



The Nexus between Innovation Types and Marketing Performance of SMEs in an Emerging Economy: The Mediating Role of Knowledge Sharing

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Authors' contributions

This work was carried out in collaboration between all authors. Author SA designed the study, performed the statistical analysis, wrote the protocol and first draft of the manuscript. Author JD and AAIM managed the analyses of the study. Author SA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

This paper investigates the relationships between the innovation types, knowledge sharing and firm's marketing performance of small and medium enterprise (SME) in an emerging economy-Ghana. In particular, it measures the mediating role of knowledge sharing within the relationship between innovation types and marketing performance. The study relied on a survey method through convenience sampling and gathered data through a sum of 437 questionnaires from SME service companies operating in Ashanti and Greater Accra region of Ghana. The quantitative methodologies were used in which Partial Least Squares Structural Equation Modelling (PLS-SEM) and bootstrapping method were used to test the hypotheses. The results obtained indicate that innovation types strongly have a significant impact on marketing performance, there is a positive connection between knowledge sharing and marketing performance, innovation types have a positive influence on knowledge sharing, and knowledge sharing was found to completely mediate the association between innovation types and marketing performance. The results clarify that

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innovation types, knowledge sharing, and marketing performance play a vital role in the success of SME in emerging economies and the indisputable fact that managers and owners of such businesses need to pay attention to these concepts and use them to their advantage.

Keywords: Knowledge sharing; innovation types; marketing performance; PLS-SEM; SME.

1. INTRODUCTION

In the world's developed and undeveloped economies, policymakers at the local, territorial and governmental levels have considered the vital role that Small Businesses [1] generate employment, wealth and innovation development [2]. This area has been vexed by distinct definitions of SME where some scholars and research institutions have explained SMEs to suit their operations. Abor and Quartey [1] argued that the justification of SME depends on capital assets, the use of talented people, the level of turnover, the legal status and the number of permanent and casual workers. In addition, some expounders also use the number of people to define SME that differs in the national statistical system. In Ghana, SMEs are classified into Micro (less than 5 employees); Small (5-29 employees); and Medium (30-99 employees) [3]. In keeping with [4] and [5] analysis, there exists an extra robust relationship between SME and associated economic development particularly within the area of employment and taxation to an economy.

In furtherance, a developing economy like Ghana, SMEs commitment to GDP and employment [6] and [7] cannot be de-emphasized. In Ghana, SME is perceived as a partner to the economic development of nations as they make significant contributions to employment and poverty reduction [8,6]. The world of SME, therefore, plays a key role in the economic development and improvement of the living standard of the Ghanaian people [1]. Business survival seeks to maximize profit and marketing orientation plays a key role in ensuring these expectations. Therefore, marketing performance interrelation to innovation activities of organizations' goals essentially leads to a positive organizational growth. In Ghana and other growing economies in African, SME has been facing some marketing performance challenges. In keeping with, Agyapong [9] identify that 24.9% of Malawian business owners alluded their business challenges to marketing constraints, while a study by Aryeetey et al. [10] additionally mentioned 5% of respondents in Ghanaian SMEs had marketing challenges.

Besides, there is insufficient proof and conceptual investigation of types of innovations and marketing performance among Ghanaian SMEs. This might have an associate adverse effect on policy development and implementation in SME. Consequentially, business owners/managers of SME might not appreciate the connection to marketing performance in their operations.

Furthermore, in the era of the business, the management of intangible resources is extremely important and essential for business survival [11, 12]. Therefore, the knowledge-based view (KBV) theory believes that knowledge management will offer a reasonable level of performance and capacity to organizations compared to tangible resources. Some scholars recommend that the activities of knowledge sharing among people, groups and business units are fundamental for organizations to offer, capture and apply information that allows organizations to develop resource and capacity for managers which offers unparalleled organizational performance [13,14]. In addition, knowledge sharing activities seek to the synchronization, concerted effort and exchange of knowledge and experience within the organization [15]. This includes the sharing of common ideas and the understanding of knowledge workers related to information and knowledge [16].

Notwithstanding, there is still an absence of the agreement to comply with the opportunities of information and knowledge management strategies in Knowledge Management perspectives. Zack [17] postulates that the term knowledge strategy could be a competitive strategy that has intellectual resources and capabilities of the organization. The growing importance of Knowledge Sharing (KS) practices has prompted managers to imbibe and instill more information management methods, as a result of adjusting the organizational rules, structure, and culture for greater knowledge sharing which can generate better performance results. Past reviews prove that knowledge sharing practices amply confirm the performance of companies in terms of decreasing production and labor value, improving the organization's

creative capacity for the development of new products and services, the growth of sales and a better completion of projects [13,18]. In addition, the next questions were unaddressed by prior examination regardless of whether the Knowledge sharing directly affects the innovation activities and performance marketing of an organization or any intervening effect on innovation activities driven performance.

This study seeks to connect this gap and offer to the literature by specializing in the nexus between types of innovation and the firm marketing performance and the mediating effect of knowledge sharing in a developing economy. However, this investigation makes an attempt to measure the intervening part of Knowledge sharing on types of innovation and marketing performance. By examining the product, process, marketing and organization innovations in marketing performance such as profit, sales, and customer satisfaction in furtherance to mediate Knowledge sharing. The most persuasive commitment to this research is that detailed types of innovation and analysis of marketing performance support empirical knowledge that did not accurately acknowledge the absolute effect of innovation on the firm marketing performance, however, conjointly yielded a path of relations among these variables using structural equation modelling PLS approach. This document has six segments, the introduction in section 1, we tend to be brief, in section 2 the literature review. In section 3, the hypothesis of the research model. Section 4 presents the research methodologies, while section 5 describes the results and discussion of the findings. Lastly, section 6 concludes the work.

2. LITERATURE REVIEW

2.1 Innovation

Intense competition within the contemporary business in the world business has led to and continues improvement of technology and fierce competition. Innovation culture has been pronounced as a pre-condition for improving organizational, marketing and managerial capabilities in a competitive market [19]. Moreover, during the past 20 years, researchers have proven to clarify, order and verify innovation and connection performance for its practicalities [20]. Innovations make organizations to form a defensible competitive advantage because of their strategic orientations to overcome the challenges they face e.g. [21,22,23]. Therefore, innovation justifies freshness, eliminates new

things or eliminates new ways to improve performance in terms of sales, profitability and market shares in an organization. Innovation was classified in many perspectives [24,25]. These methods have been carried out through generation, adoption, and implementation [26], while [27] think of the innovation method as a positive combination of circumstances into the new design and in the creation of a widely applicable use. Damanpour [28] thought that types of innovation are radical, incremental, product, process, administrative, or technical. A more popular result of innovation has been classified into totally different disciplines, in particular, referent, form, size, type, and nature [24].

2.2 Innovation Types

Innovation has several considerations and could be categorized in incommensurable points of view, such as, innovation of systems, of cognitive content, of ecosystems, of commercial models, of products or services, of processes, of organizations, of institutional strategy, of the engines of innovation (technologies, markets, design, users, etc.), or the passion of innovation. [29] denote that the innovation is the progress and the prosperous enterprise of a technical, organizational, commercial, analogous, institutional or social responsibility of a difficulty, that is, as the introduction of new ideas and strategies, approved by correct and associated users by innovators in expectation of an achievement. In unison with the Oslo Manual [30], it classified the types of innovation into four distinctive types: Product, process, marketing and organization innovation. These are the following: Product innovation could be considered as the characteristics of intended uses at the beginning of a good or service that is new or has significant meaning. There are totally different beliefs that are associated with levels of originality, such as extreme and progressive. Secondly, process innovation in the sense of the implementation of a replacement issue or exceptional improvement of production, delivery technique or administrative process, while marketing innovation could be described as a new or distinctive distinction in non-functional attributes, such as product style or packaging, place, promotion and price. For example, changing a product style corresponds to its dynamic appearance, not its role or user, finally organization innovation could be a situation in which an organization imposes new designs or practices in accordance with the business pattern

of the company and the organization of the workplace or external associations.

When probing, the innovation technique would be for the types of innovation described in the Oslo Manual [30], where the innovation of SME was explained as a product, process, marketing and organization innovations to promote the performance of marketing. The involvement of SMEs in innovation activities associated with the economy as a stimulus for the economic growth that leads and improves the fair development of the countries. The implementation of the concept of innovation and its interrelation with the performance marketing through the sharing of knowledge would guarantee that the activities of SMEs improve or increase drastically.

The study in development supported the theory of resource-based view. The resource-based view was developed within the study of Barney [31], which explains that internal resources based on companies can develop a competitive advantage and commercial performance. The review of the literature of the idea within the study of these concepts was achieved from the marketing performance. In addition, the knowledge-based view (KBV) suggests that management of knowledge base resources is more likely to lead to superior sustainable performance and competition for organizations than tangible assets. It postulates that practices of knowledge sharing between people, groups and units are essential for organizations, to create, share, capture and use the knowledge that empowers organizations to improve asset organization and capacity building, which drives to advanced organizational performance [32]. Finally, Mills [33], control theory suggests the need for ex-post or retrospective data on marketing programs as a necessary part of the research, planning, execution, and control cycle. Therefore, to verify the theory of these analyses, a model of empirical analysis in four hypotheses was adopted to test the impact of among the variables of this investigation.

