SMEs' dynamic capabilities and value creation: The mediating role of competitive strategy

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Abstract

This research explicates the role of dynamic capabilities in the ability of SMEs to create value and also investigates the relationship between different dynamic capabilities, competitive strategy and SMEs' value sources. Empirical evidence based on a survey conducted on a sample of 441 UK-based SMEs was used to test the research hypotheses. The findings illustrate that sensing, learning, integrating and coordinating capabilities play a significant role in SME's value creation, and competitive strategy mediates the impact of dynamic capabilities on value creation. This study demonstrates the benefits of understanding the link between the four types of dynamic capabilities, competitive strategy and value creation. Moreover, this study contributes to the notion of the contingency nature of dynamic capabilities. It prompts rethinking the impact of dynamic capability and competitive strategy on value creation in SMEs by using a multidimensional perspective.

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Introduction

Several scholars (e.g., Drnevich and Kriauciunas 2011; Prange and Verdier 2011; Lin and Wu 2014; Girod and Wittington 2017; Ko and Liu 2017) prove that dynamic capabilities can improve organisational performance. However, dynamic capabilities may not be sufficient for firms' performance improvement, but their contribution to performance is significant (Rice et al. 2015; Wang, Senaratne and Rafiq 2015; Teece 2018). While much of the literature investigates the impact of dynamic capabilities on organisational performance, little attention (e.g., Rodrigo-Alarcon et al., 2018; Eikelenboom and Jong 2018) has been paid to understanding how dynamic capabilities create value to SMEs. Value is defined as the non-financial aspects of performance measurement from the stakeholders' view (Amit and Zott, 2001). According to Zott and Amit (2007) this value is considered in terms of four aspects: novelty (innovative provision of new products, services, distribution and marketing channels), lock-in (maintaining a durable relationship with customers and partners), complementarities (offering bundles of products, services and distribution channels) and efficiency (decreasing cost to provide higher benefits for vendors and customers).

This value creation is particularly crucial to SMEs, as they are increasingly under pressure of globalisation and a fierce competition from large peers to improve their competitiveness through generating higher value (Karaev et al., 2007; Castiglioni et al., 2015). Schilke, Hu and Helfat (2018) argue that dynamic capabilities should be considered as the primary sources of value creation which enable firms to identify opportunities/threats in the market and to exploit/neutralise them by firms' recourses and capabilities (Teece 2018). Due to the restricted financial, technical, and managerial resources of SMEs to spend on R&D and highly developed systems/technologies (Brouthers, et al., 2015), dynamic capabilities can assist SMEs to scan the environment, understand the marketplace, and create and seize opportunities (Eikelenboom and Jong 2018). Apart from descriptive implications of dynamic

capabilities, dynamic capabilities are essential to SMEs to enable better capability decisions, thus dynamic capabilities should be a focal point for any strategic analysis (Hatum, Pettigrew and Michelini, 2010; Pisano, 2017). While Rashidirad (2014) suggests that any investment on dynamic capabilities could be a wasted investment if the importance of competitive strategies to derive value is neglected, it is still unclear whether this statement is fully applicable to the context of SMEs. SMEs' researchers (e.g., Altinay, et al., 2016; O'Dwyer and Gilmore, 2018) have thus become increasingly willing to uncover why some SMEs are more value generating than the others. There are some disperse studies which have advocated that dynamic capabilities should enable SMEs to search and seize new ideas, and to integrate and coordinate the firm's resources and capabilities in order to create value (e.g., Ngugi, Johnsen and Erdelyi 2010; Scuotto, et al., 2017; Mennens et al., 2018; Ko and Liu, 2017), however, the extant literature has not been well informed by Dynamic Capabilities View (DCV) to clearly explicate the relationship between competitive strategies, dynamic capabilities and value creation in SMEs.

This research aims to systematically address the following questions: to what extent dynamic capabilities yield value in SMEs and whether competitive strategies play any mediating role in value creation of dynamic capabilities? By addressing these research questions, we aim to contribute to Resource Based Theory (RBT) and DCV in both theoretical and empirical sense, through considering dynamic capability as a multidimensional factor (as opposed to uni-dimensional, adopted in much of the previous work), whose contribution to value creation is contingent to the SMEs' competitive strategies. This research intends to equip both scholars and practitioners with solid empirical evidence to explain why DCV has become essential to SMEs in today's business world. This research also advances the understanding of the importance of adopting a competitive strategy which directs SMEs' investment on dynamic capabilities in order to bring about desired value sources.

Theoretical Background and Research Hypotheses Development

The Role of Different Dynamic Capabilities in Value Creation

The initial focus of RBT was devoted to the possession of core resources and capabilities, which are characterised as Valuable, Rare, Inimitable and Non-substitutable (VRIN) to create value (Barney 1991). Due to the changes in competition rules, the traditional focus of RBT has shifted from core resources and capabilities to particular types of capabilities, known as dynamic capabilities (Teece and Pisano 1994). Ambrosini and Bowman (2009, p. 32) contend that "if a firm possesses VRIN resources but does not use any dynamic capabilities, its superior returns cannot be sustained". Thus, in contrast to the traditional version of RBT, dynamic capabilities have become substantial requirements of any value creation in firms.

