan, 2017; Wang & Miao, 2015). Developing on the concept of RBT, this study aims to uncover the extent to which these three capabilities (MO, IoT, and creativity) are important for superior SMEs performance by concurrently investigating the direct effects of each of the constructs on SMEs' performance, moderating effects of IoT, and mediating effect of creativity on the MO and firm performance linkage.

Although creativity has received an increasing amount of attention, no empirical study, to the knowledge of the authors, has examined whether creativity plays a role in enhancing firm performance. An extensive literature conducted by the authors in the context of creativity suggested that several attempts to empirically validate the role of creativity at individual and group levels have been conducted (Alhakimi & Mahmoud, 2020; Im & Workman, 2004; Neto et al., 2019; Sohn & Jung, 2010; Sutapa et al., 2017), however, very few scholars have examined individual creativity. Marketing performance can be improved through the effective application of MO and digitization (Wang & Miao, 2015). This is where creativity is crucially important when acting as a mediator between MO and performance. Focusing explicitly on individual creativity, this study contributes to the SME research field by proposing and examining the unique framework of IoT, MO, creativity, and SME performance. It extends empirical insights on the synergistic outcomes of MO with empirical evidence for the positive moderating effects of IoT and mediating effects of creativity on the MO➔performance linkage. The results indicate that the bundle of resources, when utilized uniquely enhances firm performance (Barney, 1991; Wernerfelt, 1984) and thus, explain how RBT enriches our knowledge base on IoT and creativity as enablers of firm performance.

Literature review and hypotheses

Theoretical foundation

The resource-based theory (RBT) assumes that a bundle of firm resources including "all assets, capabilities, organizational processes, firm's attributes, information, knowledge, etc." (Barney, 1991, p. 101) that are "tied semi-permanently to the firm" (Wernerfelt, 1984, p. 172), when deployed uniquely

can create a competitive advantage for firms (Day & Wensley, 1988). Lonial and Carter (2015) argue that unique SME capabilities applied collectively, positively influence firm performance.

However, only valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resources are strategically considered a foundation in this regard (Barney, 1991). Since tangible resources are comparatively weak and can be easily identified and copied (Grant, 2015), intangible resources and capabilities are deemed more important and challenging to acquire and replicate (Zhou et al., 2008). Therefore, it is crucial to focus on developing intangible resources and capabilities to gain an edge in the marketplace. Furthermore, capabilities integrate the resources and facilitate a profitable deployment (Day, 1994), making them deeply rooted in business processes and enhanced performance (Cake et al., 2020).

Firms may pursue several resources and/or capabilities; however, MO, IoT, and creativity are considered most important as they are VRIN capabilities (Im & Workman, 2004; Lonial & Carter, 2015) and, thus, challenging to duplicate by the competitors. Based on the concept of RBT, this study examined the concurrent effects of a bundle of capabilities that is, MO, IoT, and creativity on SME's performance.

Firm performance

Firm performance is a significant dependent variable in management research (Wolff et al., 2015). A vast number of researchers have adopted firm performance as an endogenous construct (for example, Calabrò et al., 2020; Gupta et al., 2020; Lonial & Carter, 2015; McGee & Peterson, 2019; Morgan & Anokhin, 2020; Wiklund & Shepherd, 2005): however, being a multidimensional construct, it has been used as a subjective as well as an objective measure (Lonial & Carter, 2015; Vij & Bedi, 2016). Since the critical informants in SMEs are usually reluctant to disclose objective figures (Brouthers et al., 2015), subjective survey measures provide a broader possibility and conceptualization (Lonial & Carter, 2015). Therefore, this study adopts firm performance as a subjective endogenous variable.

Market orientation

Marketing is a paradoxical idea in the field of management (Day, 1994), and so is the idea of market orientation (MO), which is operationalized from the concept of "marketing" (Cake et al., 2020). MO is referred to the application of the marketing concept, that is, a firm's ability to outperform rivals in identifying and satisfying customer needs and wants (Lonial & Carter, 2015). Scholars have no consensus on the definition of MO,

however, Kohli and Jaworski's (1990) conceptualization has high support in the literature for SMEs and large companies (Kara et al., 2005), which theorized MO as three dimensions: generation, dissemination, and responsiveness to market intelligence.

Market intelligence refers to the knowledge of customers' existing and potential needs and wants, as well as external factors that may impact such factors (Kohli, 2017). It can be developed via market research and the implementation of decision support systems within the focal firms (Lonial & Carter, 2015). The intelligence generated must be disseminated internally within the firm, that is, vertically across organizational hierarchy, and a response mechanism should complement it (Kohli & Jaworski, 1990). Firms that are well-prepared to respond to market needs and predict environmental changes can achieve superior performance (Day, 1994).

MO and firm performance

MO has predominantly been positively related to firm performance (Kirca et al., 2005; Kohli, 2017; Lonial & Carter, 2015). Although this positive relationship has been extensively established empirically (see, Abbu & Gopalakrishna, 2019; Baker & Sinkula, 1999; Brouthers et al., 2015; Hernández-Linares et al., 2021; Jaworski & Kohli, 1993; Morgan & Anokhin, 2020; Narver & Slater, 1990; Renko et al., 2009), however, Kirca et al., (2005) in their meta-analysis stated that scholars also found either nonsignificant relationships or negative associations. Also, when firm performance is measured as market share, MO is seen to impact firm performance negatively (Baker & Sinkula, 1999; Jaworski & Kohli, 1993; Kirca et al., 2005). Jaworski and Kohli (1993) stated two key reasons for this result, (a) market share might be an inappropriate measure of firm performance, and (b) MO necessitates an extended period to affect market share.

Although MO and SME performance relationship is positive (Lonial & Carter, 2015), small businesses must create superior sustainable value for customers to achieve above average profit (Porter, 1985). SMEs may not generate the required levels of market intelligence as their access to key resources is constrained; however, their dissemination and response to market intelligence are swifter than larger firms (Lonial & Carter, 2015). In general, market-oriented firms overall satisfy customer needs and wants, however, this study proposes that the effect of MO on firm performance can differ based on firm size.