2.3 Knowledge Sharing

Contextually, companies continue to exist in a knowledge-based society in which knowledge accessible to companies is becoming a strategically necessary resource [34], some even consider it as the central capacity and the performance driver of organizations [35,36]. Knowledge sharing is one of the most critical facets of knowledge management [37] and the success of knowledge management initiatives

depends on sharing of knowledge [38]. Hence, there are critical descriptions of knowledge sharing within the literature. Ryu et al., [39] described knowledge sharing based on the behavior of a staff that disperses his knowledge and information obtained from his colleagues within the organization. Xinyan and Xin [40] stated that knowledge sharing has been considered a necessary way to acquire knowledge for a person and to start new knowledge for an organization. Moreover, there are many elements that impact sharing of knowledge behavior like communication, data systems, rewards, organization structure, work fulfillment, organizational culture, organizational climate, leadership, the standard of reciprocity and trust, extraneous and intrinsic motivation, etc [41,42]. Knowledge sharing as a part of knowledge management points to many advantages at a personal and organizational level. An example is that knowledge sharing increases the capacity for innovation and the performance of an organization [43,44,45,36, 35].

2.4 Marketing Performance

Performance could be described as the results achieved in meeting internal and external goals of a company [46]. Performance has many classifications, as well as development [47]. Owen [48] believes that organizational performance encompasses three specific areas of firm performance: (a) financial performance (profits, return on assets, return on investment etc.), (b) performance of the product market (sales, market share etc.) and (c) profitability of shareholders (total return of shareholders, economic value added etc. Performance is financial or non-financial in which monetary return is an asset, return on investment, return on capital, return on capital used, income margin, gross profit margin, profit-after tax, pre-tax profit, and market share. Historically, alternative departments are subject to extreme examination and evaluation of their contribution to shareholder investment, marketing has been able to bypass the highest levels and barely bear are transferability for performance. Marketing deserves no exceptional treatment and it is an investment, and unless its impact is estimated, the investment could be waste of cash [49] .

As indicated by Ambler [49], marketing performance has to be evaluated through the use of marketing metrics and this was enforced by the control theory that explains that managers try to reduce performance outcome variances by

using characteristic performance predictors. This could be done by modeling the relationships between the predictors and performance and thus observing the predictors. Barwise and Farley [50] defend control theory as “a combination of unexpected events (both intelligent and bad) and performance that is more solid or less robust than expected because the final results are higher or worse than planned”. As claimed by [33], control theory suggests the requirement for ex-post or retrospective information on marketing programs as a necessary part of the examination, planning, execution, and control cycle. These marketing controls are the annual arrangement, profitability, power, and strategy [49]. The general approach advocates the use of three financial and six measures of brand equity to measure marketing performance in particular (ROMI, Sales, Brand Equity etc.).

Marketing scholars have observed that the inability of marketing to authenticate its aid to the performance of the company has failed its impact on companies [51,52]. The only agreement that has been reached so much in the strategy [53,54] and literature in marketing [55,56,57] is that performance of marketing is multi-facets in disposition. Homburg and Pflesser [58] defined marketing performance as: “...the effectiveness and efficiency of an organization’s marketing strategy to objectives related to the market, such as income, sales, and market share...” Next, giving the best consideration for evaluating marketing performance that would help marketing exponents measure their part of the organization’s financial performance. Katsikeaset al. [59] categorically identified four ways of evaluating marketing performance outcomes in 998 empirical studies published in the top 15 marketing journals from 1981- 2014, namely; Customer Mindset, Product-Market Performance, Accounting Performance, and Financial Market performance. Research has revealed the performance resulting from the supremacy of marketing in the performance facets of accounting and the product-market. As a result, accounting indicators of profit, sales gains and, market share are the most accepted marketing measures. In addition, the market share of product market measures is widely admissible as an indicator of performance compared to measures based on product-based sales or brand [60]. Accounting measures related to earnings and sales revenue are the most commonly used performance indicators as compared to the use of earnings performance

and, finally, financial market measures expose a rapid increase in the use of related performance measures with the stock market as three marketing magazines of the last decades indicate. Further, customer satisfaction was identified as the dominant measure as compared to the brand value and others in the attractiveness of customer based measures. The immediate literature above provides an indicative prominence for using finally acceptable indices to measure marketing performance inconsistent with the type’s innovation of SMEs. This research defends profitability as an accounting measure, sales as a product market measure and finally, customer satisfaction as customer-based measures. With the assertion of [61], it suggested that customer’s profit, sales and growth are the scopes to measuring marketing performance.

3. RESEARCH MODEL HYPOTHESES

The research model was made following earlier relevant literature which has been shown in Fig. 1. It shows the analysis model with all variables. Moreover, it illustrates the association between knowledge sharing, innovation types, and marketing performance. Four research hypotheses of this study were generated to check the connection among knowledge sharing, innovation types, and firm marketing performance, and the mediating impact of knowledge sharing on the connection between innovation types and firm’s marketing performance. In addition, four hypotheses were introduced to demonstrate the mediating function of knowledge sharing, according to [62];

Research Hypotheses:

- H1:** Innovation Types (Product, Process, Marketing, Organization) has a positive influence on Marketing Performance
- H2:** Innovation types (Product, Process, Marketing, Organization) has positive influence on Knowledge Sharing
- H3:** Knowledge Sharing has positive influence on Marketing Performance
- H4:** Knowledge sharing mediates between Innovation types (Product, Process, Marketing, Organization) and Marketing Performance

3.1 Innovation Types and the Marketing Performance

The notoriety of innovation were represented by [63] as a form that results in a competitive

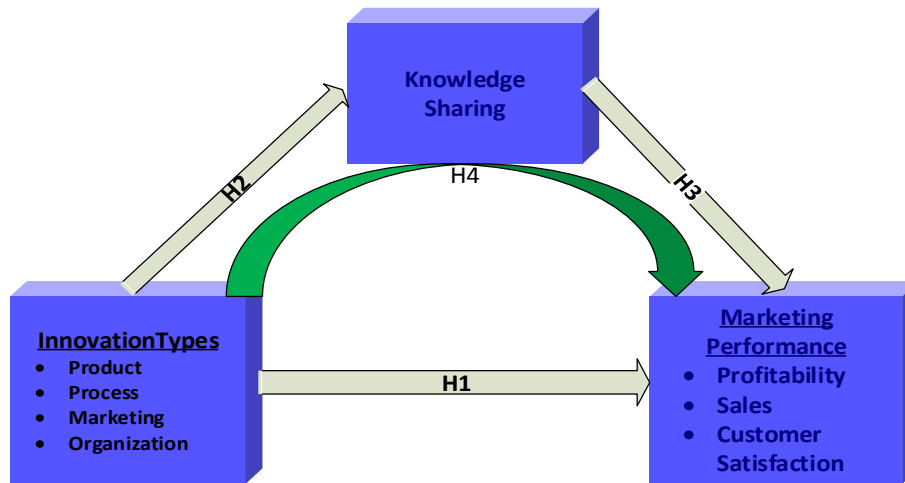


Figure 1. Conceptual Framework

advantage and a superior profit. As it is not hidden in several studies, it established a great association between innovation and the performance of companies [64,65]. In 1959, Penrose developed a resource-based theory [66] where the performance of a company depends on the resources and capabilities it has as supply of sustainable competitive benefits within the market [67,68]. Garnsey [66] argues that companies must meet, organize and dispose of before they will grow up. Organizational goals are based on the distinctive avenues that are always used to determine organizational performance. These evaluation mechanisms are financial and non-financial tools [69,70,71]. Furthermore, the importance of innovation for organizations is almost due to the competitive advantage and profits maximization announced by Roberts and Amit [63]. Most companies tend to apply financial indicators as an evaluation mechanism to performance [72,73], while non-financial mechanisms are widely used to adjust the variations in the internal and external environments [74]. As revealed by many studies and scholars, innovation and company performance have an affinity for examples [75, 76,64,65].

Anning-Dorson [77] explained that innovation is empirically linked to competitiveness and is an essential strategic tool for service organizations to accept competitiveness and be relevant. Flexibility, conformation, and responsiveness lead to the performance of business improvement through innovation as stated by Tan and Nasurdin [88]. The key argument for

innovation that leads to the performance of the company is that these companies are efficient in constantly anticipating the competition. Two cardinal points to decide firm performance and organizational development are financial and non-financial [77,78]. Therefore, marketing performance was gathered in the structure of profits, sales, customer satisfaction, and customer retention, and market share is enough for the company to measure performance. Then, we tend to propose the next hypothesis:

H1: *Innovation types significantly and positively affect Marketing Performance*

3.2 Innovation Types and Knowledge Sharing

Most of the earlier literature gathered suggested the sharing of knowledge has an influence on innovation, [13] since the sharing of explicit and tacit knowledge; each one has a direct influence on the innovation and performance of the company. Moreover, Sáenz [79] focused on the impact of knowledge sharing mechanism on innovation ability. In addition, Liao and Wu [80] argued that knowledge sharing plays a vital role in developing a firm's innovation. Therefore, knowledge must be absorbed and therefore, shared among the staff in order to improve the creative capacity of the company and the benefit for the company. Secondly, the concept of innovation has been powerfully connected to the creation of new knowledge [79] where people give their own information to make better levels of innovation [81] due to the inability of

organizations to form knowledge without the contribution of people who have an active role in achieving innovation [82]. That was highlighted by Camelo-Ordaz et al. [83] they declared once the concepts and notions were shared among the teams, the current ideas of the first group have distinctive characteristics and seem novel for another, and vice versa, an intensive task in knowledge of new products or services here the organization [84].