Despite the significance of dynamic capabilities, less attention has been paid to gaining a consensus about the typology of this type of capabilities. Several scholars (e.g. Teece, Pisano and Schuen 1997; Schilke and Goerzen 2010) have endeavoured to identify and classify various types of dynamic capabilities. Of this group, Teece's work (Teece, Pisano and Schuen 1997) is one of the most cited pieces of research of dynamic capabilities literature (Peteraf, Stefano and Verona 2013), and it has been employed in several studies when investigating dynamic capabilities typology (e.g., Pavlou and El Sawy 2011; Lin and Wu 2014). However, some (e.g., Ellonen, Wikström and Jantunen 2009) argue that this framework is not yet well-established, as most of the studies using this framework have been predominantly conceptual/theoretical, while there is still a paucity of empirical research conducted on various types of dynamic capabilities (Lichtenthaler 2012; Laaksonen and Peltoniemi 2018), and their relationship with competitive strategies and value creation. The reason for this is that Teece's framework has been proposed at an abstract level, which has failed to offer an applicable procedure to measure its micro foundations in various firms (Ambrosini and Bowman 2009; Pavlou and El Sawy 2011). In order to overcome such limitations of the dynamic capability framework of Teece

(2007), Pavlou and El Sawy (2011) attempt to operationalise Teece's framework through four processes of sensing, learning, integrating and coordinating capabilities, which have been applied in our study.

Firms' sensing capability lies in the dynamic search for opportunities and threats in order to shape and interpret opportunities in the market (Miocevic and Morgan 2018). Govindarajan and Trimble (2004) argue that this type of capability is more significant than ever to SMEs, as the rate of change in the current competitive, globalised marketplace is very high and this makes any market prediction very difficult (Radulovich, Javalgi and Scherer 2018). This capability is important for SMEs due to several reasons. First, sensing capability has both internal, i.e. firm level, and external aspects, as one of the primary objectives of this capability is to control internal and inter-organisational information to monitor the changing environment (Daniel & Wilson, 2003). Second, it has a dynamic and developmental nature, as it constantly explores, integrates and analyses information and knowledge to provide decision makers with real time information to make timely and effective decisions (Rashidirad, 2014). As information and knowledge are the core elements of this dynamic capability (Wang and Ahmed 2007), it may not be easily imitable and substitutable, therefore, it is a valuable and unique capability in SMEs (Jantunen, Ellonen and Johansson 2012). As the density of information and the rate of change and uncertainly in today's marketplace are more remarkable than in traditional areas (Jackson, Harris and Eckersley 2003), sensing capability may not have been a strategic capability some decades ago, while it is highly crucial to SMEs; not least because of their rather fragile competitive position in the market, compared to their large established peers, to create value (Roxas, B., Ashill, N. and Chadee 2017). Thus it is suggested that

H1a: Sensing capability positively affects an SME's ability to create value.

Learning capability is the ability of firms to address the opportunities identified by sensing capability through proposing new products/services (Matysiak, Rugman and Bausch 2018). Teece and Pisano (1994, p.10) interpret learning as "a process by which repetition and experimentation enable tasks to be performed better and more quickly and new production opportunities to be identified". Learning needs to be obtained from not only organisational internal transactions, but also the external environment (Lin et al. 2013). While internal learning refers to learning processes inside the firms, mainly in the form of training multifunctional employees, external learning is inter-organisational learning, mainly through relationships with customers and suppliers (Schroeder, Bates and Unttila 2002). Without dynamic learning procedures, SMEs may not be thoroughly able to achieve their objectives to create value (Barrales-Molina, Bustinza and Gutiérrez-Gutiérrez 2013; Valaei, Rezaei and Ismail, 2017). Otim et al. (2012) elaborate that if the expected value creation is high, an early and substantial investment in this capability is needed to empower firms to resolve the uncertainty of the current business environment, and therefore achieve competitive advantage. Learning should represent how SMEs learn to continuously acquire, assimilate, transform, and exploit knowledge (Zahra and George 2002; Mitki, Shani and Greenbaum 2018) in order to benefit them and their stakeholders. Thus, it is seen as a crucial source of knowledge and experience, which any SME that is willing to create value, achieve and sustain competitive advantage must be aware of.

H1b: Learning capability positively affects an SME's ability to create value.

Integrating capability enables firms to combine individual knowledge, acquired by learning capability, into a firm's operational capabilities by creating shared understanding and collective sense-making (Pavlou and El Sawy 2011). This type of dynamic capability is particularly crucial for SMEs in the current digital marketplace, as they need to integrate their computer/network based applications for their brick stores with their web systems (Kim, Nam

and Stimpert 2004a). Therefore, integration between legacy systems and web-based systems, and online and offline channels to avoid any conflict is one of the most significant areas of integrating capabilities. The pertinent literature reveals that integration leads to performance improvement. Mikalef and Pateli (2017) point out that integrating capability, as the foundation of dynamic capabilities, is an essential ability for any firm to create value. It is suggested that the competitive value creation through successful collaboration with complimentary resources of an SME is linked to the integrative capabilities of the SME (O'Dwyer and Gilmore, 2018), which is supported by appropriate infrastructure, organisational processes, and competitive and structural polices. In this sense, an SME is highly competent in value generation if it is able to quickly combine perceived technological advances and opportunities into their routines. Several authors have attempted to illustrate how this value creation may occur by looking at different aspects of integration. Some of these aspects include integrating knowledge resources within the whole firm (Grant 1996), integrating relevant R&D and operations knowledge of multiple business units (Tanriverdi 2005), integrating existing knowledge with new knowledge acquired from external partners (Ettlie and Pavlou 2006), integrating relevant customer knowledge of multiple business units to gain new customer insights (Teece 2007), and virtual integration of members, including consumers, into new product/service development (Füller et al. 2006).

