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A Case Study Analysis Of The Antecedents Of Innovation And Its Impact On Business Performance In High-Tech Smes In The UK

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Abstract

In view of the contribution of Small and Medium Enterprises (SMEs) to the economy, numerous studies focused on high-technology firms. High-tech small start-ups were considered very important for the innovation of small businesses. This study focuses on the antecedents of innovation and its contribution to business performance. The theoretical background was based on the Resource-based view (RBV), Knowledge-Based view (KBV), and Market Orientation view (MOV) of the firm. The role of these theories on a firm's innovativeness was investigated.

A single case study approach and a qualitative data analysis method were used for generalization. Qualitative methodology was followed as most of the previous research was quantitative in nature. The firm was chosen from the manufacturing sector as it was considered to be more innovative in past years. Data was collected from different sources such as documents and archival records. The findings were consistent with previous studies. The results showed that the capability of each approach was positively related to innovation activities in the firm and ultimately resulted in improved business performance. The implications and limitations of the study are discussed. The study sums up by highlighting possible future research directions.

Key Words: Resource-Based view; Knowledge-Based view; Market Orientation; Innovations; Business Performance; Case Study; Qualitative data analysis.

Introduction

In the beginning, innovation was concerned mostly with large organizations and the technological aspects of the organizations were considered sources of innovation. Innovation

studies in SMEs started only when the contribution of SMEs to the economy was recognized (Adam & Alarifi, 2021). Such studies were many and focused on high-tech small firms as they were recognized as these firms were considered to be the essential elements of innovation in small businesses. The rate of innovation and growth of these start-ups made them more successful and they become famous names of business history. Such businesses grabbed more attention of the academics and researchers (Adam & Alarifi, 2021). As a result, most of the research was conducted in such high tech firms. This research is aimed at filling that gap by examining the phenomena in small low tech firm. The study also attempts to highlight the importance of Innovation studies in SMEs, as it is in larger organizations (Almeida, 2021).

The importance of SMEs in job creation and income generation in a country's economy is well accepted (Adam & Alarifi, 2021). SMEs are considered as the backbone in the economy of any country and their contribution to GDP is significant (Güzel, Ehtiyar, & Ryan, 2021). Likewise, SMEs play a vital role in economic growth in the United Kingdom (UK). Broadly, the UK economy can be divided into Public and Private Businesses. In 2021, approximately 5.6 Million private businesses were registered in the UK out of which nearly 99% were small businesses. Within small businesses 99.9 % were SMEs with their number increased significantly in past few years. SMEs are thought to be the largest source of employment with more than 15 million workforce making it 60% of the total employment in the private sector and a collective turnover of over £1.8 Trillion equating to 47% of the total private sector turnover (Department for Business Innovation & Skills, 2022).

The innovation practices of SMEs contribute to the economy and growth of the economy is possible due to the contribution of innovative SMEs. empirical research on SMEs shows that innovation plays a very crucial role in their performance (Adam & Alarifi, 2021). Innovations also help SMEs to perform in face of scarce resources, uncertain and changing businesses environment, greater competition, and changing market conditions. In such a complex and uncertain business environment, technology is constantly changing and market conditions are getting tougher, and businesses must attempt to be innovative in order to stay competitive (Do et al., 2022).

Considering the importance of SMEs in the economy of a country and the importance of innovations for the competitiveness of SMEs, this research intends to discuss the antecedents of innovations in SMEs. The study examines the theories about the antecedents of innovation, the capabilities of SMEs that can trigger innovation, and the role of innovations in enhancing SMEs' performance in the manufacturing sector of the UK (Hamdan, & Alheet, 2020). The study examines two comprehensive research questions. First, to explore the antecedents of innovations in SMEs, and second, to examine the role of innovativeness in enhancing business performance. In the first part, three theories i.e. KBV, RBV, and MOV are discussed and the role of these theories on a firm's innovations is examined. Thus attempt will be made to answer the following research questions in the first part,

1. RBV: Is there any impact of Entrepreneurial capability on Innovativeness of the firm?
2. KBV: Is there any impact of learning orientation on innovativeness of the firm?
3. MOV: is there any impact of components of MOV on innovativeness of firm?