However, the skills of the staff to unravel the problems and innovation that are affected by their understanding to acquire and share knowledge, which is good, results in the real innovation needs, the transfer and participation of knowledge [79]. Brachos et al. [85] concluded that innovation could be improved if the necessary factors are available to motivate people to share their knowledge. Based on the earlier studies, knowledge, and sharing of knowledge as an indispensable relevance of the performance of innovation. From the earlier discussions, the existence of a relationship between knowledge and innovation is often clear, because knowledge considers maximizing its potential through the process and technological innovations, the new innovation will result in new information. On the contrary, the organization wins different types of innovation depending on the varied activities of knowledge sharing that will occur between people or groups.

Some observational research aimed at a few companies have affirmed the positive relationship between knowledge sharing and innovation. For example, Al-Husseini [86] investigated the impact of knowledge sharing on product innovation in Iraqi public education activity establishments. The result showed that knowledge sharing plays an elementary role in the improvement of product innovation within the educational activity. The same study of Zohoori [87] explored the link between knowledge sharing and innovation in Iran's electronic commerce. The results concealed the speed and nature of innovation that is critically important in the sharing of implicit and non-implicit knowledge. Tan and Nasuridin [88] study also showed a positive and important relationship between knowledge sharing and technological innovation in Malaysian production companies. The study by Hu et al. [89] on the international traveler hotels in Taiwan found a strong and robust relationship between the sharing of knowledge and innovation of service. The study by Liao [80] on 170 Taiwanese companies revealed a positive and important correlation

between knowledge sharing and innovation. Only if the positive and important relationship between knowledge sharing and innovation has been confirmed in several analyses environments, the researcher were forced to examine the knowledge sharing influences innovation types of SME in the context of Ghana. Therefore, the subsequent hypothesis was proposed:

H2: Innovation types significantly and positively affect Knowledge sharing.

3.3 Knowledge Sharing and Marketing Performance

It is known that Knowledge sharing is one of the best of all [90,35]. As a result of this, it helps companies to use and make the most knowledge-based resources [91,92]. It is described as "the act of placing knowledge possessed by a person available to others in the organization" [82]. Consequently, it is an act of transmitting the information of companies among people so that they can take resolute measures and take part in the innovation [93]. Knowledge sharing allows the circulation of information between people, teams and organizations [94] that helps to transfer new ideas or solutions [93], improves organizational learning capacity of the organization accelerating the start of new knowledge, which in turn, improves the competitive advantage of a company [95,96]. Alternative researchers have also given that knowledge sharing has an impact on the prices of production, time of completion of the advance, performance of the team, capacities of firm innovation, growth of sales and gains of new product and services, etc. [43,97,98]. Similarly Hau et al. [99] pointed out the sharing of knowledge as an essential and fundamental part of the progress of performance. Wherever, it may be noted that sharing of knowledge is fundamental, essential and necessary part for the advancement of performance. However, [100,101] stated that the result of knowledge sharing is the creation of the new knowledge and new innovation result in improving organizational performance. Then, we tend to propose the following hypothesis:

H3: Knowledge Sharing significantly and positively affects Marketing Performance.

3.4 Knowledge Sharing as a Mediator

Knowledge sharing in cooperation activities with innovation usually attracts resources,

understanding, and many iterations [102]. Companies must interact repeatedly in cooperative way to take advantage of better levels of knowledge sharing and performance. Knowledge sharing could also function as an intermediation between innovation types and marketing performance. Few earlier studies, specifically, recommend that knowledge sharing be an instrument that helps to understand the information benefits of cooperative innovation activities for the performance of innovation. As a result, functionally distinct supply chain partners will acquire data, capabilities, and data points through knowledge sharing [103,104]. As mentioned, the research has represented an analysis, sharing knowledge effectively and immediately boosts the performance of the innovation [105,36,79,106]. In general, creative efforts will generate opportunities for companies to help from knowledge sharing [107]. Therefore, knowledge sharing serves to improve the marketing performance of companies. Lastly, the intermediate effect of knowledge sharing in the connection between innovation types and the marketing performance of the company. Then, we have a tendency to propose the next hypothesis:

H4: *Knowledge sharing significantly mediates the effect of Innovation types and Marketing Performance.*

4. METHODOLOGY

The objectives of the study are to determine the mediating effects of the exchange of knowledge on the types of innovation and marketing performance of SMEs and to observe, however, the varied dimensions of each of the types of innovation on the marketing performance of SMEs. The essential elements of the consultation are collected in the owners/managers of companies, where all the respondents were surveyed to provide information about their businesses and materials informed about the types of innovation and their correspondence with the marketing results of different companies. The study was dense for the Greater Accra (Accra; the capital city of Ghana) and Ashanti (Kumasi; the second largest city in Ghana) regions of Ghana, with the outstanding concentration of SMEs. A sample of convenience was used to choose 500 owners/business managers of SME. This approach is in line with a study by Makanyeza and Dzvuke [108] within which only one individual was selected to complete the questionnaires for the company.

Therefore, the similarity of the activities of SMEs in an economy, a sample size of 500 is assumed to be large and representative, since most companies in this sector lack official data on their activities.

The constructed questionnaires were tested and the final adjustment was created to replicate the reliability of the instruments before being distributed to the respondents. The questionnaires were compelled by a group of eight researchers from the field of entrepreneurship and the business owners / managers of SMEs. Consequently, five research assistants got involved and encouraged to help with the administration of the survey questionnaires to the respondents. In total, 87.4% of the administered aggregate questionnaires were returned representing 437 respondents. All acceptable types of innovation, knowledge sharing and also marketing performance were connected in sequence to reduce the difficulty of the common method variance (CMV). In addition, participants were assured of the secrecy of the information and the data provided. Acquah and Agyapong, Acquah et al. [109,110] studies are consistent with the reduction of CMV problems.

4.1 Measurement of Constructs

4.1.1 Innovation types - independent variables

In the questionnaire items, firms show whether they had any activities of innovation types, knowledge sharing and marketing performance in the last 3 years. Innovation types as an independent variable during this investigation were classified into product innovation, process innovation, marketing innovation and organizational innovation. This part includes 20 items divided into 4 subcategories (Innovation to scale varied issues connected with the aspects of innovation. Each one of the independent variables were measured by a Likert-type scale of seven (7) levels (ranging from '1 strongly disagree' to '7 strongly agree')

4.1.2 Product innovation (SI)

Product innovation (SI) embraced four elements, expressly introduction of new products, developing new product features, reposition of existing products and new products to penetrate markets as was used by Prajogo and McDermott, Vinarski-Peretz et al. [111,112]. A 7-point interval scale ranging from strongly agree =1 to strongly

disagree=7 was used and the respondents were quizzed to differentiate their businesses' innovation types and the marketing performance comparative to competitors.

4.1.3 Process innovation (PI)

Process innovation (PI) comprised four items namely Increase speed of implementation, information accessibility, methods allowing work instruction and cut variable cost. All these items were adapted/modified from Bilderbeek et al. [113]. A 7-point interval scale ranging from strongly agree =1 to strongly disagree=7 was used and the respondents were quizzed to find their businesses' innovation types and the marketing performance germane to competitors.

4.1.4 Marketing innovation (MI)

Marketing innovation (MI) seven items were identified, that is, innovating marketing programs to stay ahead of the market, find new ways to build and improve relationships with customers, sales techniques are always revised, and the new methods were tried to find, carry out innovative marketing programs, look for ways to develop new business models, product design is constantly renewed according to customer's needs and competitive products and look for ways to improve promotion methods and tools. All these items were adapted/modified from Deshpandé et al., Sok et al. [114,115]. A 7-point interval scale ranging from strongly agree =1 to strongly disagree=7 was used and the respondents were asked to show their businesses' innovation types in a relation to the marketing performance relative to competitors.

4.1.5 Organization innovation

Organization innovation measurement embraces co-operation between units and departments, encouragement to disagree, encouragement to be multi-skilled, work well-being of employees and appreciation of employees. All these items were adapted/modified from cf., [116,117,26, 118,119]. A 7-point interval scale ranging from strongly agree =1 to strongly disagree=7 was used and therefore the respondents were asked to find their businesses' innovation types in respect to the marketing performance on competitors.

4.1.6 Knowledge sharing mediator

The researchers developed a composite measure for knowledge sharing involving;

Knowledge sharing is important for me, lack of trust in colleagues and fear of misusing knowledge, the organization has a reward system (provides incentives), management encourages and motivates knowledge sharing and Knowledge sharing does not create enough business values. All these items were adopted and modified from some recent studies [120,41, 121,122,123,124,36,125]. A 7-point interval scale ranging from strongly agree =1 to strongly disagree=7 was used and the respondents were quizzed to find their businesses' knowledge sharing, innovation types in respect to the marketing performance relative to competitors.