H1: MO and firm performance are positively and directly linked.

Creativity

The past views of how firms prosper in global marketplaces are being challenged by the era of rising digitization (De Luca et al., 2010). While most research implies the utilization of digital skills and mindsets by employees, however, a critical success factor of future businesses in this digital era, namely "creativity" has been ignored (Amabile, 1983; Neto et al., 2019).

The production of unique and beneficial goods by employees in any domain is constantly described as creativity (Cai et al., 2020). This description had been utilized widely as a starting point (Stojcic et al., 2018). Employee creativity in the contemporary literature is the result of innovative ideas and processes to develop products and services (Imran et al., 2018; Ramirez et al., 2014). This indicates that employee creativity is novel ideas, which lead to the creation of innovative products and services (Donkor et al., 2018).

Creativity and firm performance

The antecedents of creativity have amassed a wealth of knowledge (Didonet et al., 2016; Keskin, 2006). However, the focus on the factors of creativity has resulted in a lack of attention to the effects of innovation. Research on whether creativity improves business performance is scarce (Cai et al., 2020; Donkor et al., 2018; Sutapa et al., 2017). The practice of conceiving creativity and firm performance at various levels may explain the dearth of study on the link between creativity and firm performance (Stojcic et al., 2018). The widespread belief that because creativity improves firm performance, no empirical investigation is required may also contribute to the lack of focus on this link. Indeed, as Gilson (2008) points out, most published research on creativity begins with the assumption that innovation improves a company's competitiveness or performance. "Employee innovation can make a major contribution to an organization's ... competitiveness," said Baer and Oldham (2006, p. 963). Although individual creativity is recorded as a cultural phenomenon (Amabile, 1988; Cai et al., 2020; Dabrowski et al., 2019), limited research examined creativity and firm performance relationship.

In 122 American advertising agencies, Von Nordenflycht (2007) discovered a positive, linear association between creativity and performance. It is claimed that creativity leads to competitive distinctiveness and, as a result, corporate success. Performance was judged using three-year growth rates in this study. The results on the association between creativity and performance, in contrast, only explained a small portion of the variance. When it comes to studying the relationship between performance measures like revenue or profitability, previous research has shown mixed findings (Von Nordenflycht, 2007).

This study claim that creativity has a direct significant impact on firm performance. The impact of fresh idea generation can be seen in the form of new and successful inventions (Nieto & Santamaría, 2010), which can boost performance. Employee creativity has a twofold effect: first, it improves employee understanding to help them perform better, and second, it helps the business develop innovative products, services, and processes (Brockman et al., 2012; Keskin, 2006). Furthermore, according to the RBT of the organization, creativity can deliver a competitive edge to firms (Alegre & Chiva, 2013; Amabile, 1988) being a VRIN resource. Hence, we propose that:

H2: Creativity and firm performance are positively and directly linked.

MO and creativity

Since market-oriented organizations may better satisfy consumers and achieve superior financial performance by tracking and responding to customer wants and preferences, the MO literature shows that a market-oriented culture can be a key factor of business performance (Ozkaya et al., 2015; Ngo & O'Cass, 2012; Im & Workman, 2004). Furthermore, MO encourages creativity as it entails the creation and transmission of market intelligence and knowledge, as well as the reaction to it, in response to market needs (Didonet et al., 2016). A firm that attentively evaluates the needs of the customers improves creativity by producing innovative products, which, in turn, enhance innovation throughout the entire firm (Dabrowski et al., 2019; Donkor et al., 2018; Ejdys, 2015; Kaya & Patton, 2011; Ramirez et al., 2014).

According to Wang and Miao (2015), MO is positively related to the marketing team's creativity in a firm as it leads to generative learning and creative ideas. MO requires the marketing team to recognize the customer's entire value chain (Sutapa et al., 2017). Firms' commitment to higher customer value has been shown to innovate holistically, beyond products and services through their business system (Secchi et al., 2019). Furthermore, MO gathers and circulates insights about customers to satisfy their needs (Kohli, 2017). This may motivate the firms to discover the current and future needs of customers to formulate creative problem solutions (Masa'deh et al., 2018; McAdam & Keogh, 2004) and ultimately improve firm performance.

Im and Workman (2004) found that new product and marketing programs related to creativity mediate MO and new product success relationships, leading firms to higher firm performance. They argued that generating and marketing creative ideas to satisfy evolving market needs enhance firm performance.

The conception and generation of creative ideas when applied as MO are regarded as fundamental parts of innovation, leading to higher performance, for at least two reasons (Sutapa et al., 2017; Im & Workman, 2004). First, creativity encourages the production of novel ideas, an important factor influencing innovation and enhancing firm performance. Second, innovation leads to differentiation, the extent to which the value is created for consumers uniquely (Amabile, 1983), in terms of novelty, quality, cost-effectiveness, and technical performance, which is a crucial factor in a company's success (Sutapa et al., 2017).

We believe that MO leads to the creation of marketing plans and which, in turn, leads to improved performance. Employees' creativity is thought to mediate the link between MO and business performance (Alegre & Chiva, 2013; Stojcic et al., 2018). Our research is the first to formally validate these mediation interactions in SMEs, as both marketing concepts and creativity are considered fundamental for SME performance (Didonet et al., 2016; Kaya & Patton, 2011). The key reason behind this is that it symbolizes the organizational capacities needed to respond to changes in the environment (Donkor et al., 2018; Ejdys, 2015; Keskin, 2006) and regard creativity as a crucial component of an organization's so-called dynamic skills, which are required for a competitive edge and good performance in uncertain environments (Amabile, 1988; Cai et al., 2020; Dabrowski et al., 2019). Therefore, it is hypothesized that creativity mediates MO and firm performance link.