The later part of this study about the impact of innovativeness of the form on business performance. This part of the study attempts to find out about the impact of firm's innovativeness in enhancing business performance. The research question to be answered in this part is as follows,

4. Is there any impact of firm's innovativeness on business performance?

Literature Review

Innovations

Joseph Shumpeter, a German economist first introduced the notion of Innovation and explained it as the composition of creativity, new processes, the introduction of new products/services, research and development, and technological advancements (Benbrahim, & Benabdelhadi, 2021). According to Kuratko, Goldsby, and Hornsby (2018), innovation is the beginning of new wealth or enhancement of the available resources to generate new wealth. Thornhill (2006) defines innovations as the process of generating a new idea that leads to the creation of a new product, process, or new service. According to the Oslo Manual (2005) of the OECD, innovation is about a new method of marketing, a new business practice, or a change in the workplace or organization of work. OECD manual introduces four types of innovations as related to Product, Process, Marketing, and Organizational. In this manual, product innovation is the introduction of a new or improved good or service. It is not limited to the introduction of new products and services but also covers meeting the needs of the current customers (Wang and Ahmed, 2004; Wan et al., 2005). In this sense, product innovation is regarded as an important source of competitive advantage (Camison and Lopez, 2010), that can enable firms to respond to the threats faced by them in face of competition (Hult et al, 2004).

Process innovation is defined by OECD Oslo Manual 2005 as, the introduction of a new or an improved production method. Process innovation comprises substantial alteration of software, types of equipment, and techniques of production. As compared to product innovation, process innovation is internally focused (Sjödin, 2019). The aim of process innovation is to redesign and enhance business operations inside an organization focused on multiple aspects of function and operation of the organization i.e. design, management, R&D, and manufacturing (Sjödin, 2019). In process innovation, an attempt is made to improve current techniques which help in the development of a system or process, for example, a new skill, new technology, a new tool, and new knowledge (Oke, 2007).

According to OECD Oslo Manual 2005, Market innovation is about the application of a new method of marketing including the design, placement, promotion, and pricing of a product or service. In view of Udriyah, Tham, and Azam (2019), marketing techniques in strategic organizational behaviour domain comprising four forms i.e. product innovation, service, efficiency, and brand influence aimed at channel influence and brand recognition with the help of creative techniques of marketing. Market innovation is the amalgamation of target marketing and marketing mix to meet the demands of customers. Market innovation is about creating new marketing tools and it has two forms including marketing research and minimizing transactional costs (Udriyah et al., 2019).

Lastly, OECD Oslo Manual 2005 defines organizational innovations as the execution of a new method in practices, the workplace, or the relationships of the organization. It is the application of new ideas at the individual, group, or organizational level (Anderson, Potočnik, & Zhou, 2014).). Innovation is the process of problem identification and looking for its solution through new knowledge or methods and it could be best understood by considering multiple innovations in comparison to single innovation (Anderson et al., 2014). Organizational innovations are about the implementation of novel ways to support competitive advantage including but not limited to new technology, processes, methods, products, and services (Kuncoro & Suriani, 2018). In Polder et al. (2010) view, the adopted organizational methods must be novel in nature and should be developed by the firm itself, in collaboration with any third party, or any third party for the firm (Polder et al., 2010). Therefore, the literature confirms that organizational innovation incorporates product, process, and marketing-related innovations.

Antecedents of Innovations

The common theories related to the integration of capabilities of innovation and its antecedents are discussed in this section including RBV, KBV, and MOV.

Resource Based View: The RBV stresses the importance of different types of resources that can help the organization achieve competitive advantage (Bakar, & Ahmad, 2010). Resources are the assets possessed by an organization in the form of information, knowledge, capabilities, physical things, technology, etc. (Anderson et al., 2014). As argued by Amit and Shoemaker (1993), resources denote the know-how of the organization whereas, capabilities refer to the ability of the organization to utilize those resources. Innovation is the ability of an organization to convert resources into new products and, a positive association between resources and competitive advantage exists (Bakar, & Ahmad, 2010). Gaining and utilizing resources by using the capabilities of the organization is of more importance than access to resources (Newbert, 2007). Utilizing resources effectively and efficiently helps in achieving competitive advantage and it is sustained if competitors are unable to imitate it (Anderson et al., 2014; Grewal and Slotegraaf, 2007).

The essential elements for sustained competitive advantage are valuable, rare, inimitability, and non-substitutable. First, the value of a firm's resources is determined by its role in strategy and giving strength to the organization's capabilities (Barney 1991). Second, the rare the strategy and resources of the organization, the more chances of achieving a competitive advantage Barney (1991). The scarcity of resources is directly associated with the value of capabilities such resources provide in achieving competitive advantage (Amit & shoemaker, 1993). Third, inimitability means the ability of competitors to copy resources that give a competitive advantage to a firm. The quality of most of the competencies and capabilities is that competitors cannot get hold to them easily (Renko, Carsrud, & Brännback, 2009). Lastly, achievement of first three conditions is not enough to achieve competitive advantage unless such resources are non-sustainable (Amit and Schoemaker 1993 & Barney 1991). Organizations having distinctive abilities can improve innovativeness and could make them superior than their competitors (Renko et al., 2009). Innovations can help firms to embrace and

initiate organizational change and respond to the changes in their dynamic and uncertain external environment (Renko et al.,2009).