4.1.7 Marketing performance (MP) – dependent

Marketing Performance as a dependent variable is measured by three (3) items namely Profitability, Customer Satisfaction and Sales. All these items were adopted and modified from [126], the literature review and other studies in such areas. These items were selected according to the appropriateness of each item and to maximize the construct's reliability and validity. In this research, the subjective perceptions of owners or managers of SMEs were used to evaluate the marketing performance. A 7-point interval scale ranging from strongly agree =1 to strongly disagree=7 was quizzed and the respondents were asked to identify their businesses' firm marketing performance in relation to innovation types and knowledge sharing alike to competitors.

In accordance to studies conducted, the study controlled four characteristics of the firm – firm size (number of employees) [127]; firm age (number of years established firm age [128] ; firm sector (measured as hospitality, beauty, transportation and banking servic and finally forms of business (classified as family owned, sole trader, private, partnership and public limited companies).

4.2 Descriptive Statistical

Table 1 shows the characteristics of the respondents and the SMEs participated in this study. The data collected for this study come from 437 business owners/mangers from Accra and Kumasi respectively. 39.4% of the respondents are located in Accra, whiles 60.6% were in Kumasi, this might be due to highly populated SMEs. The educational background of these respondents demonstrates 33.6% of them having professional/training certificates, followed

Table 1. Characteristics of respondents

Variables	Frequency	Valid percent	Variables	Frequency	Valid percent
Gender			Forms of business		
Male	236	54.0	Private limited company	111	25.4
Female	201	46.0	Partnership limited company	75	17.2
Age			Public limited Company	43	9.8
under 21 years	54	12.4	Sole Proprietorship	168	38.4
21 – 34 years	202	46.2	Family owned business	40	9.2
35 -44 years	105	24.0	Employees		
45-54 years	63	14.4	Less than 5 (Micro)	59	13.5
55- 65 years	13	3.0	6-29 (Small)	293	67.0
Education			30- 99 (Medium)	70	16.0
No formal education	54	12.4	100 & more (Large)	15	3.4
Primary School	39	8.9	Role in the Firm		
High/Secondary	62	14.2	General Manager/Owner	232	53.1
Training/ Professional Cert	147	33.6	Marketing/Sales manager	158	36.2
HND/Bachelor	127	29.1	Supervisor	47	10.8
Graduate & Post graduate	8	1.8	Current Business		
Establishment			Existing	194	44.4
Less than 2 years	12	2.7	Existing concept in Ghana	147	33.6
3 to 5 years	102	23.3	Never existed	96	22.0
6 to 8 years	69	15.8	Sector		
9 to 11 years	152	34.8	Hospitality	144	33.0
12 years & above	102	23.3	Beauty	136	31.1
Location			Transportation	87	19.9
Accra	172	39.4	Banking service	70	16.0
Kumasi	265	60.6			

Source: Based on the sample survey

by HND/bachelors with 29.1%, whiles 14.2%, 12.4%, 8.9% and 1.8% were high/secondary, no formal education, primary school and graduate and post graduate certificates respectively. The 53.1% of the respondents were managers/owners, 36.2% of them were marketing/sales managers and supervisors were 10.8%. Classification of employees really reflect on the SMEs definition which identified 13.5% as Micro, 67% as small, 16% as medium and 3.4% as large businesses. The sample is rich in four sectors including mainly from hospitality (33%), beauty (31.1%), Transportation (19.9%), and banking (16%). The business model of SMEs, 44.4% are existing, 33.6% existing concept in Ghana and 22% were never existed. The ages of the respondents vary between under 21 years (12.4%), 22-34 years (46.2%), 35-44 (24.0%), 45-54 years (14.4%) and 55-65 years (3.0%). In term of age the survey depicts most of the respondents as predominantly as youth adults. Gender, 54% of the sample is male and the remaining part (46%) is female. Types of business operated by the SMEs, sole proprietorship were 38.4%, 25.4% are private

limited liability, 17.2% partnership limited liability 9.8% were public limited liability and family owned business hold 9.2%.

5. RESULTS AND DISCUSSION

First of all, the challenges in the exploration of surveys are the description of a statistical model suitable for analysis. The structural equation modeling based on partial least squares (PLS-SEM) focused on the main concept and uses the partial least squares estimator [129,130,131]. PLS-SEM were selected in the consultation due to the following assertion: 1) it is suitable for theory construction studies [131]. 2) it is considered applicable to investigate complex cause-effect models [132,130]. 3) It is a non-parametric method which limits the existence of restrictions for the distribution of data and the size of the sample [131]. SmartPLS 3 software were accustomed to questioning the research hypothesis [132]. Fig. 2 provides more details of our approach. Table 4 shows that the cross-loadings of items were consistent with the constructs.

5.1 Measurement Model Assessment

In PLS-SEM, the assessment of the measurement model includes the composite reliability (CR) to test the internal consistency, the reliability of the individual indicator and the average variance extracted [91] to adjudicate the convergent validity [133]. While the reliability of internal consistency is a reliability configuration that announces the consistency of the results on the elements of similar variables [133]. It establishes that if the items that measure a variable are comparable in their results [134]. The reliability of the internal consistency is beset by the use of CR. Table 2 shows the CR values of all the latent variables used in this study. These values were designed to be >0.70 [134] that shows internal consistency. Secondly, convergent reliability refers to the limit at which an estimate harmonizes positively with an alternative instrument of the same variable [133]. AVE was a conjecture to examine convergent validity. Table 2 shows the AVE values of all the latent variables used in this study. These values were advanced to be more than the specified value of 0.50 [134] and, therefore, attest to convergent validity.

In addition, discriminant reliability is the range in which a variable is so different from other variables, in what proportion is it complemented by different variables and how was indices used to interpret a single variable [133]. The excellence and the cross-loading score of [135] were used to certify the discriminant validity. Table 2. argued that the square root of AVE for all latent variables was distinguished from the appendix constructions [135] and confirmed the discriminant validity. Complementary, all individual loadings were embedded to be on top of their distinctive cross-loadings [133]. This stirred up more certification for discriminant

validity (Table 2). The reliability of the indicator shows what proportion of the distinction in an item was translated by a variable [133]. The outer loadings were able to test the reliability of the indicator as shown in Table 5. A better outer loading in a variable announces that the interconnected reference has much in common, which is measured by the variable [133]. Hair et al. [133] implied that items that have a loading >0.70 sought to be retained, items that have an outer loading value >0.40 should be neglected and that its weight on the AVE and CR of the variable should be scrutinized.

The structural model was elicited to experiment the association between endogenous and exogenous variables. In PLS-SEM, path coefficients to find out the weight and relevance of structural model relationships coerced through structural model assessment, f2 to pronounce on the influential weight of the exogenous variable on an endogenous variable [133].

5.1.1 t- Values of the path coefficient

SI, PI, MI and OI were absolutely related to MP, that supports H1, H2 H3 and H4 (Fig. 2). For that reason, it's extremely important for managers and business owners to embrace marketing performance as a necessary clue to decide the company's performance and its predisposition, while MP has a direct and admiring influence on SI, PI, MI and OI—SI, PI, MI and OI, and MP have close relationship which improves organizational performance through innovation types. The results of these direct relationships are in tandem with those [136,137,20 and 138] that established a complementary affinity between innovation types and marketing performance. Moreover, the value of the SI – MP interrelation path coefficient is slightly higher than

Table 2. Measurement model results – reliability, convergent and discriminant validity

	CR	AVE	1	2	3	4	5	6
1. Knowledge Sharing	0.873	0.501	0.678					
2. Marketing Innovation	0.870	0.593	0.218	0.747				
3. Marketing Performance	0.901	0.698	0.316	0.664	0.864			
4. Organization Innovation	0.799	0.524	0.437	0.319	0.419	0.739		
5. Process Innovation	0.713	0.537	0.532	0.481	0.615	0.533	0.865	
6. Product Innovation	0.848	0.662	0.571	0.688	0.494	0.359	0.546	0.782

Note: 1% level of significance is set for getting values of correlation coefficient

Notes: *Diagonal elements are the average variance extracted for each of the six constructs. Off-diagonal elements are the squared correlations between constructs. For discriminant validity, diagonal elements should be larger than off-diagonal; All of the correlations are significant at the p, 0.01 level

Table 3. Model fit measures through confirmatory factor analysis

Description	CMIN/df	CFI	SRMR	RMSEA	PClose
Fit Indices	3.321	0.921	0.045	0.073	0.067
Remark	Acceptable	Acceptable	Excellent	Acceptable	Acceptable

Note: the threshold observed as- CMIN/df>3.0, CFI>0.90, SRMR<0.080, RMSEA<0.080, PClose>0.05

Table 4. Cross loadings between the measures

	Knowledge sharing	Marketing innovation	Marketing performance	Organization innovation	Process innovation	Product innovation
KS1	0.722					
KS2	0.746					
KS3	0.685					
KS4	0.722					
KS5	0.713					
MI1		0.635				
MI2		0.712				
MI3		0.747				
MI4		0.779				
MI5		0.713				
MI6		0.873				
MP1			0.938			
MP2			0.928			
MP3			0.707			
OI1				0.826		
OI2				0.702		
OI3				0.722		
OI4				0.698		
PI1					0.967	
PI2					0.709	
PI3					0.899	
PI4					0.867	
SI1						0.919
SI2						0.763
SI3						0.868
SI4						0.719

that of the other variables that show that SMEs give added value to product innovations with respect to achieving improved marketing performance.