H3: Creativity mediates MO and firm performance relationship.

IoT and firm performance

The Internet of Things (IoT) refers to those devices that are connected via a network and can receive and send data and information to those interconnected objects (Ahmed et al., 2021). IoT is a potentially disruptive technology, that is, it creates new and redefines existing industries (Islam et al., 2020). With the rising attention on how emerging technologies are enabling digital transformations of enterprises, we can find a variety of studies that have examined how businesses are influenced by digitalization. Scholars seem to agree that digital transformation of marketing processes improves efficiency in organizations that have established advanced and dispersed control over their processes (Kalsoom et al., 2021). The IoT is frequently utilized to sell items, automate activities, and interact with customers. Certain IoT technologies, including 3D printing, virtual reality (VR), and artificial intelligence (AI), have a substantial impact on marketing process management, including scalability and diversity.

However, IoT technologies including radio frequency identification (RFID), WIFI, cellular, cloud computing; wireless sensor networks (WSN), Bluetooth, and IoT application software (Lee & Lee, 2015) are well used in SMEs. Scholars have a consensus that cloud technology has potential for SMEs (Hansen & Bøgh, 2021). These small businesses now widely use computers, smartphones, and online platforms such as UberEATS, Deliveroo, Gumtree, eBay, Amazon, and Facebook marketplace pages, to sell and purchase products. The incessant growth of digital advertising in SMEs is observed by Pradhan (2018). The use of wirelessly connected "electronic point of sales" (EPOS) through WIFI enables inventory control, staff management, and customer relationship management. These businesses use several social media platforms to provide customer services and ads to strengthen their digital presence. The platforms include SEO, Twitter, Meta, and WhatsApp applications. Some of these businesses use digital signage to show highly personalized messages to store visitors. The use of an internet-connected CCTV system to make the physical presence more secure for staff and customers is a common practice in small businesses. Bagale et al. (2021) indicated the increased use of internet-connected devices, mobile phones, and digital media usage would significantly affect SMEs. The connected devices also enable owners/managers at SMEs including micro-firms to interact with employees and ease decision-making by having required information swiftly and timely, which ultimately allows business operations within the value chain to coordinate their activities more readily (Slack & Brandon-Jones, 2018).

To facilitate meaningful, collaborative action, IoT is crucial. Any endeavor that involves building something jointly through a co-creation process qualifies as a collaborative activity (Sutapa et al., 2017). Because digital entrepreneurship and marketing are driven by ideas and inventions, creativity and IoT may have more value than in traditional businesses (Yu et al., 2016; Bi et al., 2014). To be a digital enterprise require a certain level of individual and group innovation. SMEs must develop quicker to compete and survive in the current highly competitive environment, enhancing the cruciality of creativity and IoT (Nieto & Santamaría, 2010). The increased digital presence, innovation in internet-connected devices globally, technically informed and universally interconnected consumers, and the emergence of new industries made the IoT in business even more important (Soltanifar et al., 2021). The prominence of efficacy and novelty as two essential standards for creativity have been underlined in a previous study (Im & Workman, 2004; Amabile, 1988; Cai et al., 2020; Imran et al., 2018). Most practitioners in digital or social advertising companies consider interactivity to be the most crucial factor for innovation and improvement in firm performance.

New approaches that encourage customer participation in product conception and development are largely linked to digital technologies (Al-Surmi et al., 2020). Digital IoT-enabled businesses can sustain open and distributed

innovation processes. IoT technologies have an impact on a wide range of corporate operations and procedures, providing firms with a variety of benefits that can help them enhance their performance (Ehie & Chilton, 2020). For example, big data and the IoT are targeted at making processes and product monitoring easier, while automation can be applied to a wide range of business tasks. In addition, being exposed to the diversity of knowledge might assist employees to uncover new thoughts. Technology obtains and distributes data swiftly and automatically, allowing staff to focus on other activities and the generation of new creative ideas.

In the context of this discussion, it is envisaged that the adoption of IoT will give businesses a competitive advantage in terms of efficiency, uniqueness, and innovation. With the introduction of new digital technologies that allow a paradigm shift from traditional marketing to digital marketing, a clearer understanding of the link between IoT usage and enhanced business performance is essential. Based on the above, it is hypothesized that:

H4: IoT has a positive effect on firm performance.

IoT, MO, and CR

Scholars from a variety of disciplines have demonstrated that combining digital technologies can enhance creativity by allowing employees to utilize "information and communication technologies" (ICT) on the job (Nieto & Santamaría, 2010; Ramirez et al., 2014). Didonet et al. (2016) demonstrate that new ICT applications can and should be creatively utilized in SMEs to enable the sector's continued development. Indeed, a rising corpus of fresh research in this field demonstrates that ICT-enabled creativity can boost marketing, innovation, and operations (Brockman et al., 2012; Cai et al., 2020; Dabrowski et al., 2019).

IoT allows enhanced connectivity and data collection and has a significant impact on MO and creativity (Nieto & Santamaría, 2010). To examine the IoT and MO relationship, the significance of conjoining data and creativity in today's digital world should be considered (Sutapa et al., 2017). IoT devices collect data shared by individuals over devices, enabling marketers to manage and utilize this information. This will allow them to gain insights into customer needs, offer creative and personalized marketing content to individuals (Masa'deh et al., 2018). In addition to creating advertising campaigns, IoT offers customer value at the right moments. The timing plays a vital role in satisfying customers and eventually enhancing firm performance (Mikalef & Gupta, 2021; Wang & Miao, 2015).

A firm's MO aids the development of more inventive, game-changing products (Didonet et al., 2016; Donkor et al., 2018; Kaya & Patton, 2011). Because SMEs demand a higher level of technology integration, the return on

investment is likely to be better if they focus on and invest in new products that can be a powerful differentiator, resulting in competitive advantage (Ejdys, 2015). Furthermore, a MO may help the company to gather the information that leads to a focus on processes, resulting in increased creativity and, as a result, improved business performance (Keskin, 2006). This is in line with the key paradigm of RBT for analyzing the relationship between organizational resources and performance, both theoretically and experimentally, therefore, it is hypothesized that:

H5: IoT strengthens MO and firm performance relationship.