Literature suggests that firms can have three forms of capabilities including entrepreneurial, technical and managerial, and this study focuses on entrepreneurial capabilities which relevant to the scope of this study. Entrepreneurial capabilities are about identifying and implementing new and innovative ideas and resources for capturing new opportunities (Arthurs and Busenitz, 2006). The attempt of exploring new market opportunities by organization through market intelligence highlights the opportunity discovery function (Liao, Kickul and Ma, 2009). Such market intelligence enables the organizations to spot ongoing changes in its external environment and capitalise on any opportunity that come its way. If a firm lacks such ability, it may not be able to discover any opportunities in its external environment, and avoid any threat to its competitive position in the market. Entrepreneurial capabilities can help organizations of introducing innovative products and also its processes. Such capabilities also can have effect on a managers know how of the market and signals that motivate them to innovate. Likewise, such abilities enhance the alertness of employees and can speed up the process of looking for opportunities (Liao et al., 2006). Hence, employees can facilitate market intelligence by helping managers to take proper decisions about perspective opportunities in the market. With the help of such capabilities organizations can better shape skill, knowledge and ideas into innovation, and to focus on the best yielding investments. Empirical evidence supports the idea that entrepreneurial approach can enable organizations to produce innovative products and services (e.g. Zhou, Yim and Tse, 2005). Hence, this research intends to study the role of entrepreneurial capabilities as an antecedent to innovations in context of SMEs.

RQ1: Is there any impact of Entrepreneurial capability on Innovativeness of the firm?

Knowledge Based View:

The two broad categories of knowledge are explicit and implicit or tacit knowledge (Nickols, 2013).). Explicit knowledge is expressive in nature, it could be transferred and shared among individuals and group whereas, tacit knowledge is implicit in nature and could not be codified or shared (Nickols, 2013). KBV has its foundations in RBV and the assumptions of both views are similar (Miller, 2019). The main difference between the two is that RBV is broader in nature and considers the importance of all assets including human, physical, and other material resources, whereas, KBV stresses the importance as the most crucial resource as compared to other resources for competitive advantage (Barney, 1991, 1996). KBV could be regarded as the extension of RBV having its emphasis on knowledge and its importance (Miller, 2019). RBV considers knowledge as a valuable resource and it also satisfies the conditions for competitive advantage being inimitable, valuable, non-substitutable, and rare (Nickols, 2013). It is not possible to achieve competitive advantage by just accumulating knowledge, but the ability of an organization to create new and apply prevailing knowledge for competitive advantage (Carlsson, 2003).

According to Leonard (1998), effective management and building of knowledge can make successful innovators. This can motivate organizations to pursue knowledge and use it for innovation initiatives. There are four dimensions of capabilities that require innovations

including skills, behaviours, managerial systems, and physical systems (Leonard,1998). In addition to the importance of physical resources, she stresses the importance of learning and knowledge sharing, and innovative supporting culture. Knowledge could be obtained through both internal (R&D, Coordination, etc.) and external (competitors, suppliers, customers, etc.).

Tacit knowledge is of greater importance for the innovativeness of an organization. The capacity of transferring and absorbing makes the organization to be more innovative through innovations of products and services (Nickols, 2013). Tacit knowledge can contribute to the creation of innovation (Cavusgil, Calantone, and Zhao, 2003). Competitive advantage could be achieved through enhanced skills, knowledge, and competencies that can help organizations to innovate and develop products and services (Miller, 2019).

Literature related to knowledge points out the importance of existing knowledge as a prerequisite for the innovation process. Existing knowledge is a function of the innovative capability of a firm which is very important for the absorptive capacity of the firm. The lower level of knowledge can hinder innovation capability; it happens due to the insufficiency of required knowledge for innovation. Existing knowledge can be a helping hand for innovation and it works as a link not recognized before (Cavusgil et al., 2003). Existing knowledge serves as the base for innovations and the continuous acquisition of new skills and knowledge for the production of new ideas is also dependent on existing knowledge. The development of new knowledge in an organization is known as learning orientation (Du Plessis,2007). It is related to the actions of the organization aimed at creating and using knowledge for the achievement of competitive advantage. Such activities may include collecting and disseminating intelligence related to customer needs, actions of competitors, changes in the business environment, and also product development for competitive advantage (Du Plessis,2007).

RQ2: is there any impact of learning orientation on the innovativeness of the firm?

Market Orientation View:

The work of Kohli & Jawroski (1990) and Narver & Slater (1990) is regarded as the foundation of the concept of MOV. Their work laid the basis for the sensing market. Market orientation is the creation of market intelligence throughout the entire organization which is about the current and future needs of the customer, market intelligence and its distribution amongst different units, and the response of the organization to these issues (Kohli and Jawroski, 1990). According to this view, there are the components of MOV including customers, rivals, and coordination among different functions which are important for the market sensing ability of the firms. These abilities serve as a base for better performance than competitors and achieving competitive advantage. RBV and the presence of dynamic abilities also imply the same. Narsa (2019) found that market orientation, entrepreneurship, organizational learning, and innovativeness are the four capabilities that have a positive impact on organizational performance.