5.2 Hypothesis Testing and Discussion

The study wanted to know the correlation between the types of innovation and marketing performance of SME in Ghana using Knowledge sharing as a variable of mediation. The study was conducted with the following aims: to investigate the impact of innovation types and marketing performance, to test the effect of innovation types on SME marketing performance; and finally to measure the mediating effect of Knowledge Sharing relationship with the innovation types and marketing performance. The PLS - SEM model

was used to verify the correlation between the variously advanced constructs through research. In this cause, SEM analysis was implemented by PLS version and analyzes specific to indexes of goodness of fit. For the complete statistical results of the model, Table 3 shows that Chi-square/df = 3.321, CFI=0.921, SRMR = 0.045, RMSEA=0.073 and PClose = 0.067. In line with [139] it was recognized that SRMR, RMSEA and CFI are imperative to model fit analysis. Congruence with the study, we formulated the hypothesis of four paths using the SEM to investigate the correlation of innovation types in the marketing performance. The results predict that all the paths were significant ($p < 0.05$). A SEM model states that the innovation types are the direct effects on the marketing performance efforts. The plenary routes were significant at $p < 0.000$.

5.3 Mediation Analysis

We analyze the mediation analysis in Smart PLS-SEM to decide the direct impact of the independent index on the dependent index and the indirect impact of the variable on the dependent variable through mediating variables.

Table 5 presents the direct effect of the independent variables (ie, Product, Process, Marketing and Organization Innovation) on the dependent variable (ie, Marketing Performance), which is statistically significant in ($p < 0.001$) and confirms the main assumption of mediation (see Baron and Kenny, 1986).

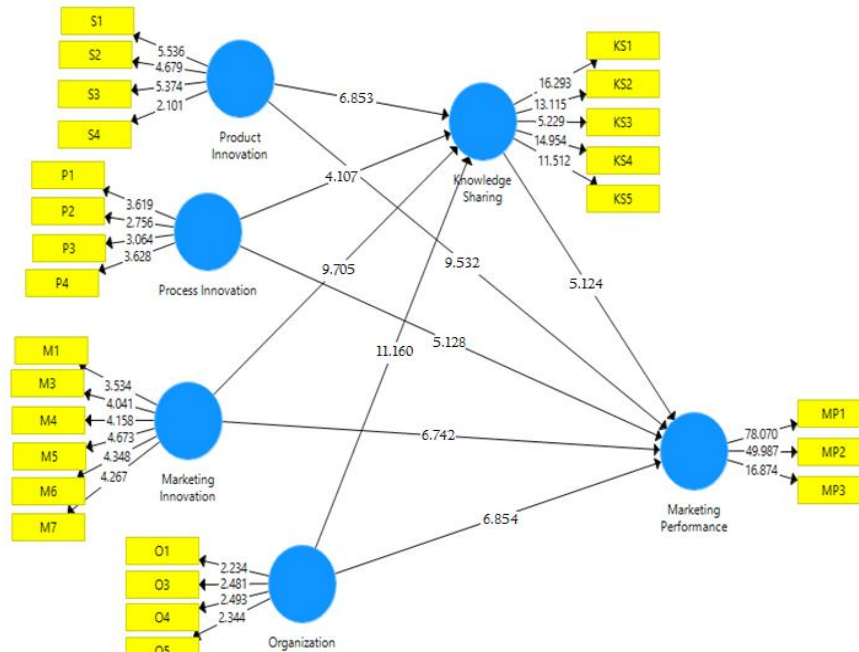


Figure 2. PLS-SEM output for the direct and indirect relationship between product, process, marketing, organization and marketing performance, mediated by knowledge sharing

Table 5. Direct effect through multiple regression analysis

Relationship	B	STDEV	t-value	P Values	R ²	Adjusted R ²
Overall			107.3	***	0.613	0.604
KS -> MP	0.314	0.061	5.124	0.000		
MI -> KS	0.592	0.061	9.705	0.015		
MI -> MP	0.472	0.070	6.742	0.031		
OI -> KS	0.558	0.050	11.160	0.000		
OI -> MP	0.425	0.062	6.854	0.023		
PI -> KS	0.345	0.084	4.107	0.034		
PI -> MP	0.359	0.070	5.128	0.029		
SI -> KS	0.514	0.075	6.853	0.030		
SI -> MP	0.591	0.062	9.532	0.019		

KS=Knowledge Sharing, MI=Marketing Innovation, OI= Organization Innovation, PI= Process Innovation, SI= Product Innovation, MP= Marketing Performance, *** $p < 0.001$

Table 6. Specific indirect effect of knowledge sharing on MP through MI, OI, PI and SI

Relationship	β	STDEV	t-value	P Values	f ²	Remarks
MI -> KS -> MP	0.438	0.021	20.857	0.008**	0.234	Medium
OI -> KS -> MP	0.218	0.025	8.720	0.012*	0.137	Small
PI -> KS -> MP	0.431	0.027	15.962	0.029*	0.246	Medium
SI -> KS -> MP	0.564	0.024	23.500	0.000***	0.452	Large

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7. Paths coefficient of control variables

Relationship	β	STDEV)	t-values	P values
Firm Size -> Market Performance	0.506	0.051	9.921	0.024
Forms of Business -> Market Performance	0.211	0.044	4.795	0.042
Sectors -> Market Performance	0.113	0.051	2.215	0.049
Firms age -> Market Performance	0.477	0.059	8.084	0.034

5.4 Mediation Analysis: Direct and Indirect Assessment

The investigation of the data collected established that product innovation (SI) has a significant positive result in the marketing performance (MP) (Table 5, $\beta = 0.591$, $t = 9.532$, $p < 0.019$). The beta coefficient was within the correct tide, according to the hypothesis; therefore, the hypothesis was supported that "product innovation has a positive influence on the performance of marketing". So far, this indicates that a discovery in product innovation would boost the marketing performance of SMEs. In harmony, SMEs that meet better product levels, innovation activities are correlated with marketing performance indicators. The results are consistent with a collection of the invention in earlier studies that recited a favorable expressive affiliation between the innovation of the product and the performance of the company. As an example, [136] discovered a positive connection between product innovation and marketing performance in their study of innovation and business performance in SME. Different studies also supported a direct association between product innovation and company performance [140,141,142].

The analysis of the information showed that process innovation had a positive result on marketing performance (MP) (Table 5, $\beta = 0.359$, $t = 5.128$, $p < 0.029$) as hypothesis that "process innovation positively influences marketing performance" this was indicative within the beta coefficient that describes the correct direction of the route. This precept predicts that an efficiency in process innovation would lead to an enhanced performance of SME. In justification, SMEs that have high capacity of process innovation activities would lead to doing well on marketing performance indicators. The result is in agreement with the judgment of [143], who opined that process innovations have a strong and positive affiliation with organizational performance [138], which they hypothesize that process innovation fulfilled the performance of the company in a critical manner.

The analysis of the information collected showed that marketing innovation (MI) had a positive vital influence on marketing performance (MP) (Table 5, $\beta = 0.5472$, $t = 6.742$, $p < 0.031$). The presumption that "Marketing innovation completely influences marketing performance" was supported because the beta coefficient was within the right path. The emphasis suggests that enrichment in process innovation would lead to an advancement in the performance of SMEs. Process innovation activities would do well in marketing performance indicators. Side effects agreed to a compilation of the deductions in earlier studies that reported a vital positive relationship between process innovation and marketing performance. For the ideal, [144] using an estimated model, it declares an extremely vital association between a market related innovative activity and firm performance. [20] raised in their research on innovation, organizational learning and performance, confirm a positive correlation between process innovation and organizational performance.

Experiment of the data collected modeled that organizational innovation had significant positive impact on marketing performance (MP) (Table 5, $\beta = 0.425$, $t = 6.854$, $p < 0.023$;) according to the hypothesis; consequentially, that "organizational innovation completely influences performance of marketing" was supported, therefore the beta coefficient given within the right path. This presupposed that advance innovation activities of the organization would correlate its affinity with the marketing performance of SMEs. The climax is in agreement with some scholars research that transcribed to the positive vital relationship between organization innovation and performance of the company [145,146,137].

5.5 Direct and Indirect relationship of Knowledge Sharing

Table 5 shows direct relationship of Knowledge Sharing between SI, PI, MI, OI, and MP. From the results, the route from Knowledge Sharing to Marketing performance (MP) indicates a greater and positive effect ($\beta = 0.314$, $t = 5.124$, $p < 0.000$; Table 5). This means an improvement within the activities of knowledge sharing would be similar

to the marketing performance of SMEs. This coincided with some researchers that knowledge sharing has impact on production costs, time of completion the development of new product, team performance, firm innovation capabilities, sales growth and revenue from new products and services, etc. [43,97,98,36].