H1c: Integrating capability positively affects an SME's ability to create value.

To deal with the rapidly changing environment, firms need to dynamically govern the structure, processes, resources, and tasks through coordinating and managing the interdependencies among them (Teece 2012). Teece and Pisano (1994, p. 10) put emphasis on the role of dynamic capabilities, as a "coordinative management process", which can make the inter-organisational leaning more likely to occur, such as through collaboration and partnership. In another study, Teece, Pisano and Schuen (1997) acknowledge this view by

stating that "[dynamic] capability is embedded in distinct ways of coordinating" (p. 519). Coordinating aims to sustain a firm's competitiveness through dynamic "redirecting and realigning the resource base" (Lichtenthaler 2012, p. 5). This view could be explained through a different perspective adopted by Cabrera-Suárez, De Saá-Pére and García-Almeid (2001). Based upon RBT, they suggest that a firm may underperform if it is only seen as a bundle of resources and capabilities. Instead, the ability of a firm to integrate, coordinate and mobilise these resources and capabilities can be regarded as a strategic dynamic capability which may not be easily replicable and available for every firm. Hervas-Oliver and Albors-Garrigos (2007) believe that this capability which enables SMEs to share tacit, path- dependent and often uncodified knowledge can provide SMEs with sustainable competitive advantage. Rashidirad (2014) argues that those which underestimate the significance of coordinating capability and fail to align it with their competitive strategies should not expect to create superior lock-in value in retaining and maintaining their customers and partners.

H1d: Coordinating capability positively affects an SME's ability to create value.

Mediating Effect of Competitive Strategy

Dynamic capability, as an extension of RBT (Vogel and Güttel 2012), enables scholars to trace how firms can change their core resources and capabilities over time to sustain their competitive advantage. This is in contrast to the traditional static view of RBT which was heavily criticised on its tautological nature (Gruber, et al. 2010); RBT was not able to offer any normative implications for managers on how core resources and capabilities can create value with regards to the firms' internal and external determinants (Schilke, Hu and Helfat 2018). Hence, by utilising dynamic capabilities in the appropriate setting, including the environmental and organisational setting, firms can yield superior value (Ringov, 2017).

In this research, strategy, as one of the key determinants of organisational setting, has been chosen to examine its mediating impact on the link between dynamic capabilities and value creation. The reason for this is that strategy determines and governs the configuration of other organisational settings, including resources, processes, and systems to deal with external uncertainties (Lawson and Samson 2001). Grant (1991) was one of the leading strategy scholars who proposes his seminal framework on the crucial role of competitive strategies in RBT. He believes that firms can create value if they develop and implement their competitive strategy based upon their resources and capabilities (including both operational and dynamic capabilities). For example, SMEs with cost leadership strategy are likely to allocate investment in dynamic capabilities to cut costs, but SMEs pursuing service-product differentiation strategy are more likely to invest in sensing and learning capabilities (see also Pett and Wolff 2017). Thus, dynamic capabilities enable SMEs to create value if they positively contribute to the development of new strategies and/or support current competitive strategies. Dynamic capabilities may only deliver higher value along dimensions consistent with the competitive strategy of the firm (Rashidirad, et al. 2015).

The literature shows that there is no doubt in the positive contribution of competitive strategy to value creation (e.g., Kim, Nam and Stimpert 2004a; Wang and Ahmed 2007; Parnell 2011). Indeed, firms develop strategy to create value for their stakeholders, i.e., management, suppliers, partners, customers, etc. However, different empirical studies postulate various relationships among SMEs' competitive strategy, dynamic capabilities and performance/value (Parnell, Long and Lester 2015; Acquaah and Agyapong 2015). We propose that value creation may not be perfectly accessible if SMEs' competitive strategies are not fostered by the firms' dynamic capabilities. Competitive strategies will assist SMEs to deploy their dynamic capabilities in a way that they create more value.

H2: SMEs' competitive strategy mediates the positive effect of (a) sensing, (b) learning, (c) integrating and (d) coordinating capabilities on SMEs' ability to create value.

Methods

Sample and Measurement

This research was conducted within the UK-based SMEs in Information Technology (IT) sector. These SMEs provide Information services which include related activities to data processing and hosting activities, web search portals, and all other activities that supply information to both business and individual customers (SIC code Support 2018). The selection of this sector was made not only because of the distinctive position of the UK IT service providers in Europe (Ofcom, 2018), but also due to the scarcity of current research within this sector. A careful investigation demonstrates that much of the literature on this sector relates to case studies and conceptual frameworks, while there are still fewer studies empirically conducted on the SMEs operating in this sector. Without doubt, this sector deserves more research to generate studies that are more conclusive.