Digital technologies, such as IoT are crucial for collaborative activity (Mikalef & Gupta, 2021) that is, co-creation of something using a combination of resources. The importance of digital technologies and creativity is high for entrepreneurial firms since they are driven by new ideas and innovations (Wang & Miao, 2015). Several features of IoT, including automation, range and capacity, evolvement, interactivity, and flexibility enhance creativity at the individual level in a firm (Mikalef & Gupta, 2021). The combined use of IoT and creativity make sense of huge data and uncover relationships and patterns previously unachievable, leading to the creation of innovative insights (Alhakimi & Mahmoud, 2020).

In accordance with the RBT, the relevance of merging creativity with data in the current digitalized world is emphasized to investigate the relationship between IoT and creativity (Soltanifar et al., 2021). The success of new technologies and business models will be determined by how well acquired data on customer behavior and preferences is used creatively (De Luca et al., 2010; Alegre & Chiva, 2013). Marketers will be able to understand the needs of each consumer using their shared information and preferences through IoT devices (Soltanifar et al., 2021). The usage of programmatic adverts, which can be highly personalized and published quickly, is an example of this. For SMEs, the use of IoT technologies such as AI in creative processes is imperative (Pradhan, 2018), as it revolutionized the ways of gathering consumers' insights and producing creative marketing content that is customized to every consumer's demands.

The above discussion highlights the role of IoT in improving business performance, and most importantly, in enhancing organizational creativity (Mikalef & Gupta, 2021). Therefore, we hypothesized that:

H6: IoT strengthens employee creativity (CR) and firm performance (FP) relationships.

Building on the above hypotheses, the conceptual framework is developed as shown in Figure 1.

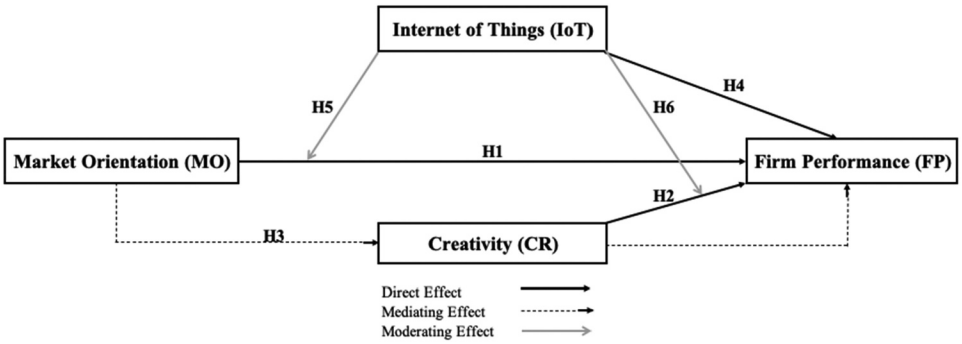


Figure 1. Conceptual framework.

Methods

Operationalization, sample, and data collection

Established scales items, identified through in-depth literature review, were pretested and utilized to estimate the effects of key constructs in this study. This study utilized a Likert scale of five points from strongly disagree (1) to strongly agree (5). The FAME database and yellow pages were utilized to identify 1,500 SMEs located in Scotland. We successfully contacted 1,206 CEOs/owner/managers using a self-administrative online survey strategy in 2019. However, only 229 (18.9% response rate) usable responses (retail = 155, service = 59, and manufacturing = 15) were collected. The firm and respondents' profiles are highlighted in Table 1.

Measurement model

We used multiple items to measure each construct. MO is conceptualized into three components and each sub-construct is measured by utilizing two items. The measures of MO were adopted from the MARKOR scale developed by Kohli et al. (1993). A subset (six items) of the original scale was utilized. Baker and Sinkula (2005) identified that the correlation of these six items with full scale is .84. To measure the utilization of the firm's IoT, we adopted a seven-item scale from Kim et al. (2012). Creativity is measured using four items adapted from Sohn and Jung (2010). To measure the firm performance, we used four subjective performance measures synthesized from previous scales. The measures are given in Table 2.

Table 1. Profile of the respondents and firm.

Categories		Frequency	Percentage
Gender	Male	174	76%
	Female	49	21.40%
	Prefer not to say	6	2.60%
Age	18–24	21	9.20%
	25–34	65	28.40%
	35–44	79	34.50%
	45–54	49	21.40%
	54+	15	6.60%
Education	Primary school	1	0.40%
	High school	32	14%
	College	79	34.50%
	Undergraduate degree	75	32.80%
	Master's degree	39	17%
	Professional qualification	3	1.30%
Position	Owner/CEO/proprietor	110	48%
	Director	52	22.70%
	Manager	62	27.10%
	Supervisor	5	2.25
Turnover	Under €2 million	170	74.20%
	€2 million to €10 million	38	16.60%
	€10+ million to €50 million	16	7%
	Over €50 million	5	2.20%
Employees	Under 10	152	66.40%
	10 to 49	52	22.70%
	50 to 249	25	10.90%
Industry	Retail	155	67.70%
	Manufacturing	15	6.60%
	Service	59	25.80%
Firm Age	Under 3 years	52	22.70%
	3 to 5 years	55	24%
	6 to 10 years	49	21.40%
	11 to 15 years	26	11.40%
	Over 15 years	47	20.50%
Total		229	100%

Quality check

After successfully meeting the sample adequacy requirement, an exploratory factor analysis (EFA) was conducted with all 21 variables using the maximum likelihood factor extraction and the Promax factor rotations approach. As a result, we achieved a clean factor structure with high loadings (above .40) and no significant cross-loadings. Furthermore, the reliability test highlights that Cronbach alpha coefficient for market orientation (MO) is .94, Internet of Things (IoT) is .92, creativity (CR) is .84, and firm performance (FP) is .82 (see, Table 2). This, in turn, proves the unidimensionality, validity, and reliability of the model at the EFA stage.