Again, the results determine that KS encompasses a direct association with SI, PI, MI and OI which denote a main and positive effect ($\beta = 0.514$, $t=6.853$, $p<0.030$); ($\beta = 0.349$, $t=4.107$, $p<0.034$); ($\beta = 0.592$, $t=9.705$, $p<0.015$); ($\beta = 0.558$, $t=11.160$, $p<0.000$). This shows that an advance in KS activities will have a corresponding effects in SI, PI, MI and OI individually. The secondary effects of the research carried out by Lin et al. [46] showed the many positive effects of knowledge sharing on innovation capacities. It could be the same as the organization with the secure knowledge sharing and apply measures apparently to have the opportunity to accelerate their innovative abilities. In several studies, knowledge sharing is considered a crucial enriching innovation capacity and the performance of the company [43,45,36,35].

Table 6 shows knowledge sharing as a mediating role on the product innovation (SI) and marketing performance (MP). From the results, the indirect path from SI to MP through KS indicates a significant and positive impact of the mediator variable KS, provided that ($\beta = 0.564$, $t=23.500$, $p<0.000$). Again, the indirect route from PI to MP through KS denoting an important and positive result of the KS mediator indicating that ($\beta = 0.431$, $t=15.962$, $p<0.029$). The indirect path from MI to MP through KS indicating a significant and positive impacts of KS as mediator indicating ($\beta = 0.438$, $t=20.857$, $p<0.008$) and indirect path from OI to MP through KS indicating a significant and a positive reaction of the KS mediator indicating that ($\beta = 0.218$, $t=8.720$, $p<0.012$). This indicates that KS mediate the affinity between SI, PI, MI, OI, and MP.

The research, finally, tested four intervening situations with a mediating variable and the direct result being the affinity between SI, PI, MI, OI, and MP of SME. The four concepts showed that KS mediates the relationship between SI, PI, MI, OI, and MP. The sixth model, which dealt with mediation function of organization innovation, was not affirmative. Therefore, this study is essential for contemporary companies and for business owners. It offers opportunities for

managers of SME to understand the need to consciously employ innovation activities and knowledge sharing in their business models to confirm that the total profit, sales, and customer's satisfaction were obtained with respect to marketing performance. The owners and managers of businesses must realize that implementation of these concepts in business can generate costs, and even be counterproductive if they are not implemented correctly.

This study has provided each empirical and theoretical contributions to the concepts of innovation types, knowledge sharing, and marketing performance studies. Theoretically, the findings on the mediation result of knowledge sharing have established that knowledge sharing mediates the connection between innovation types and marketing performance. The study argues that SME will take pleasure in improving marketing performance by investing much in their innovation activities. Moreover, the link established by workers, knowledge, information sharing, and trust through knowledge sharing would enable workers to be creative in product/service, process, marketing and organization innovation, which could eventually lead to an enhanced marketing performance. Contextually, this study has added to the innovation types and marketing performance studies in Ghanaian situation, which remains unexplored by the prevailing studies. The study has, therefore, added to the literature by examining how knowledge sharing mediates the connection between innovation types and marketing performance in a latent economy. Moreover, the results of this study may ease SME Directors in Ghana to find a corporate direction to marketing performance in an intensely competitive business environment within which they work.

5.6 Limitations

The major limitation of the study used solely quantitative survey analysis, with a structured questionnaire because of the main tool for collecting data. The structured questionnaire denies the chance for a lot of discreet exploration of relevant issues from the respondents but, all the vigorous checks were done to decide the validity and reliability of the information collected. Moreover, generalizing the study to cover all countries must be done with care since the information was gathered from SME in precisely two cities in Ghana. The second limitation of this

analysis is qualitative information of the marketing performance. We tend to use qualitative information to predict the firm marketing performance due to the company's interference in giving original data. But subjective information is widely used in the organizational research [147,148]. Lastly, this study measures knowledge sharing as one dimension. However, it must be known that it carries a multi-facet concept. This could be the limitation of this study. Future research has to discuss different aspects that have the effect on the knowledge sharing like tacit and explicit knowledge. These factors are increasingly developing practices for knowledge. Consequently, these parameters should be investigated in future studies as well as the applications of these variables in the SME manufacturing sector.

6. CONCLUSION

Most studies have established the connection between innovation types and company performance. The point of this investigation was to cross-examine the role of Knowledge sharing among the connection between innovation types and firm marketing performance using information from a developing country, Ghana. The study has supported the current study by establishing a positive connection between innovation types and marketing performance, additionally, established a positive connection between the different innovation types and marketing performance. Moreover, the study found that knowledge sharing mediates the connection between innovation types and marketing performance. Innovation types impact on marketing performance directly, and through knowledge sharing indirectly. However, the study found a mediator of the knowledge sharing within the association between innovation types and marketing performance. We incline to propose that, while managers of SMEs are edged to invest a lot on innovation activities, they have to equally use the knowledge sharing as a competitive advantage to be innovative, hence, accelerating their marketing performance.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Abor J, Quartey P. Issues in SME development in Ghana and South Africa. *International Research Journal of Finance and Economics*. 2010;39(6):215-228.
2. Nyoni T, Bonga WG. Anatomy of the small & medium enterprises (SMEs) critical success factors (CSFs) in Zimbabwe: Introducing the 3E Model; 2018.
3. Teal DM. Intrusion detection system and method having dynamically loaded signatures. Google Patents; 2002.
4. Craig SG, Kohlhasse JE, Perdue A. Entrepreneurship and economic development: The relative attraction of employment centres by firm size. *International Journal of Global Environmental Issues*. 2014;13(2-4):281-293.
5. Kobe K. The small business share of GDP, 1998-2004. 2007: SBA Office of Advocacy.
6. Abor J, Biekpe N. Small business financing initiatives in Ghana. *Problems and Perspectives in Management*. 2006;4(3): 69-77.
7. Keskin H. Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model. *European Journal of Innovation Management*. 2006; 9(4):396-417.
8. Agyapong D. Micro, small and medium enterprises' activities, income level and poverty reduction in Ghana—A synthesis of related literature. *International Journal of Business and Management*. 2010;5(12): 196.
9. Dalitso K, Peter Q. The policy environment for promoting small and medium-sized enterprises in Ghana and Malawi. University of Manchester; 2000.
10. Aryeetey E, et al. Supply and demand for finance of small enterprises in Ghana. The World Bank; 1994.
11. Teece DJ, Pisano G, Shuen A. Dynamic capabilities and strategic management. *Strategic Management Journal*. 1997; 18(7):509-533.
12. Subramaniam M, Youndt MA. The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*. 2005;48(3):450-463.
13. Wang Z, Wang N. Knowledge sharing, innovation and firm performance. *Expert Systems with Applications*. 2012;39(10): 8899-8908.
14. Lee LTS, Sukoco BM. The effects of entrepreneurial orientation and knowledge management capability on organizational effectiveness in Taiwan: The moderating

- role of social capital. *International Journal of Management*. 2007;24(3):549.
15. Haas MR, Hansen MT. Different knowledge, different benefits: Toward a productivity perspective on knowledge sharing in organizations. *Strategic Management Journal*. 2007;28(11):1133-1153.
 16. Gold AH, Malhotra A, Segars AH. Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*. 2001;18(1):185-214.
 17. Zack MH. A strategic pretext for knowledge management. in *Proceedings of the Third European Conference on Organizational Knowledge, Learning and Capabilities*. 2002.
 18. Wu GC, Cheng YH, Huang SY. The study of knowledge transfer and green management performance in green supply chain management. *African Journal of Business Management*. 2010;4(1):044-048.
 19. Aksoy H. How do innovation culture, marketing innovation and product innovation affect the market performance of small and medium-sized enterprises (SMEs)? *Technology in Society*. 2017;51: 133-141.
 20. Gunday G, et al. Effects of innovation types on firm performance. *International Journal of Production Economics*. 2011; 133(2):662-676.
 21. Drucker PF. The discipline of innovation. *Harvard Business Review*. 1985;63(3):67-72.
 22. Hitt MA, et al. Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*. 2001;44(1):13-28.
 23. Kuratko DF. The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice*. 2005;29(5): 577-597.
 24. Crossan MM, Apaydin M. A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*. 2010;47(6):1154-1191.
 25. Jiménez-Jiménez D, Sanz-Valle R. Innovation, organizational learning, and performance. *Journal of Business Research*. 2011; 64(4):408-417.
 26. Wan D, Ong CH, Lee F. Determinants of firm innovation in Singapore. *Technovation*. 2005;25(3):261-268.
 27. Tidd J, Bessant J, Pavitt K. *Managing innovation integrating technological, market and organizational change*. John Wiley and Sons Ltd.; 2005.
 28. Damanpour F. Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*. 1991;34(3):555-590.
 29. Wirtz BW, Schilke O, Ullrich S. Strategic development of business models: implications of the Web 2.0 for creating value on the internet. *Long range planning*, 2010; 43(2-3):272-290.
 30. Oecd E. *Oslo manual. Guidelines for collecting and interpreting innovation data*; 2005.
 31. Barney J. Firm resources and sustained competitive advantage. *Journal of Management*. 1991;17(1):99-120.
 32. Mills AM, Smith TA. Knowledge management and organizational performance: A decomposed view. *Journal of Knowledge Management*. 2011;15(1): 156-171.
 33. Kotler P, Armstrong G. *Fundamentos de marketing*. Pearson Educación; 2003.
 34. Akhavan P, Mahdi Hosseini S. Social capital, knowledge sharing, and innovation capability: An empirical study of R&D teams in Iran. *Technology Analysis & Strategic Management*. 2016;28(1):96-113.
 35. Yeşil S, Koska A, Büyükbeşe T. Knowledge sharing process, innovation capability and innovation performance: an empirical study. *Procedia-Social and Behavioral Sciences*. 2013;75:217-225.
 36. Lin HF. Knowledge sharing and firm innovation capability: An empirical study. *International Journal of Manpower*. 2007; 28(3/4):315-332.
 37. Gupta AK, Govindarajan V. Knowledge flows within multinational corporations. *Strategic Management Journal*. 2000; 21(4):473-496.
 38. Wang S, Noe RA. Knowledge sharing: A review and directions for future research. *Human Resource Management Review*. 2010;20(2):115-131.
 39. Ryu S, Ho SH, Han I. Knowledge sharing behavior of physicians in hospitals. *Expert Systems with Applications*. 2003;25(1): 113-122.
 40. Xinyan Z, Xin Z. Moderating effects of organizational justice to knowledge-based