An extensive literature review was conducted to extract all the relevant measures from previous studies, which could operationalise the research constructs. However, as this research was conducted in the IT sector, some minor adjustments and modifications in wording were made to increase the acceptability and applicability of the measures to the high-tech context of this research.

To measure dynamic capabilities, respondents were asked to indicate the extent to which their firm is dynamically competent to address a rapidly changing environment. Overall, 24 questions were provided in this section to cover all four types of dynamic capabilities, i.e., sensing, learning, integrating and coordinating. The first six items on sensing were proposed to assess the extent to which processes, such as scanning and monitoring the environment

(Pavlou and El Sawy 2011), and reviewing and detecting the effect of changes in a business environment (Jaworski and Kohli 1993) were emphasised in the SMEs. This was followed by six items on evaluating whether the SMEs are effective in identifying, importing and utilising new information and knowledge, i.e., learning capability (Bhatt and Grover 2005; Ettlie and Pavlou 2006). Integrating capabilities were operationalised through six items, such as "we effectively interrelate our activities to manage rapidly changing conditions" (Pavlou and El Sawy 2006) (see Appendix A for other measures). Finally, the last six items were designed to ensure that the SMEs' employees are competent enough to synthesise their tasks (Pavlou and El Sawy 2011) through a proper allocation of their resources in order to work as a coordinated unit (Saini and Johnson 2005).

Regarding competitive strategy, among the existing strategic options models, Porter's generic strategies (1980) seem the most appropriate to be employed in this research. This is not only due to the highest research attention received when compared to other typologies, but also because the literature (e.g. Kim, Nam and Stimpert 2004a; 2004b) reveals no doubt about the acceptability, adaptability and applicability of this typology in the context of high-tech businesses. Therefore, competitive strategy was measured through two generic types of competitive strategies (Porter, 1980), i.e., cost leadership and differentiation. It is worth nothing that the decision to apply this duopoly strategy and overlooking the focus strategy in Porter's classification was made to be consistent to the pertinent literature in the area of technological and IT related businesses (e.g., Kim, Nam and Stimpert 2004a; Raisinghani, Meade and Schkade 2007; Gabrielsson, Seppala and Gabrielsson 2016) as well as SME context (e.g. Pett and Wolff 2017; Linton and Kask 2017). According to these studies, focus is a necessary condition for any high tech SME to become successful, so it is not a strategic option anymore; those SMEs failing to benefit from the abundant advantages of the Internet and other Information Technologies to carve out a market segment may not be able to create value. Thus,

this section contained seven items to encompass two main generic types of competitive strategies (see Appendix A). Respondents were asked to assess how their SME competes strategically in the market. Similarly to the previous section, all questions were extracted from past relevant research.

This study operationalised value creation based on the work of Amit and Zott (2001; Zott and Amit 2007; 2010). They argue that value creation in high-tech firms is determined by four business models based on NICE model, i.e, Novelty, Lock-in, Complementarities and Efficiency. A total of 12 measures, three measures for each aspect of value creation, were utilised (See Appendix A).

All measures of the questionnaire were designed in the form of propositions, in which the respondents were required to give their evaluation of how accurately they feel that these propositions describe the situation in their SMEs through the 7-point Likert scale ranging from 1 being totally disagree to 7 totally agree.

Data Collection

This research employed a questionnaire survey to top managers and directors from 441 UK based SMEs active in IT sector. A pilot test was undertaken to ensure the content validity of the questionnaire items. To do so, 243 questionnaires were emailed to a sample of SMEs within the selected sector. As a result, 30 fully completed responses were used to pilot test. During the pilot test, some amendments were made to remove any ambiguity in the wording on the questionnaire. For instance, two reverse items were identified as being confusing for the respondents, so they were turned into positive wording. As a result, all the items were measured in the same direction. Having ensured the face and content validity, the results of the initial Cronbach's alpha test of the reliability (Cronbach 1951) acknowledged that the designed questionnaire is reliable enough to be employed for data collection. Finally, the measurement

model was tested to ensure sufficient convergent and discriminant validity. To assess convergent validity, the average variance extracted (AVE) was used. The result showed the AVE of all research constructs are greater than 0.50 at the construct level (see appendix A). The result of applying the Fornell–Larcker criterion, as one of the common approaches of discriminate validity, proved the model's discriminant validity is acceptable. As a result of the pilot test, the finalised questionnaire was found valid, comprehensive and appropriate to be used for data collection.