In a similar way, Narver and Slater (1990) explained the notion of market orientation as an organizational culture that attempts to provide the best value for customers effectively and efficiently. They highlight inter=functional orientation, customer orientation, and competitor

orientation as the three main components. Inter-functional coordination is about utilizing organizational resources to provide the best value to the customer. Customer orientation is about knowing the current and potential customers and creating the best value for them. Competitors orientation means making sense of the competitors and customers through market intelligence.

Narver, Slater and MacLachlan (2004) also contended that market orientation is influential when it comes to learning from rival firms and customers. In addition, they have also embraced the importance of entrepreneurship and the structure of the organization in the association of market orientation and organizational learning to enhance the capacity of learning. Organizational learning has been defined by them as the advancement of novel knowledge that would have an effect on behavior. Their suggested framework formed the basis of the research in the market orientation domain. Majority of the studies have adopted their definition of market orientation and have consensus over the importance of the three components I.e. customer, competitor, and functional/departmental coordination.

Customer orientation means customers first i.e. considering customers as more important than all other stakeholders of the organization (Park, Oh, & Kasim, 2017). According to this view, proper attention should be given to products and services for getting higher value (Narver & Slater, 1990). Customer orientation lies at the heart of MOV as the primary purpose of organizations is to offer higher value to their buyers (Park et al., 2017). The consolidated view in marketing is that customer orientation increases the innovativeness of the organization as it is about doing novel things by responding to environmental changes (Jaworski and Kohli 1990). Firms that have a customer-oriented strategy focus on learning and the use of information to cover customer needs to increase innovativeness (Narver et al. 2004). Some experts still argue that customer orientation is could be considered as innovation as customers cannot properly enunciate latent needs properly (Park et al., 2017).

There is empirical research on the association between MO and innovation. For example, Tajeddini (2010) examined the concept in the hospitality sector of the UK and did not find a positive impact of MO on innovativeness and suggested a further investigation into the subject matter. Hence, this research attempts to investigate customer orientation as a predictor of the innovativeness of the firm.

RQ3: Is there a positive association between customer orientation and the innovativeness of the firm?

Competitor orientation is about attempting to know about the strengths, weaknesses, strategies, and competencies of the competitors (Narver & Slater, 1990). However, according to Lafferty and Hult (2001), customer orientation and competitor orientation have information gathering in common. Although customer orientation is of much importance, companies should not consume all their energies on it but also look into competitor profiles for effective strategies. Relying solely on will customer orientation will induce a reactive approach to strategy instead of a proactive approach (Gebauer, Gustafsson, & Witell, 2011). Companies should have a balanced approach by combining both customer orientation and competitor orientation for an effective strategy in order to gain a competitive advantage over their rivals (Gebauer et al.,

2011).). In this context, Olson et al (2018) found that to achieve a competitive advantage, companies should focus on the goals, strategies, capabilities, and other strategic aspects of their competitors.

Some research studies indicate that competitors-oriented firms attempt to distinguish themselves from competitors by monitoring their performance and producing differentiated products and services (Olson et al., 2018). Still, competitor orientation is considered a primary way of imitating products and suggests that it has a negative influence on innovation (Lukas and Ferrell 2000).

Hence, this research attempts to investigate the influence of customer orientation on the innovation of the firm.

RQ 4: IS there any impact of competitor orientation on the innovativeness of the firm?

Lastly, inter-functional coordination is the utilization of the resources of a firm in a coordinated way to create superior value for customers (Narver and Slater, 1990). Every person and department in an organization has the potential to create value for the customers and this individual effort when coordinated together is related to both customer and competitor orientation (Lafferty & Hult, 2001). Kohli and Jaworski (1990) discovered that high-level management is aware that functional areas of the organization know that only marketing research is not enough but an integrated effort of all the functional areas plays a key role in responding to customer needs. Each department carries out its own task in its areas and their coordination is important to achieve overall goals. This coordination could be achieved through open communication among various departments. Open communication is positively related to innovations, if employees across different departments do not communicate properly, the chances of solving problems are very low (Kim & Chung, 2017).

Empirical studies have stressed the importance of inter-functional coordination and communication for innovations in the organization. For instance, Mokhber, Khairuzzaman, & Vakilbashi (2018) discovered a significant association between organizational support to the innovativeness of the organization. The relationship of employees across various departments can yield a positive association of inter-functional coordination and innovativeness of the organization. Hence, it will increase the dependence on different functional areas in the organization (Kim & Chung, 2017). Based on the literature, this research attempts to investigate the impact of inter-functional coordination on the innovativeness of the firm.