Confirmatory factor analysis (CFA) was also applied to further examine the construct validity (convergent and discriminant) and reliability of the measurement model. The convergent validity was measured by assessing the factor loadings (Hernández-Linares et al., 2021) and average variance extracted (AVE; Cake et al., 2020; Calabrò et al., 2020). All standardized loading estimates and AVEs were found to exceed the cutoff criteria of .5 (Hair et al., 2014). Discriminant validity was analyzed in two ways; first, by assessing the pair-wise

Table 2. Measurement scale and reliability statistics.

Construct, Items and Code, Source and Reliability Statistics	Loading (EFA[a])	Loading (CFA[b])
Market Orientation (MO): (Baker & Sinkula, 2005) (Cronbach's Alpha[c] = .94; AVE[d] .709; CR[e] = .935)		
We are slow to detect changes in our customers' product preferences. (MO1)	.74	.81
We frequently review the likely effect of changes in our business environment on customers. (MO2)	.91	.92
When something important happens to a major customer or market, the whole business unit is informed about it within a short period. (MO3)	.64	.69
When one department finds out something important about competitors, it is slow to alert other departments. (MO4)	.94	0.93
For one reason or another, we tend to react slowly to changes in our customers' product or service needs. (MO5)	.93	.88
Several departments get together periodically to plan a response to changes taking place in our business environment. (MO6)	.72	.79
Internet of Things (IoT): (Kim et al., 2012) (Cronbach's Alpha = .92; AVE = .636; CR = .924)		
There is a stable network connection between IoT devices. (IoT1)	.71	.75
Interconnectivity of IoT helps to efficiently manage system resources. (IoT2)	.83	.83
Interconnectivity between IoT devices helps to provide more effective coordination among different functional activities. (IoT3)	.92	.88
It helps in effective assimilation of new information and knowledge to assist in decision-making process. (IoT4)	.83	.85
We constantly monitor the performance of IT functioning. (IoT5)	.87	.79
Our employees are very knowledgeable about the role of IoT. (IoT6)	.57	.71
Our employees show superior ability to learn about new technologies. (IoT7)	.71	.75
Creativity (CR): (Sohn & Jung, 2010) (Cronbach's Alpha = .84; AVE = .574; CR = .842)		
We derive original ideas. (CR1)	.7	.78
We derive unique ideas. (CR2)	.59	.77
We derive large number of ideas. (CR3)	.95	.85
There is a variation in our ideas. (CR4)	.62	.62
Firm Performance (FP): (Baker & Sinkula, 2005; Lonial & Carter, 2015; Morgan et al., 2009) (Cronbach's Alpha = .82; AVE = 0.673; CR = .889)		
Our return on investment increased as compared to the competitors. (FP1)	.48	.58
Our sales increased as compared to competitors. (FP2)	.94	.93
New product/service development in our firm is higher as compared to the competitors. (FP3)	.94	.91
Customer service quality is improved as compared to the competitors. (FP4)	.81	.81

[a]EFA = Exploratory Factor Analysis, [b]CFA = Confirmatory Factor Analysis, [c]Cronbach's Alpha = Reliability Statistics, [d]AVE = Average Variance explained; [e]CR = Construct Reliability.

correlations between the constructs (Lonial & Carter, 2015), which did not surpass .85 and were in the range of .206 and .636 (Kline, 2016). Table 3 depicts the constructs correlation matrix and descriptive statistics. Second, the discriminant validity was examined by comparing the square of the correlation with AVEs

Table 3. Descriptive statistics and correlation matrix.

Constructs	Mean	SD	MO	IoT	CR	FP
MO	4.03	.96	1			
IoT	3.78	.97	.636*	1		
CR	3.81	.96	.268*	.206*	1	
FP	3.97	.94	.539	.060*	.346*	1

**Correlation is significant at the 0.01 level

(Akhtar et al., 2018), as listed in Table 4. The AVEs in Table 4 are the average of the correlated constructs. The model also met construct reliability (CR) requirements as all values were found above .7 (Hair et al., 2014).

Normality check

Normality test is deemed useful to test the distribution of the data. The univariate normality test, that is, Shapiro–Wilk test and multivariate normality test, that is, Mardia test, indicate p-values < .05. Therefore, the data was found to be normally distributed.

Common method bias

Alongside adhering fundamental guidelines to diminish the impact of method variance, Harman's one-factor test (Podsakoff et al., 2003) was applied. We found that most of the variance is not explained by a single factor. The multiple indicator approach and maximum likelihood estimate were used to control measurement error (Akhtar et al., 2018; Kline, 2016).

Also, a comparison of the unconstrained and fully constrained common method factor model indicates that the chi-squared test is insignificant with the difference in chi-squared = 14.1 and difference in df = 21, p = .85. Therefore, no shared variance in the common method bias test was found.

Control variables

Firm size, age, and industry type were used as control variables in this study. Firm size may influence key constructs and firm performance links (Miller et al., 2013). As stated by Wiklund and Shepherd (2005), differences in firm size, age, and industry type may determine different business and environmental characteristics, which in turn may affect performance. It has been found in the analysis that the control variables have no major influence on the model and the results remain stable.

Table 4. Discriminant validity.

Constructs	Correlation	Square Correlation	AVE*	AVE >Square Correlation
MO × IoT	.636	.404	.673	Yes
MO × CR	.268	.072	.642	Yes
MO × FP	.539	.291	.691	Yes
IoT × CR	.206	.042	.605	Yes
IoT × FP	.06	.004	.655	Yes
CR x× FP	.346	.120	.624	Yes

*AVE is the average of correlated costructs

Table 5. Multi-collinearity test.