In order to increase the response rate for our Internet survey, other methods such as phone calls, and in some cases mail surveys, were utilised to encourage those SMEs that missed the initial e-mail communication. In using this multi-method, a letter was emailed to a randomly chosen set of 950 founder/director/managers of total population of 1150 SMEs in IT sector listed on the directory portals of Keynote, LexisNexis and Freeindex directory. Sampling was conducted by using the probability sampling 'simple random sampling method', in which each SME has an equal probability of being selected (Jackson, 2012). The message encompassed a link to the survey website. As a result, the process of data collection from a total 950 randomly contacted SMEs, which lasted seven months, resulted in yielding 441 usable responses: 265 SMEs completed the questionnaire via the web-link provided to them; 117 SMEs responded after one or two phone reminders, and the final 59 were collected via postal mail. This multi-method process of data collection returned a 21% response rate. The achieved response rate is argued to be an acceptable rate in the selected settings when compared to similar studies where the average response rates ranged from 11% to 63% (e.g. Lai, Griffin and Babin 2009; Shin, Kim and Lee 2011; Linton and Kask 2017).

The data collected mainly from directors and CIO of the SMEs. A small proportion (18%) of the participants had different managerial roles, e.g., head of IT, sales manager and marketing executive analyst. The majority of the SMEs participated in this research project were young

(54.4% had been in business for less than 10 years). In terms of SMEs' size, while 86% of them were small with less than 100 full time employees, the remaining 14% were medium with 100-250 employees.

In order to ensure that the data gathered from different methods during the long period of data collection can be combined, a series of Chi-square tests were undertaken to test for nonresponse bias. Analysing the results of these tests for the two items of firm's age and scope of operation (percentage of sales outside the UK) and firm's size (two items of number of full time employees and the total sales in the most recent year), demonstrated no significant difference ($p > 0.05$) between the data collected through the different methods in the first and last half of the data collection period. Principal Component Analysis (PCA) was employed to ensure scale validity among the constructs. Consistent with the prior work (e.g. Song, Nason and Di Benedetto 2008), the cut-off factor loading of 0.4 was used. In so doing, items with a factor loading equal or below the cut-off point were considered. Moreover, varimax rotation with eigenvalue greater than 1.0 was employed for factor inclusion, therefore, items with lower eigenvalue were removed (Jackson 2012). As a result of this process, two items of competitive strategy and two items of dynamic capabilities, one from integrating and one from configuration capabilities were screened out. Kaiser-Meyer-Oklin (KMO) values of all constructs were above the recommended value of 0.6 (Kaiser 1974), so the construct validity of the survey was ensured. Moreover, correlation analysis by using Pearson Product-Moment Correlation Coefficient (PPMCC) was used in this research to examine the possible relationship between the factors. The results presented in Table 1 illustrate that all research constructs are distinct. Although the correlations between the variables are all positive, the strength of the relationships varies, but as presented in Table 1, the differences in correlation scores are not significantly different. Moreover, all scales yielded an alpha score greater than

the recommended value of 0.7 (see Appendix A for the final draft of questionnaire which contains alpha scores).

*****Insert Table 1, then Figure 1 and 2 in here*****

Analytical Result

Data analysis was conducted using Structural Equation Modelling (SEM). Compared to a more conventional method of multiple regression, SEM enables researchers to examine several sets of regression equations simultaneously (Hoyle, 2014). Of the various methods of SEM, path analysis in LISREL was found most appropriate for the hypotheses testing and examining the accuracy of the two proposed models (Figure 1 and Figure 2).

First, path model 1, illustrated in Figure 1, assesses the direct impact of dynamic capabilities along with competitive strategy on value. The findings show the overall fit of $\chi 2$=44.84 (d.f. =2), p=0.00, GFI =0.76, AGFI =0.16, RMSEA=0.31, NFI =0.63, TLI =0.19, and CFI =0.76. The results show that the fit indices are not good enough, so the proposed model was found inappropriate. In contrast, path analysis of model 2 (see Figure 2) reveals adequate fit: $\chi 2$=22.31 (d.f. =2), p=0.18, GFI =0.90, AGFI =0.98, RMSEA=0.056, NFI =0.98, TLI =0.98, and CFI =1.00 with the GFI, AGFI, and NFI and TLI well above the recommended threshold of 0.90 and the RMSEA less than 0.08 (Mueller 1996; Hu and Bentler 1999).

Having carefully evaluated the path analyses of the both models (see Table 2 and 3), it was revealed that the mediating impact of competitive strategy is significant. Analysing the relationship between dynamic capabilities and value creation reveals that sensing (β=.189, t-value =4.831), learning (β=.031, t-value =.793), integrating (β=.301, t-value =.640) and coordinating (β=.403, t-value =11.017) all positively enhance the ability of SMEs to create value. This result supports H1a-d. This research further examined the relationship between dynamic capabilities and SMEs' competitive strategy and found that dynamic capabilities positively impact competitive strategy (β=.478, t-value =11.997). Thus, it is fair to say that the

findings of this research are consistent to previous work, as second hypothesis (H2) is supported too.