IRQ 5: Is there any impact of Inter-functional coordination on the innovativeness of the organization?

Role of Innovations in the performance of SMEs

Many empirical studies have validated the association between innovativeness and the performance of the organization related to new technology, process improvement, new and improved products, and innovations (Udriyah et al., 2019). Being innovative is a very important condition for SMEs to survive in face of competition and the uncertainty of the business

environment (Narsa, 2019). These innovations should incorporate cost efficiency, creating new products, niche markets, etc.

SMEs face the problems of scarce resources, risk, environmental uncertainty, and lower bargaining power in relation to their suppliers and customers (Keizer et al., 2002; Narsa, 2019). Hence, it is crucial for SMEs to be innovative to counter these issues and perform well for gaining a competitive advantage. Therefore, adopting a business strategy that leads to innovations is a very important feature of the organizational culture. Romijn and Albaladejo (2002) found that innovativeness did enhance the organizational performance of firms in the high-tech industry. In line with the empirical evidence, this study attempts to investigate innovativeness as a predictor of organizational performance.

RQ6: Is there any impact of Innovativeness on the performance of the organization?

The conceptual model of current study is highlighted in figure 1 on next page.

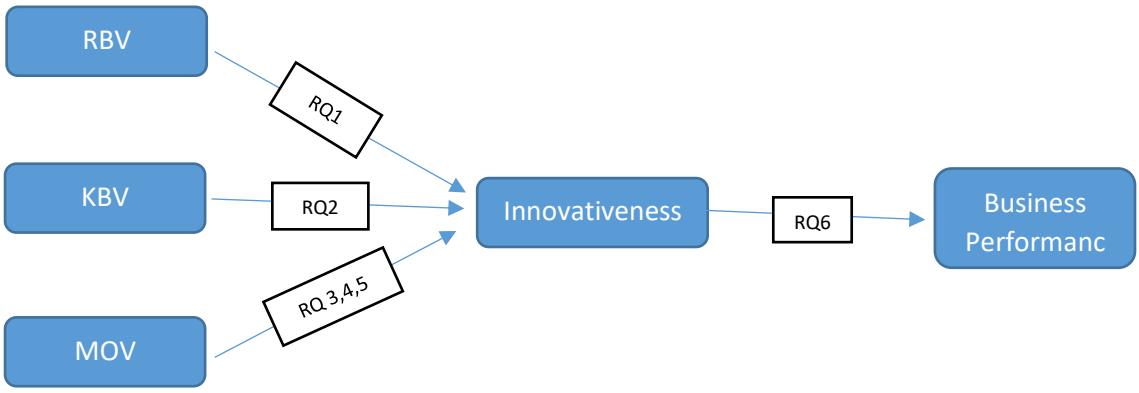

Figure 1: Conceptual model

Methodology

Research Design

The purpose of this research is to study the role of different theories of antecedents of innovations in the manufacturing sector SMEs of the UK. The impact of innovativeness on the business performance of SMEs is also examined. The study extends past research and attempts to develop a theory as well as its contribution to the benefit of business enterprises.

The basic motive of the current study is to explore the drivers of innovation and its contribution to business performance. First, the supporting role of the three theories for innovations is examined, and second, the contribution of innovations in improving the performance of the organization is explored.

To achieve the research objectives, the current study adopted an exploratory research approach based on the realist inductive paradigm of research (Seuring, 2008). Since the literature review

suggested that there is a dearth of research on antecedents of innovations in the context of SMEs and in the case of manufacturing sector SMEs, there is almost no study. Therefore, there is a need to get knowledge about the subject matter at hand. Exploratory research is helpful when there is a lack of research in an area and the aim is to test theories. In such situations, a deductive approach is preferred over a deductive approach. Therefore, the exploratory research approach was considered the most appropriate one.

The Case Study

Exploratory research is of use when the purpose of the study is to extend the generalization of some theories and not make statistical inferences (Løkke & Sørensen, 2014). Hence, exploratory research informed by a realistic inductive paradigm was considered the most suitable approach, and the case study method was adopted. Yin, (2009) defined a case study as an empirical investigation of a current occurrence in real settings, particularly, in case of no clear distinction between the occurrence and context. In case studies, diverse methods are used for data collection including interviews, observation, and documents, and archive records, etc. (Løkke & Sørensen, 2014). Case study method focus on unravelling different aspects of a situation. Being the record of real world events, case studies are very helpful in developing theories predominantly when in case of exploratory research (Yin, 2009). Theory development include construction of new as well as the extension of existing theories when not rigorously explained before (Løkke & Sørensen, 2014).