- psychological ownership and knowledge sharing. in Proceedings of the 8th International Conference on Innovation & Management; 2006.
41. Hsu MH, et al. Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. *International Journal of Human-computer Studies*. 2007; 65(2):153-169.
 42. Jiacheng W, Lu L, Francesco CA. A cognitive model of intra-organizational knowledge-sharing motivations in the view of cross-culture. *International Journal of Information Management*. 2010;30(3):220-230.
 43. Cummings JL, Teng BS. Transferring R&D knowledge: the key factors affecting knowledge transfer success. *Journal of Engineering and Technology Management*. 2003;20(1-2):39-68.
 44. Riege A. Three-dozen knowledge-sharing barriers managers must consider. *Journal of Knowledge Management*. 2005;9(3):18-35.
 45. Liebowitz J. Linking social network analysis with the analytic hierarchy process for knowledge mapping in organizations. *Journal of Knowledge Management*. 2005;9(1):76-86.
 46. Lin MJJ, Huang CH. The impact of customer participation on NPD performance: the mediating role of inter-organisation relationship. *Journal of Business & Industrial Marketing*. 2012; 28(1):3-15.
 47. Wolff JA, Pett TL. Small-firm performance: modeling the role of product and process improvements. *Journal of Small Business Management*. 2006;44(2):268-284.
 48. Owen D. Emerging issues in sustainability reporting. *Business Strategy and the Environment*. 2006;15(4):217-218.
 49. Ambler T. *Marketing and the bottom line: The marketing metrics to pump up cash flow*. Pearson Education; 2003.
 50. Barwise P, Farley JU. Marketing metrics:: Status of six metrics in five countries. *European Management Journal*. 2004; 22(3):257-262.
 51. Ambler T, Roberts JH. Assessing marketing performance: Don't settle for a silver metric. *Journal of Marketing Management*. 2008;24(7-8):733-750.
 52. Stewart DW. Marketing accountability: Linking marketing actions to financial results. *Journal of Business Research*. 2009;62(6):636-643.
 53. Chakravarthy BS. Measuring strategic performance. *Strategic Management Journal*. 1986;7(5):437-458.
 54. Morgan RE, Strong CA. Business performance and dimensions of strategic orientation. *Journal of Business Research*. 2003;56(3):163-176.
 55. Clark BH, Ambler T. Marketing performance measurement: evolution of research and practice. *International Journal of Business Performance Management*. 2001;3(2-4):231-244.
 56. Morgan NA, Clark BH, Gooner R. Marketing productivity, marketing audits, and systems for marketing performance assessment: integrating multiple perspectives. *Journal of Business Research*. 2002;55(5):363-375.
 57. Vorhies DW, Morgan NA. A configuration theory assessment of marketing organization fit with business strategy and its relationship with marketing performance. *Journal of Marketing*. 2003; 67(1):100-115.
 58. Homburg C, Pflesser C. A multiple-layer model of market-oriented organizational culture: Measurement issues and performance outcomes. *Journal of Marketing Research*. 2000;37(4):449-462.
 59. Katsikeas CS, et al. Assessing performance outcomes in marketing. *Journal of Marketing*. 2016;80(2):1-20.
 60. Farris PW. *Marketing metrics*. Pearson Education India; 2006.
 61. Ismail T. The development of entrepreneurial social competence and business network to improve competitive advantage and business performance of small medium sized enterprises: A case study of batik industry in Indonesia. *Procedia-Social and Behavioral Sciences*, 2012;65:46-51.
 62. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986;51(6):1173.
 63. Roberts PW, Amit R. The dynamics of innovative activity and competitive advantage: The case of Australian retail banking, 1981 to 1995. *Organization Science*. 2003;14(2):107-122.
 64. Calantone RJ, Vickery SK, Dröge C. Business performance and strategic new

- product development activities: an empirical investigation. *Journal of Product Innovation Management: An International Publication of the Product Development & Management Association*. 1995;12(3): 214-223.
65. Han JK, Kim N, Srivastava RK. Market orientation and organizational performance: Is innovation a missing link? *The Journal of Marketing*. 1998;30-45.
 66. Garnsey E. A theory of the early growth of the firm. *Industrial and Corporate Change*. 1998;7(3):523-556.
 67. Peteraf MA. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*. 1993;14(3):179-191.
 68. Mahoney JT. A resource-based theory of sustainable rents. *Journal of Management*. 2001;27(6):651-660.
 69. Darroch J. Knowledge management, innovation and firm performance. *Journal of Knowledge Management*. 2005;9(3): 101-115.
 70. Bagorogoza J, de Waal A. The role of knowledge management in creating and sustaining high performance organisations: The case of financial institutions in Uganda. *World Journal of Entrepreneurship, Management and Sustainable Development*. 2010;6(4):307-324.
 71. Bakar LJA, Ahmad H. Assessing the relationship between firm resources and product innovation performance: A resource-based view. *Business Process Management Journal*. 2010;16(3):420-435.
 72. Grant RM, Jammine AP, Thomas H. Diversity, diversification, and profitability among British manufacturing companies, 1972–1984. *Academy of management Journal*. 1988;31(4):771-801.
 73. Rosli MM, Sidek S. The impact of innovation on the performance of small and medium manufacturing enterprises: Evidence from Malaysia. *Journal of Innovation Management in Small & Medium Enterprises*. 2013;2013:1.
 74. Kargar J, Parnell JA. Strategic planning emphasis and planning satisfaction in small firms: An empirical investigation. *Journal of Business Strategies*. 1996; 13(1):2-64.
 75. Zahra SA, Das SR. Innovation strategy and financial performance in manufacturing companies: An empirical study. *Production and operations management*. 1993;2(1):15-37.
 76. Capon N, Farley JU, Hoenig S. Determinants of financial performance: A meta-analysis. *Management science*. 1990;36(10):1143-1159.
 77. Anning-Dorson T. Interactivity innovations, competitive intensity, customer demand and performance. *International Journal of Quality and Service Sciences*. 2016;8(4): 536-554.
 78. Jaworski BJ, Kohli AK. Market orientation: Antecedents and consequences. *The Journal of marketing*. 1993;53-70.
 79. Sáenz J, Aramburu N, Blanco CE. Knowledge sharing and innovation in Spanish and Colombian high-tech firms. *Journal of Knowledge Management*. 2012. 16(6):919-933.
 80. Liao SH, Wu Cc. System perspective of knowledge management, organizational learning, and organizational innovation. *Expert systems with Applications*. 2010; 37(2):1096-1103.
 81. Rahab C, Sulistyandari S, Soedjono S. The development of innovation capability of small medium enterprises through knowledge sharing process: An empirical study of Indonesian creative industry. *International Journal of Business and Social Science*. 2011;2(21):112-123.
 82. Camelo-Ordaz C, et al. The influence of human resource management on knowledge sharing and innovation in Spain: The mediating role of affective commitment. *The International Journal of Human Resource Management*. 2011; 22(07):1442-1463.
 83. Kamaşak R, F Bulutlar. The influence of knowledge sharing on innovation. *European Business Review*. 2010;22(3): 306-317.
 84. Quintane E, et al. Innovation as a knowledge-based outcome. *Journal of Knowledge Management*. 2011;15(6):928-947.
 85. Brachos D, et al. Knowledge effectiveness, social context and innovation. *Journal of Knowledge Management*. 2007;11(5):31-44.
 86. Al-Husseini SJ. The impact of leadership style on innovation in Iraq's higher education institutions: The role of knowledge sharing; 2014.
 87. Zohoori M, et al. The relationship between knowledge sharing and innovation in electronic industry of Iran. *Journal of*