*****Insert Table 2 and 3 in here*****

Conclusion

Discussion

Grounded on the main notion of RBT and adopting DCV, this study is able to investigate the relative importance of the value contribution of the different dynamic capabilities in regards to SMEs' competitive strategy. This study argues an SME's competitive strategy significantly mediates its ability to derive value from its dynamic capabilities, and it explains the extent to which an SME's competitive strategy influences its value generation. The results of the dynamic capabilities-value relationships (H1a-d) support our expectations and are largely consistent with prior research studies. Although the financial returns of dynamic capabilities have been proven by prior studies (Schilke and Goerzen 2010; Drnevich and Kriauciunas 2011; Wilhelm, Schlömer and Maurer 2015; Wang, Senaratne and Rafiq 2015), our results further justify the non-financial value added by the four dynamic capability processes in a highly turbulent IT sector. This idea which is grounded in DCV requires SMEs to continuously search and seize new ideas, innovate new products/services, integrate and orchestrate their resources and capabilities to stay competitive and yield value. This is particularly crucial to SMEs due to their limitations and their sensitive competitive market position compared to their large peers.

Our analytical findings of the relationship among dynamic capabilities, competitive strategy and value creation provide further evidence of the significant role of competitive strategy in deriving value from dynamic capabilities (H2). The results reinforce the argument for the need to consider the mediating impact of organisational contextual factors, such as firms' competitive strategy, to examine how they interact with dynamic capabilities to deliver value. Our results further enrich evidence of the purported positive impact of dynamic

capabilities on competitive strategy in SMEs (e.g., Parnell, Long and Lester 2015; Acquaah and Agyapong 2015). This result indicates the benefits of dynamic capabilities to support the competitive strategy of SMEs. By developing dynamic capabilities and adopting competitive strategy to mediate dynamic capabilities, SMEs can deliver value and thus create and maintain their competitive advantage in the market. Although the value of competitive strategy has been recognised, previous research (e.g., Wang and Ahmed 2007; Parnell 2011) largely focuses on the financial returns of adopting a competitive strategy. This study confirms that developing a competitive strategy underpinned by dynamic capabilities can assist firms to achieve non-financial returns (see Zott and Amit 2010). Thus, the significant role of competitive strategy is addressed due to its direct impact on value creation and its indirect impact mediated by dynamic capabilities from DCV.

Theoretical and Empirical Implications

The findings of this study provide significant contributions to theory in several ways. Unlike some previous studies which conceptualise dynamic capabilities as a unidimensional construct (e.g., Drnevich and Kriauciunas 2011), this study demonstrates the benefits of understanding the details of the link between the four types of dynamic capabilities, competitive strategy and value creation. Thus, we develop a theory based on whether each type of dynamic capability creates value with respect to the mediating role of competitive strategy. We believe that a systematically multidimensional study of dynamic capabilities provides new insights into the creation and exploitation of dynamic capabilities. We suggest that SMEs have to learn how to develop their dynamic capabilities to act flexibly to changes, and continuously remain open to innovations. Thus, dynamic capabilities are to assist SMEs to outperform their peers (Karaev, et al., 2007). However, we have not addressed how an SME may create and

exploit its dynamic capabilities to yield value. A fruitful avenue for future research would be to develop, explore and assess ideas about how firms might deal with this issue.

The majority of prior work (e.g., Girod and Wittington 2017; Wamba et al., 2017) has investigated the impact of dynamic capabilities and competitive strategies on financial returns of firms, whereas this study proves the non-financial value adding of dynamic capabilities and competitive strategies. We believe that although examining financial value measures is predominant in the studies, it may not be the most appropriate construct to study the impact of a firm's dynamic capabilities and strategies (see also Soto Acosta, Colomo-Palacios and Loukis 2011). This is particularly crucial in the IT sector, as financial benefits may not be achievable and measurable in a short term, but they might be seen through the non-financial value created for a firms' stakeholders in a longer term. Thus, we suggest that successful SMEs are those that are quick in sensing, learning, integrating and coordinating capabilities to spot and seize the opportunities in the market and therefore stay competitive. This may not be truly accessible by any SME, but once an SME exploit their resources and capabilities in alignment with its competitive strategy, it is in a competitive position to create opportunities and/or neutralize threats in the market (Grant, 1991).

Another implication of this study is that it contributes to the notion of the contingency nature of dynamic capabilities. Consistent with Schilke's view (2014), we propose that dynamic capabilities is not a universal or context-free concept. As a result, the contingent value of dynamic capabilities is empirically acknowledged. This leads us to one of the other contributions of this study, which is the proposition and examination of an untested theoretical framework on the mediating impact of competitive strategy on the contribution of dynamic capabilities to firms' value creation. This framework attempts to complement previous studies (e.g., Wang, Senaratne and Rafiq 2015) and helps to clarify the tenuous links between dynamic capabilities, competitive strategy and value (Rashidirad, et al. 2015), which contributes to RBT

and DCV. In particular this contributes to the long-standing issue of tautologies between capabilities and values, which lies in RBT. Indeed, the point of departure for the study reported here is the proposition that in order to compete in the current fast-moving economy through creating superior value for stakeholders, firms need to develop and exploit their dynamic capabilities in line with their competitive strategy. This is another contribution of this research, particularly as we tested and proved this statement in the context of SMEs in which limited pertinent research has been conducted so far (e.g., Acquaah and Agyapong 2015). This suggests that the realisation of competitive strategy may not be sufficient for SMEs to survive, especially if they underestimate the significant role of dynamic capabilities as one of the primary sources of value creation in firms (Pavlou and El Sawy 2011).