Researchers suggest that the researcher should determine whether to use single or multiple cases in case study design. Single case study focuses on similar, crucial, end/or different cases whereas, various cases help determine the occurrences of single phenomena in diverse settings (Yin, 2009). Single case studies are of importance based on five reason. First, a developed theory is tested in a critical case, second reason is when a unique or extreme case is studied, third is when a typical case is studies, fourth situation is when a revelatory case is examined (a phenomenon not studied before), and finally, in case of longitudinal design (over a period of time) (Yin, 2009). Since the objective of this research is to investigate a distinctive case (second rationale), single case study design is considered the more suitable one. Additionally, there is lack of prior research on antecedents of innovations in SMEs and most of the research carried out was quantitative in nature (i.e. Shah, Shah, El-Gohary, 2022), and there was limited time and resources available carry out the research.

The Case organization

The organization selected of this study as a single case is a high-tech manufacturing company located Sheffield (UK) was established in 2001. In the beginning the company used to offer the services of energy management consultancy to organizations to achieve energy related efficiency. The company aimed to provide customized and efficient energy systems by producing voltage optimization solution and energy storage system. The company remains the only organization having a design patent in voltage optimization system in the market. Having a good manufacturing quality, security, and reliability, the voltage optimization system stands as the market leader in the global market. The exceptional reputation of the company is due to the quality of the parts used in the system which are obtained from local suppliers to some

extent. It has a reputation for innovations and brilliance in engineering sector. The company has won awards in areas of renewable energy and product innovation at the UK and European level.

Data Collection

The most frequently used methods for data collection in case studies are interviews, focus groups, participant observation, direct observation, documentation, artefacts, and archival records (Yin, 2009). To achieve the objectives, the current research used documentation and archival records as sources of data collection. Archival records are stable, unobtrusive, and cover information about a longer period of time. Documentation provides the correct information, can correct spellings, and can also provide information from other sources. The background facts and figures about the company were collected from the website of company and through Leeds university library. Information on Dun & Broadsheet (which is a trustworthy source) was provided by the library. Additional information was obtained from Uk's business information system, BHP chartered accountants, The Company House, and the Yorkshire Post.

Once the information about the company was obtained, the step of searching for relevant data started. The majority of the required information was accessible through the company website, and financial information was obtained from company reports, company house, and dun and broadsheet to examine the performance before and after the involvement of innovation. The main variable and the data required for them to answer the research questions are as follows;

The first variable is entrepreneurial capacity and secondary data was obtained from the company website, newspapers, and interviews of the director given to a source. The second variable was learning orientation and for this secondary data about learning and knowledge sharing was obtained from the company website and the University of Warwick research alliance. Market orientation was the third variable of the study and secondary data for this variable (three components) was taken from case study reports of the company, website, organizational documents, project details, and announcements. Data about inter-functional coordination was obtained from the company house, the company website, and the interview of the directions given to a source. The last variable was company performance and its data was collected from annual reports of company.

Analysis and Discussion

This section is about testing the data and discussing the results in line with the research questions. The evidence in connection to each research question will be examined and discussed in this section.

RQ1: Is there any impact of entrepreneurial capability on the innovativeness of the organization?

The entrepreneurial capability was discussed in detail in the literature review, and it is about increasing marketing opportunities through innovative ideas and enhancement of the resource base of the firm. It helps organizations spot opportunities in the market and utilize their skills and knowledge to capitalize on those opportunities. To answer this research question, the role

of entrepreneurial capabilities in enhancing the innovations of the organization was examined through the utilization of different data sources. In an interview, the director of the company said;

"Right from the first day, I was looking to sell energy benefits however, it is difficult to from this position when the cost of energy is low"

Being formed in 2001 and voltage optimization as its main product which was based on a 1906 concept of energy saving, the company had to adjust to the market needs due to low energy costs in the country. The company focused on efficiency features and uninterrupted power supply instead of saving energy costs. The energy prices in the UK went up from 0.4 to 1.5 p/kWh, due to the introduction of climate levy change, this provided an opportunity for the company to instigate its main business philosophy of cost efficiency by pursuing an entrepreneurial approach. More recently, the war between Russia and Ukraine has also increased energy costs to a great extent. The company capitalized on this opportunity and engineered its voltage optimization system to benefit the customer and save on their energy bills. Electricity demand in the UK is forecasted to go up by 60% in 2030 and the government is investing in enhancing and extending the electricity grids. The incurred will be transferred to end users. By constantly examining the changes in the environment, the company transformed its knowledge into innovative products and designed its energy storage system. This system enables the customer to store energy and use it during peak times when the tariff is higher than normal. Since the world is moving to energy, the case company is attempting to adjust to the changing circumstances of the market and customer-related issues. The company introduced another novel idea to integrate the two technologies into a renewable energy generation system. The system uses both voltage optimization and energy storage features and can generate renewable energy when required.