	Standardized Coefficients			Collinearity Statistics	
Constructs	Beta	t	Sig.	Tolerance	VIF
MO	0.212**	3.755	0	0.512	1.91
IoT	0.427***	7.094	0	0.502	1.892
CR	0.202***	3.429	0.001	0.765	1.212
IoT x MO	0.165**	2.768	0.006	0.778	1.321
IoT x CR	-0.035	-1.038	0.3	0.802	1.199

***Correlation is significant at the .001 level. **Correlation is significant at the .01 level.

Multicollinearity

The multicollinearity test was conducted through linear regression to estimate the intercorrelations of independent variables by examining the variance inflation factor (VIF) and tolerance values. VIF helps assess the variance increase experienced by an estimated regression if the predictors are correlated and should be ideally less than 3 (Weston & Gore, 2006). Tolerance should be ideally greater than .1. The results of the multicollinearity test are illustrated in Table 5.

Results

Table 6 summarizes the results of structural model indicating the standardized path coefficients. H1 proposed the positive and the direct effect of MO on firm performance. This was supported with $\beta = .21$ at $p < .01$. H2 and H4 proposed the positive and direct effects of creativity on firm performance and IoT on firm performance respectively. Both the hypotheses were supported with $\beta = .202$ ($p < .001$) and $\beta = 0.427$ (p = .001) respectively. In addition, the fit indices $\chi^2/df = 2.921$; CFI = .979; IFI = .976; RMSEA = .078; SRMR = .067 strongly support the model.

The indirect effect of mediation between MO➔Creativity (CR)➔firm performance was tested using the bootstrapping approach. The results indicate that MO significantly affects the firm performance (dependent variable) with $\beta = .21$ at $p < .01$ and it also significantly affects mediating variable (Creativity) with $\beta = .268$ at $p < .001$. Furthermore, creativity (CR) is also found to affect firm performance significantly at $\beta = .202$ at $p < .001$. This indicates that creativity partially mediates MO➔firm performance relation. The indirect effect (MO➔CR➔FP) is supported with $\beta = .057$ and $p < .001$, hence supporting H3. The bootstrapping technique was used to determine the indirect, total, and direct effects. A 95% confidence interval level for 5000 resamples is optimum for the chosen sample size (Hayes & Scharkow, 2013). Therefore, the unstandardized indirect effects were computed for 5000 bootstrapped samples at a 95% confidence interval.

Table 6. Summary of hypothesis testing.

Hypothesis	Standardized coefficient		Remark	R^2
	Direct effect	**Indirect effect**		
Independent effects:				
H1: MO → Firm performance (FP)	0.212**		Supported	
H2: CR → Firm performance (FP)	0.202***		Supported	
H4: IoT → Firm performance (FP)	0.427***		Supported	
Mediation effects:				
H3: MO → CR → Firm performance (FP)		0.057***	Supported (Partial mediation)	
Moderating effects:				
H5: IoT x MO → Firm performance (FP)	0.165**		Supported	
H6: IoT x CR → Firm performance (FP)	-0.035		Not Supported	
CR				0.069
Firm performance (FP)				0.449

***Significant at < .001 level, **Significant at < .01 level, R^2 = squared multiple correlations.

Moderation effect

To test the hypotheses H5 and H6, Kenny and Judd's (1984) two-stage approach to interaction modeling was adopted. In step one, the values of the variables of interest, that is, MO, CR, and IoT, were standardized using the IBM SPSS, which created four new standardized variables. In the second stage, standardized variables were multiplied as per the requirement of the study to obtain a single item indicator representing the product of the two measured variables, that is, IoT × MO and IoT × CR. These product terms were entered into the model and analyzed alongside other variables. The results show that the product term IoT_×_MO and performance are linked positively at a standardized coefficient (β) of .17 and p-value of < .01. In contrast, IoT_×_CR and performance are associated negatively at a standardized coefficient (β) of –.035, however, with an insignificant p-value (> .05). Figure 4 presents the structural model graphically, and Table 6 presents the summary of the results.

The interaction effects were plotted in Figures 2 and 3 to interpret the moderating effects. First, the IoT and MO interaction (Figure 2) highlights the low effect of MO on firm performance with low levels of IoT and the high effect of MO on firm performance with high levels of IoT. Therefore, IoT strengthens the positive effect between MO and firm performance, and thus H5 is supported. The second interaction between IoT and CR (Figure 3) shows that the change in the effect of low CR on performance and high CR on performance is less when firms have a high level of IoT. In contrast, the change in the effect of low CR and performance and high CR and performance is high with low IoT. Hence, IoT dampens the positive effect of CR on firm performance. However, this interacting effect is not significant (p-value > .05), and thus H6 is not supported.

In general, the results indicate that the structural model is a good fit to data, and all paths between independent variables (MO and CR) and moderator variable (IoT) to the dependent variable (FP) were found significant, supporting hypotheses 1, 2 and 4. It is also found that CR partially mediates the

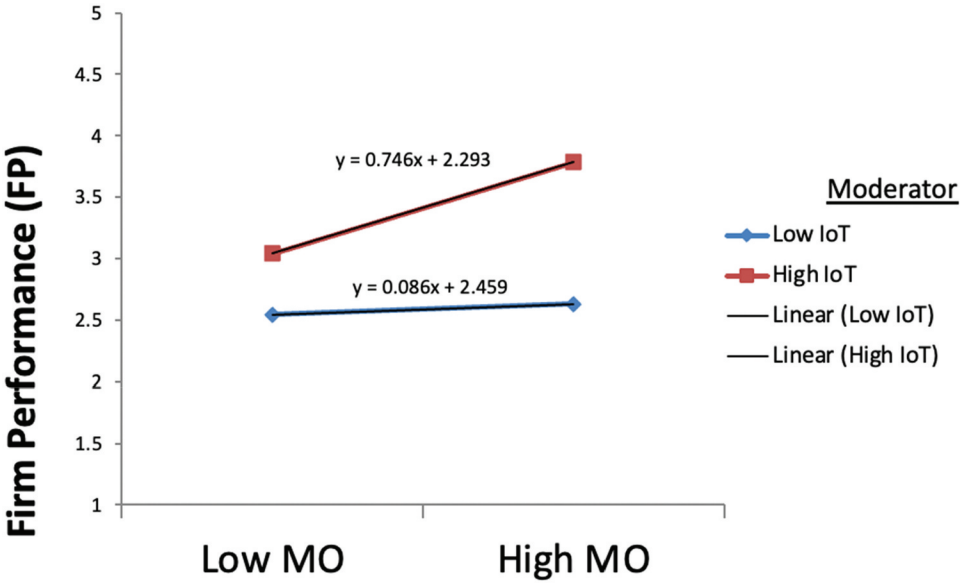


Figure 2. Interaction of IoT and MO.