In terms of research method and research context, this study contributes in two main ways: first, we provide quantitative empirical evidence of dynamic capabilities in practice, as much of the prior work on this has been either conceptual/ exploratory attempts (i.e., most of Teece's work, e.g. 2007; 2008; 2014) or case studies. Second, as the majority of the existing literature on dynamic capabilities has been conducted in the manufacturing sector (e.g., Bhatt and Grover 2005; Hulland, Wade and Antia 2007), this study extends the extant knowledge base through addressing the application of dynamic capabilities to the IT sector as a sample of service industry.

In terms of the contribution to managerial practices, this research draws attention to the importance of competitive strategy in conjunction with the development and deployment of dynamic capabilities to create value. The significant relationship between dynamic capabilities, competitive strategies and value creation suggests that SMEs that possess competitive strategy and developed dynamic capabilities will be able to leverage this to their advantage to yield value. Indeed, it offers managers insight into the aspects on which to focus their efforts to enhance their firm's capacity of value creation. The study also advises managers to invest in

developing their sensing, learning, integrating and coordinating capabilities in a way that secures their competitive positioning in the market. Without this investment, managers may not be able to (i) effectively utilise their high-tech solutions to deliver innovative products or services, (ii) attract and maintain their customers and partners, (iii) address and develop the complementarities between different elements, i.e., technologies, systems, products and/or services, and finally (iv) ensure on-time, reliable, and cost-effective delivery. All these call for managers to continuously search for opportunities in the current dynamic market, i.e., sensing, develop new ideas and explore new technological and knowledge developments, i.e., learning, interrelate information, knowledge and activities in the entire breadth of their firms, i.e., integrate and reconfigure, adjust and combine the firms resources, i.e., coordinating capabilities. This is particularly crucial to the SMEs operating in the dynamic and highly turbulent context of IT. Every day, advances in technology, and the consequences for the customers' needs and requirements, pose a number of challenging opportunities and threats for the firms' performance in this market. It is recommended that managers continuously improve their dynamic capabilities to maintain the greatest connection with the environment.

Research Limitations and Recommendations for Future Research

This paper has a number of limitations. It endeavours to explicate the value implications of dynamic capabilities with the mediating impact of competitive strategy, but the proposed research framework is not holistic as the impact of other mediating factors, e.g., environmental dynamism (e.g., Wilhelm, Schlömer and Maurer 2015; Ringov, 2017) and firms' characteristics (e.g., Fainshmidt and Frazier 2017) is not addressed. Thus, considering other important mediating factors may provide further theoretical and managerial implications to the literature. Furthermore, consistent with much of the pertinent literature (e.g., Rodrigo-Alarcon et al., 2018), this research obtained data from a single sector of IT, in the limited scope of the

UK in order to control the industry-related variables. Therefore, it is necessary to mention that disregarding other industries may limit the generalisability of the findings. A similar line of inquiry could be carried out in another industry and/or another country to assess the beneficial and generalisability of the verified research framework.

In addition, in order to reduce the complexity of the research framework, value was considered as a single dimensional construct. Future research is required to analyse the effect of dynamic capabilities and competitive strategy on each source of value creation. Similarly, a more careful classification of competitive strategies, which includes different types of differentiation strategy, e.g., product-service, marketing, technology, brand, could be employed by future studies to further expand our findings. Apart from this, as the data were collected from a single key informant respondent from each of the participating firms, further research could enhance the validity and generalisability of the research findings by employing multiple respondents.

This research area which explores the role of dynamic capabilities in the value creation capacity of SMEs is still sparse, so it is suggested to scholars to expand the extant knowledge base through conducting both conceptual and empirical studies. For instance, the behavior of managers and leaders could be considered to evaluate the effect of dynamic capabilities of the SMEs. This idea which is grounded in the behavioral theory (Cyert & March, 1963) implies that in contrast to economic rationality, managers and decision makers, as human beings have a restricted information processing capacity which can directly impact on their decisions. So it is crucial to understand in what different ways managers and decision makers perceive the value of dynamic capabilities, which influence on the extent they support and invest in development and deployment of these capabilities to reap their corresponding benefits.

Finally, from a methodological perspective, SEM path analysis was found to be a fruitful approach to assess the research hypotheses and verify the research framework. However, other

researchers may wish to re-test the research findings by using alternative methods. For instance, further research may employ a different approach to test the mediating effect of competitive strategy (see Baron and Kenny, 1986 and MacKinnon et al. 2007), or employing a mixed quantitative-qualitative methodology, which can be further employed as a more appropriate means of exploring the research phenomena, especially due to the inherently qualitative nature of dynamic capabilities.