In short, the case organization is continuously attempting to monitor its external environment, look. for opportunities, and tries to capitalize on those opportunities. Hence, the company transforms its knowledge for capitalizing on market opportunities.

RQ2: Is there any impact of Knowledge orientation on the innovativeness of the organization?

In an interview, the director of the case organization was asked about the investment of 15% turnover in research and development in collaboration with Sheffield Halm and Warwick university to stay competitive. The director stressed the significance of knowledge by stating;

"In my opinion, it is ignored by some manufacturing firms. It takes a lot of time to collaborate with universities however, knowledge is the power that is why we do invest in such collaborations"

In collaboration with Warwick University, the company has completed a project named "Energy Efficiency and Demand Project" to carry out mathematical modelling and simulation about their product used for voltage optimization. The alliance has discovered a process that can divert the saved energy to a storage source and could be utilized in the future when required. The collaboration of the company with universities in the area of knowledge creation has

helped it to develop a distinctive feature of the voltage optimization system. The new system has helped the company to enter the market of virtual power stations. The pilot project was launched by a leading retail company in the UK. It was due to the knowledge sharing and such collaborations that helped the company to obtain a European Union grant worth £1.21 million under the "Horizon 2020 innovation and research program"

RQ 3,4,5: Is there any impact of Market orientation on the innovativeness of the organization?

Research questions 3,4, and 5 were about the role of MOV as an antecedent of innovations in the case organization. For this the three component of market orientation i.e. customer, competitor, and inter-functional coordination. The following section highlights the finding of the study about the role of these factors as antecedents of innovativeness of the firm.

This factor is of great importance in the context of the customization of organizational products to meet customer needs in a better way. For this, a survey was conducted by the case organization in Durham to understand the issues faced by people related to electricity and related equipment. The results of the survey indicated that the customers claimed about the problem of irregular power supply and it affected their electric equipment. To solve this issue, the company customized its product to correct voltage problems and eliminate power failure. This initiative also showed reduced consumption of electricity by 8.8% and also a reduction of carbon which saved over 42 tonnes annually.

To explain the role of MOV in detail, customer orientation was also examined and a few cases of clients were examined to get a better insight. The case organization by Deloitte, a Cyprus based company to help it in environmentally friendly and transparent energy technology. Experts from case study organization checked their needs and found that installing a 453 KV system will fulfil their needs, reduce waste, and improve efficiency. Similarly, the student union of Sheffield Hallam University was facing the problem of high voltage and lower quality of power. The student union approached the case organization as a customer. After looking into the problem, a system was designed based on their requirements that had the ability of minimising harmonics.

With regard to the second component of the MOV i.e. competitor orientation. The director of the case organization expressed his view about competition in an interview as;

"A group of wolves can eat well; a single wolf is mostly hungry"

As a company we keep an eye on our competitors and we have a strong belief in formulating our strategies according to the completion in the market. For this reason, the company is investing about 15% their annual turnover in activities related to research and development to stay competitive in the market. There has been attempts by competitors to imitate the IP, the case company has transformed this threat into a strength by patenting their system design. This along with their innovative ability has helped the organization to remain the only voltage optimization system producer in the market.

RQ6: Is there any impact of innovativeness on the performance of the organization?

The case organization was established in 2001 and since then, it has grown with a steady rate. The energy prices have also increased continuously and the company has caught the attention of public as well as private sector due to the innovative products they offered from time to time. The products offered by the company are environmental friendly and reduce energy bill to higher extent.

In 2007, the total turnover of the company was £1m, as the company began alliance with partners like Sheffield university and Warwick University, it developed its existing products and introduced innovative ideas. The company spotted a business opportunity in Australian market in 2011, due to the high distance between grids in Australia, there is supply of high voltage energy and also the issue of carbon taxation laws. In responding to this market opportunity, the company designed a system capable of controlling voltage and also having the ability to reduce carbon emission. The company made an entry into the market and achieved 200% growth in a very short span of time.

Investment in research and development has proved productive for the case company and its turnover which was £1m in 2007, increased to £15m in 2012. These numbers highlight that the business performance of the case organization increased due to its consistent monitoring of the market and external environment and continuous focus on innovations.

Conclusion

The current study attempted to fill the research gap in the literature related to SMEs by studying theories about antecedents of innovation, understanding the role of related abilities, and the role of innovativeness on the performance of the organization. The study focused on a single case study. This study adds to our knowledge of the capabilities of the organization that can encourage innovation activities in the organization.

The findings of the study reveal that the capabilities of all the theories examined can positively influence the motivation of the firms to involve in innovation activities which can ultimately improve business performance. Therefore, the study answers all the research questions that were formulated, in a satisfactory way.