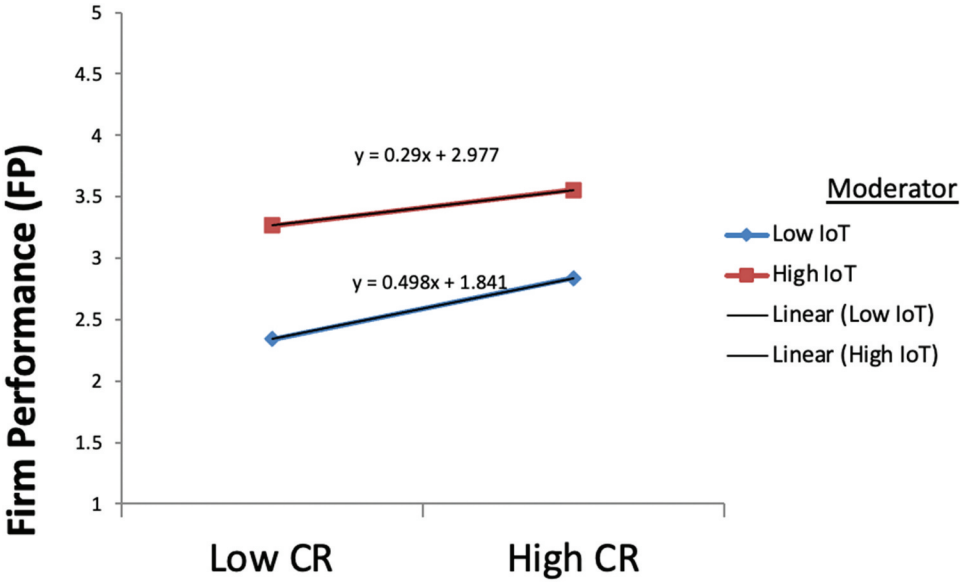
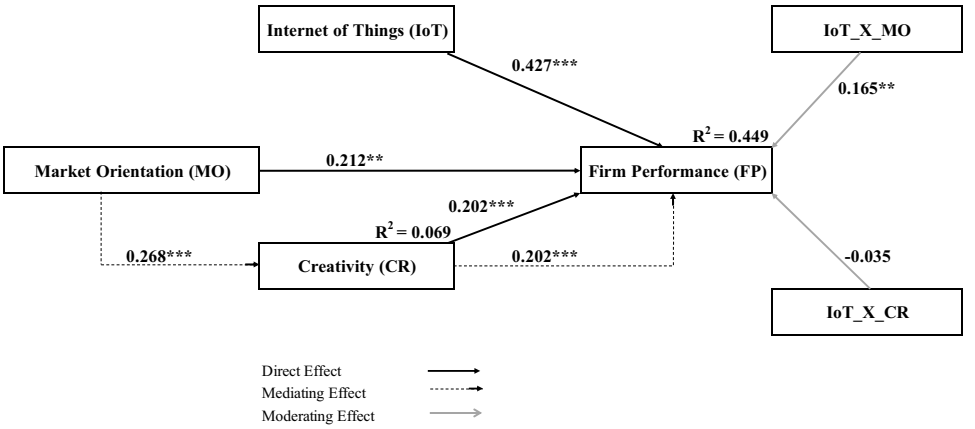


Figure 3. Interaction of IoT and creativity.

MO➔FP link, supporting hypothesis 3. Similarly, the interaction effect of IoT and MO on the dependent variable (FP) is found significant, supporting H5. However, the interaction effect of IoT and CR on the dependent variable (FP) is found insignificant, rejecting hypothesis 6.



*** = Significance Value (p-value) <0.001, ** = Significance Value (p-value) <0.01, R2 = Squared Multiple Correlations
Model fit indices: x^2/df = 2.921; CFI = 0.979; IFI = 0.976; RMSEA = 0.078; SRMR = 0.067

Figure 4. Structural model.

Discussion and conclusions

This paper investigated three types of effects: (a) the concurrent direct effects of market orientation (MO), Internet of things (IoT), and creativity on firm performance, (b) the moderating effects of IoT on the relationships between MO and firm performance and creativity and firm performance, and (c) mediating effects of creativity between MO and firm performance. The result reveals that all direct effects are positive. Concerning moderating effects, IoT was found to moderate the MO➔performance relationship, however, not the creativity➔performance relations. In addition, the MO➔performance link was found to be partially mediated by creativity. The findings recapitulate that MO, IoT, and creativity are crucial exogenous variables that directly and indirectly enhance firm performance.

Consistent with most empirical studies, MO substantially and directly affects firm performance (Baker & Sinkula, 2005; Jaworski & Kohli, 1993; Kirca et al., 2005; Narver & Slater, 1990). The SMEs' prompt application of market intelligence to decision-making processes is indicated by the direct and positive effect of MO on firm performance. SMEs by implementing MO can timely detect change, which enables them to review the effects of likely change, communicate the insights rapidly within the firm and plan the response to change, specifically concerning meeting customers' needs. Furthermore, firms, by being market-oriented, may build and maintain long-term customer relationships leading them to higher performance (Baker & Sinkula, 2005).