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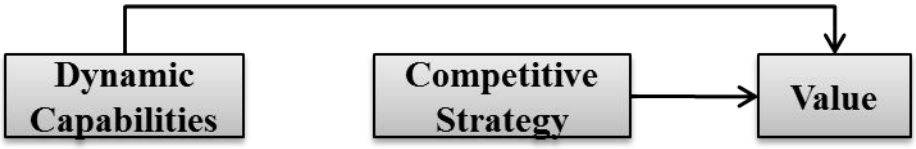

Figure 1. The direct impact of dynamic capabilities and competitive strategy on value

Figure 2. The direct and indirect influence (mediating impact) of dynamic capabilities and competitive strategy on value

Table 1. Descriptive statistics: means, standard deviations and correlations

Variable names	Mean	Std.	(1)	(2)	(3)	(4)	(5)	(6)
(1) Sensing capability	4.73	1.38	1					
(2) Learning capability	5.40	1.30	.032	1				
(3) Integrating capability	5.13	1.29	.024	.088	1			
(4) Coordinating capability	5.29	1.21	.071	.015	.045	1		
(5) Competitive strategy	5.21	1.23	.136**	.520**	.411**	.246**	1	
(6) Value	5.21	1.19	.251**	.602**	.170*	.497**	.482**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2- Testing results

Path	Co-efficient	t-value
Dynamic capabilities → value	.044	1.095*
Dynamic capabilities → competitive strategy	.478	11.997**
Competitive strategy → value	.098	2.187**

** p=0.01, * p=0.05

Table 3- The mediating effect

Models	Path	Coefficient	t-value
Model 1: Sensing (H1a and H2a)	**Sensing → value**	.189	4.831**
	Sensing → competitive strategy	.136	3.031*
	Competitive strategy → value	.456	11.665**
Model 2: Learning (H1b and H2b)	**Learning → value**	.031	.793*
	Learning → competitive strategy	.052	1.162*
	Competitive strategy → value	.484	12.182**
Model 3: integrating (H1c and H2c)	**Integrating → value**	.301	.640*
	Integrating → competitive strategy	.041	.904
	Competitive strategy → value	.482	12.142**
Model 4: Coordinating (H1d and H2d)	**Coordinating → value**	.403	11.017**
	Coordinating → competitive strategy	.246	5.607**
	Competitive strategy → value	.383	.452

** p=0.01, * p=0.05

Appendix A: Constructs and measures

Construct	Item	Reference	Cronbach's alpha	AVE
Sensing capability	Environmental scanning	(Pavlou and El Sawy 2011)	0.884	0.52
	Review product development efforts	(Pavlou and El Sawy 2006)		
	Review the likely effect of changes in the business environment on customers	(Jaworski and Kohli 1993)		
	Detect changes in customers' product preferences			
	Observe customer's needs/problems	(Liao, Kickul and Ma 2009)		
	Observe competitors			
Learning capability	Have routines to identify, value, and import new information and knowledge	(Pavlou and El Sawy 2011)	0.938	0.53
	Have routines to assimilate new information and knowledge	(Bhatt and Grover 2005)		
	Transform existing information into new knowledge	(Pavlou and El Sawy 2006)		
	Being effective in utilising knowledge into value creation	(Pavlou and El Sawy 2011)		
	Being effective in developing new knowledge			
	Learn new things within the firm	(Sher and Lee 2004)		
Integrating capability	Contribute individual input to the firm.	(Pavlou and El Sawy 2006)	0.905	0.54
	Integrate existing knowledge with the new information and knowledge acquired			
	Interrelate activities to manage rapidly changing conditions	(Ettlie and Pavlou 2006)		
	Have informal and direct communication between individuals	(Iansiti and Clark 1994)		
	Being aware who in the firm has specialised skills and knowledge	(Pavlou and El Sawy 2011)		
	Information and knowledge resources integrated in entire wide of the firm	(Grant 1996)		
Coordinating capability	An appropriate allocation of resources	(Pavlou and El Sawy 2011)	0.842	0.51
	Compatibility between expertise and work processes			
	Ensure the output of work is synchronised with the work of others	(Pavlou and El Sawy 2006)		
	Assign employees to tasks commensurate with their task-relevant knowledge and skills			
	Coordinate all the firm's functions			
	Have a well-coordinated firm			

Construct	Item	Reference	Cronbach's alpha	AVE
Competitive strategy	Operating efficiency	(Dess and Davis 1984)	0.768	0.53
	Competitive pricing			
	Strict product quality control	(Robinson and Pearce 1988)		
	Level of R&D expenditures for process innovations	(Spanos and Lioukas 2001)		
	Being ahead of competition			
	Rate of new product/service development			
	Advertising	(Zahrah and Covin 1993)		
Value creation	Being pioneer firm in utilising high-tech solutions	(Zott andAmit 2008)	0.825	0.59
	Have a strong development approach for high-tech applications	(Liao, Kickul and Ma 2009)		
	Innovate high-tech product or service offerings			
	Being expensive for customers or partners to replace the firm	(Eikebrokk and Olsen 2007)		
	Offer tailored goods and/or services in attracting and maintaining participants	(Song, Nason and Di Benedetto 2008)		
	Offer incentives to participants by loyalty programs	(Zott and Amit 2007)		
	Complementarities between online and offline elements of transactions			
	Complementarities between our company's technology and technologies provided by others.			
	Offer customers a wide range of complimentary services and products			
	Being able to deliver faster	(Eikebrokk and Olsen 2007)		
	Cost efficiency in the firm	(Hulland, Wade and Antia 2007)		
	Scalability of business model	(Zott and Amit 2008)		