The findings of the study are consistent with previous research which concludes that companies with an entrepreneurial orientation have a superior capacity to produce innovative goods and services for their customers (e.g. Anderson et al., 2014). The findings also support the view that entrepreneurial capabilities enable organizations to assess their customer market in an effective way and help management to make the proper decision to capitalize on market opportunities (Guzel, 2021), and focus on the ones that produce higher quality. Therefore, the finding that entrepreneurial capability has a positive association with the innovativeness of the firm endorses that organizations that constantly engage in market research and attempts to collect market intelligence help them to spot the changes in their external environment. This help the organization to identify opportunities for innovations and involve in innovation activities.

In relation to the second research question, the findings support prior research findings that organizations having advanced knowledge, skills, and competencies can achieve competitive

advantage through improved and innovative products, processes, and services effectively and efficiently (Sjödin, 2019). The findings of this study also confirm past research about the positive association between knowledge and innovation. This implies that proper knowledge can produce innovations and those innovations are not limited to financial benefits or tangible assets but turn the organization into a center of learning and development (Leonard, 1998).

The finding that market orientation has a positive impact on the innovativeness of the organization suggests that if the organization keeps itself updated about its competitors, it will be able to make continuous enhancements to its products and service through reach and development, and innovations. This ability will also help the organization to be competitive and stay ahead of its competitors. This finding is also consistent with Im and Workman (2004), who found that firms that constantly monitor their competitors can enhance their ability to produce or market the differentiated product in comparison to competitors. The findings are also consistent with Udriyah et al (2019), who found a positive association between market orientation with innovations and competitive advantage in textile sector SMEs.

Furthermore, the findings also suggest that firms must learn and be aware of the requirements of their customers, this will push the organization to be innovative. This finding also supports earlier research about customer orientation indicating that firms that are customer-oriented will learn about underlying customer needs and respond to them through customization and innovativeness (Lukas & Ferrell, 2000.; Narver et al. 2004). The current research endorses the view that responding to customer needs will result in innovativeness as it requires doing something new in an attempt to respond to market conditions and customer needs (Guo, Kulviwat, Zhu, & Wang, 2019). However, the findings were in contradiction to the findings of Christenson et al., (2005), who found that several organizations failed due to their extraordinary focus on customer views and the customer may put pressure on the firms, hence limiting their strategic choice and decision about adopting the best possible strategy.

Finally, a positive association of firm innovativeness with the performance of the organization was found. This means that innovation-related activities play an important role in enhancing the business performance of the organization. This finding suggests that the innovativeness of the firms unlocks the doors to new markets and also enables the organization to spot opportunities in the existing market. Hence, exploiting those markets and capitalizing on opportunities can produce improved organizational performance. This finding endorses the finding of Romijn and Albaladejo (2002), who found that innovativeness has a positive impact on the performance of the organization in high-tech SMEs. Their findings suggested that innovations help the organization in exploring new markets and industries and create value for its customers profitably.

Limitations and future research suggestions

The purpose of the current research was to contribute to the literature by investigating the role of different theories that could serve as the antecedents to innovation in the context of SMEs and the role of innovations in enhancing business performance. The study focused on three theories of the antecedents to innovations and a single capability related to each of the theories. This is considered a limitation of the current research. Therefore, future research should be

undertaken to explore the role of different theories and the diverse range of capabilities associated to these theories.

In addition, the current study focused on a single case study due to time and financial constraints, which also limit the generalizability and robustness of the findings. Future research could be carried out by investigating the phenomenon in multiple cases, this will add more rigor and reliability to the findings. The current research was based on a qualitative research method as the majority of the previous studies were qualitative in nature. Therefore, finding secondary data for qualitative analysis was not possible. Further research could also focus on extending the effort made in the current research by undertaking qualitative data analysis and using the current study as the base and adding more depth to the study by utilizing multiple data sources and use of diverse qualitative data methods. It will also be helpful if future research is undertaken by using a combination of qualitative and quantitative methodology (Mix method), it will yield more detailed insights and more in-depth findings.

Furthermore, this study encountered the issue of unavailability of data regarding the third factor of MOV i.e. inter-functional coordination. A key reason for this was the presence of fewer departments in the organizational structure of the case SME. This could also be considered one of the limitations of the current study. Future research could be carried out in SMEs having more visible departmental structures to unravel the role of inter-functional coordination in the innovativeness of the organization.

Moreover, this research focused on documents and archival records as sources of data, it will be helpful if semi-structured interviews are used in future research to obtain more enriched and in-depth data and try to understand the subject matter in more depth. Finally, this study was carried out in the manufacturing sector, future research could focus on using multiple case studies from different sectors to compare how innovations could be supported in diverse sectors and industries.

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