Although the adoption and effects of MO are more visible in large firms, it is adopted and exploited positively by SMEs including micro-firms. Micro-businesses might be unable to generate market intelligence by decision support systems and market research due to limited financial resources (Lonial & Carter, 2015), but it is easier for them to generate key market intelligence

directly from customers because owner/managers have a direct and more informal interaction with customers. Congruently, the dissemination and being responsive to marketing intelligence is faster in smaller firms than large firms (Pelham & Wilson, 1996), as they are either run by owners or have fewer senior managers on the one hand and have a limited number of employees on the other hand (Lonial & Carter, 2015).

In addition, MO, alongside having a positive and direct effect on performance, can indirectly affect performance through creativity. We have also theorized that firm-level creativity leads to superior firm performance and mediates the MO➔Performance link. The result indicates that creativity has a positive and direct effect on firm performance and partially mediates the MO➔performance relationship. As creativity can generate original and unique ideas (Sutapa et al., 2017), this result implies that developing and exploiting new ideas is vital in the extremely competitive and vigorous business environment.

The effect of MO on performance is even more substantial when firms simultaneously utilize IoT. The findings show that IoT strengthens the MO➔performance relationship. IoT is a central part of the digital artifacts (Zaheer et al., 2019) and a network of devices interconnected via the internet or local network (Hansen & Bøgh, 2021) with the ability to obtain, interact and share data (Islam et al., 2020). The firms operating in diverse industries can exploit connected devices to collect and process valuable data, that is, implement MO, to develop a competitive advantage (Akhtar et al., 2018) and achieve superior business performance (Nambisan, 2017).

Digital technologies, such as IoT, have made it possible for businesses to become much more adept in the generation, dissemination, and being responsive to valuable market intelligence and not just information (Kohli, 2017). Therefore, the findings of this study postulate indispensable evidence to support the assertions that IoT is crucial both for firm performance and MO. It is identified that the positive interaction between IoT and MO has relatively limited empirical support. This study empirically examined and found that IoT is that specific capability of firms that enables them to utilize an enormous amount of data to boost operational agility (Akhtar et al., 2018), explicitly concerning MO.

In general, this study confirms the assumption of RBT in the context of SMEs by establishing the positive effect of a bundle of capabilities on SMEs' performance.

Contributions and implications

This study contributes to our knowledge in several ways. First, the study contributes to the literature by proposing a unique framework that brings together diverse constructs from literature, for example, IoT, MO, creativity,

and SME performance, and examining their unique relationships by structure based on RBT. Second, it provides empirical evidence for Kohli (2017, p. 203S), who conceptualized the impact of the "still-developing digital technologies" on MO. Third, the empirical evidence for the positive moderating effects of IoT on MO➔performance link in this study extends empirical insights on the synergistic outcomes of MO. Fourth, we empirically validate that utilizing IoT eases the gathering, distributing, and response to market intelligence and ultimately achieves superior performance. The support for the moderating effects of IoT and mediating results of creativity on MO➔performance link indicates that the bundle of resources, when utilized uniquely enhances firm performance (Barney, 1991; Wernerfelt, 1984) and thus, explains how RBT enriches our knowledge base on IoT as an enabler.

The findings provide important practical implications. Since SMEs are resource-constrained (Brouthers et al., 2015), the managers must prudently allocate resources and decide which resources and capabilities they should invest. This study highlights how different capabilities affect SME performance, providing a guideline for entrepreneurs to prioritize their investments on various capabilities. The study provides strong evidence that managers should invest in IoT over and above any other resource or capability, as it has been found to have the most substantial impact on firm performance. IoT is also found to be an essential capability that strengthens MO and firm performance relationships.

Furthermore, MO has long been approved as a key indicator of superior firm performance. This study establishes that MO is a must-have firm-level capability and encourages managers to develop MO alongside IoT. Although MO positively affects firm performance, creativity as an intervening variable further explains the MO➔Performance relationship. The significant positive effect of MO on creativity and creativity on firm performance points toward the importance of nurturing creativity to generate and utilize market intelligence. These two capabilities could enable managers to create sustainable competitive advantage and higher firm performance with IoT.

Limitations and future research

Despite the contributions, this study should consider several limitations in interpreting the findings, leading to significant future research opportunities. First, the collection of data from Scottish SMEs necessitates caution in generalizing the results. It is suggested that a larger sample must be utilized to gather data in future research. Second, this study was conducted in a cross-sectional time horizon using the same survey instrument for exogenous and endogenous variables and collected self-reported data from a single subject within a firm, risking causal inference. Although common method bias tests indicate that it is not a major threat in this study, future research could still consider alternative approaches such as longitudinal design and the use of a separate

survey instrument to collect data on independent and dependent variables. Also, the study preferred not to use the publicly available information published on the Companies House website to assess financial performance for two key reasons. First, the majority of our study's respondents are micro-firms, most of which are neither required nor report their sales and return on investment. Most of these firms only published a limited disclosure balance sheet on the Companies House website, which does not reflect their required financial performance as required in the study. Second, some of the studied micro-firms are "sole traders," which are not required to register with Companies House and therefore, do not have any publicly available information.

Third, although, we are unable to confirm the utilization of IoT in day-to-day business by physically visiting the businesses, the usage of seven varied established items to measures the utilization of IoT provides meaningful coverage. Future research could supplement the remote data collection through self-administrated surveys with other methods to further validate the usage of IoT within SMEs. Fourth, future research should adopt qualitative and mixed methods approaches, allowing respondents to record unrestricted responses and ultimately more significant insights. Fifth and finally, this study used subjective measures. However, these measures are standard practices (Gupta et al., 2020; Vij & Bedi, 2016; Wang, 2008; Wiklund & Shepherd, 2005) but may lead to biased results. Therefore, future studies could consider using objective measures for firm performance.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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