- Small Business and Entrepreneurship Development. 2013;1(1):26-33.
88. Tan CL, AM Nasurdin. Human resource management practices and organizational innovation: assessing the mediating role of knowledge management effectiveness. *Electronic Journal of Knowledge Management*. 2011;9(2):155.
 89. Hu MLM, Horng JS, Sun YHC. Hospitality teams: Knowledge sharing and service innovation performance. *Tourism Management*. 2009;30(1):41-50.
 90. Blankenship SS, Ruona WE. Exploring knowledge sharing in social structures: Potential contributions to an overall knowledge management strategy. *Advances in Developing Human Resources*. 2009;11(3): 290-306.
 91. Davenport TH, Prusak L. *Working knowledge: How organizations manage what they know*. Harvard Business Press; 1998.
 92. Cabrera EF, Cabrera A. Fostering knowledge sharing through people management practices. *The international Journal of Human Resource Management*, 2005;16(5):720-735.
 93. Islam MZ, Jasimuddin SM, Hasan I, Organizational culture, structure, technology infrastructure and knowledge sharing: Empirical evidence from MNCs based in Malaysia. *Vine*. 2015;45(1):67-88.
 94. Huang JC, Newell S. Knowledge integration processes and dynamics within the context of cross-functional projects. *International Journal of Project Management*. 2003;21(3):167-176.
 95. Dyer JH, Nobeoka K. Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*. 2000;21(3):345-367.
 96. Jasimuddin SM. Exploring knowledge transfer mechanisms: The case of a UK-based group within a high-tech global corporation. *International Journal of Information Management*. 2007;27(4):294-300.
 97. Arthur JB, Huntley CL. Ramping up the organizational learning curve: Assessing the impact of deliberate learning on organizational performance under gainsharing. *Academy of Management Journal*. 2005;48(6):1159-1170.
 98. Collins CJ, KG Smith. Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal*. 2006; 49(3):544-560.
 99. Hau YS, et al. The effects of individual motivations and social capital on employees' tacit and explicit knowledge sharing intentions. *International Journal of Information Management*. 2013;33(2):356-366.
 100. Kumar N, Che Rose R. The impact of knowledge sharing and Islamic work ethic on innovation capability. *Cross Cultural Management: An International Journal*. 2012;19(2):142-165.
 101. Sohail MS, Daud S. Knowledge sharing in higher education institutions: Perspectives from Malaysia. *Vine*. 2009;39(2):125-142.
 102. Ritala P, et al. Knowledge sharing, knowledge leaking and relative innovation performance: An empirical study. *Technovation*. 2015;35::22-31.
 103. Soosay CA, Hyland PW, Ferrer M. Supply chain collaboration: Capabilities for continuous innovation. *Supply Chain Management: An International Journal*. 2008;13(2):160-169.
 104. Cruz-González J, López-Sáez P, Navas-López JE. Absorbing knowledge from supply-chain, industry and science: The distinct moderating role of formal liaison devices on new product development and novelty. *Industrial Marketing Management*. 2015;47:75-85.
 105. Tsai W. Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*. 2001;44(5):996-1004.
 106. Gupta S, Polonsky M. Inter-firm learning and knowledge-sharing in multinational networks: An outsourced organization's perspective. *Journal of Business Research*. 2014;67(4):615-622.
 107. Alnuaimi T, G George. Appropriability and the retrieval of knowledge after spillovers. *Strategic Management Journal*. 2016;37(7):1263-1279.
 108. Makanyeza C, Dzvuke G. The influence of innovation on the performance of small and medium enterprises in Zimbabwe. *Journal of African Business*. 2015;16(1-2): 198-214.
 109. Acquaaah M, Agyapong A. The relationship between competitive strategy and firm performance in micro and small businesses in Ghana: The moderating role

- of managerial and marketing capabilities. *Africa Journal of Management*. 2015;1(2): 172-193.
110. Acquah M, Amoako-Gyampah K, Jayaram J. Resilience in family and nonfamily firms: An examination of the relationships between manufacturing strategy, competitive strategy and firm performance. *International Journal of Production Research*. 2011;49(18):5527-5544.
 111. Prajogo D, McDermott CM. Antecedents of Service Innovation in SMEs: Comparing the Effects of External and Internal Factors. *Journal of Small Business Management*. 2014;52(3):521-540.
 112. Vinarski-Peretz H, Binyamin G, Carmeli A. Subjective relational experiences and employee innovative behaviors in the workplace. *Journal of Vocational Behavior*, 2011;78(2):290-304.
 113. Bilderbeek R, et al. Services in innovation: Knowledge intensive business services (KIBS) as coproducers of innovation, SI4S Synthesis Paper. Work Package. 1998; 5(6).
 114. Deshpandé R, Farley JU, Webster FE Jr. Corporate culture, customer orientation, and innovativeness in Japanese firms: a quadrad analysis. *The Journal of Marketing*. 1993;23-37.
 115. Sok P, A O'Cass, Sok KM. Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal (AMJ)*. 2013;21(3):161-167.
 116. Lampikoski K, Emden J. Managing innovatively: Exploit creative resources. WSOY, Porvoo; 1999.
 117. Harborne P, Johne A. Creating a project climate for successful product innovation. *European Journal of innovation management*. 2003. 6(2):118-132.
 118. Dobni CB. Measuring innovation culture in organizations: The development of a generalized innovation culture construct using exploratory factor analysis. *European Journal of Innovation Management*. 2008;11(4): 539-559.
 119. van Hemert P, Nijkamp P, Masurel E, From innovation to commercialization through networks and agglomerations: analysis of sources of innovation, innovation capabilities and performance of Dutch SMEs. *The Annals of Regional Science*. 2013;50(2):425-452.
 120. Nielsen P, Razmerita L. Motivation and knowledge sharing through social media within Danish organizations. in *International Working Conference on Transfer and Diffusion of IT*; 2014. Springer.
 121. Matschke C, et al. Motivational factors of information exchange in social information spaces. *Computers in Human Behavior*, 2014;36:549-558.
 122. Michailova S, Minbaeva DB, Organizational values and knowledge sharing in multinational corporations: The Danisco case. *International Business Review*. 2012;21(1):59-70.
 123. Littlejohn SW, Foss KA. *Theories of human communication*. Waveland press; 2010.
 124. Šajeva S. Identifying factors affecting motivation and loyalty of knowledge workers. *Economics & Management*; 2007.
 125. Chennamaneni A, Teng JT, Raja M. A unified model of knowledge sharing behaviours: theoretical development and empirical test. *Behaviour & Information Technology*. 2012;31(11):1097-1115.
 126. Vorhies DW, Morgan NA. Benchmarking marketing capabilities for sustainable competitive advantage. *Journal of Marketing*. 2005;69(1): 80-94.
 127. Dogan M, et al. The impact of CEO duality on firm performance: Evidence from turkey. *International Journal of Business and Social Science*. 2013;4(2).
 128. Coad A, Segarra A, Teruel M. Like milk or wine: Does firm performance improve with age? *Structural Change and Economic Dynamics*. 2013;24:173-189.
 129. Hair JF, Ringle CM, Sarstedt M. PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*. 2011;19(2):139-152.
 130. Lowry PB, Gaskin J. Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication*. 2014;57(2):123-146.
 131. Vinzi VE, et al. Perspectives on partial least squares, in *Handbook of partial least squares*. Springer. 2010;1-20.
 132. Henseler J, Ringle CM, Sarstedt M. Testing measurement invariance of composites using partial least squares. *International Marketing Review*. 2016; 33(3):405-431.
 133. Hair JF, Ringle CM, Sarstedt M. Partial least squares structural equation modeling:

- Rigorous applications, better results and higher acceptance.
134. Hair JF, et al. Multivariate data analysis. Upper Saddle River, NJ: Pearson Prentice Hall. 2006;6.
 135. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*. 1981;39-50.
 136. Augusto MG, Lisboa JV, Yasin MM. Organisational performance and innovation in the context of a total quality management philosophy: An empirical investigation. *Total Quality Management & Business Excellence*. 2014;25(9-10):1141-1155.
 137. Camisón C, Villar-López A. Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of Business Research*. 2014;67(1):2891-2902.
 138. Mohamad MR, Sidek S. Innovation and firm performance: Evidence from Malaysian small and medium enterprises; 2013.
 139. Hair Jr, JF, et al. A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications; 2016.
 140. Hall J, Wagner M. Integrating sustainability into firms' processes: Performance effects and the moderating role of business models and innovation. *Business Strategy and the Environment*. 2012;21(3):183-196.
 141. D'Angelo A. Innovation and export performance: A study of Italian high-tech SMEs. *Journal of management & governance*. 2012;16(3):393-423.
 142. Atalay M, Anafarta N, Sarvan F. The relationship between innovation and firm performance: An empirical evidence from Turkish automotive supplier industry. *Procedia-Social and Behavioral Sciences*. 2013;75:226-235.
 143. Murat Ar I, B Baki. Antecedents and performance impacts of product versus process innovation: Empirical evidence from SMEs located in Turkish science and technology parks. *European Journal of Innovation Management*. 2011;14(2):172-206.
 144. Varis M, Littunen H. Types of innovation, sources of information and performance in entrepreneurial SMEs. *European Journal of Innovation Management*. 2010;13(2): 128-154.
 145. Dadfar H, et al. Linkage between organisational innovation capability, product platform development and performance: The case of pharmaceutical small and medium enterprises in Iran. *Total Quality Management & Business Excellence*. 2013;24(7-8):819-834.
 146. Noruzy A, et al., Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: An empirical investigation of manufacturing firms. *The International Journal of Advanced Manufacturing Technology*. 2013;64(5-8): 1073-1085.
 147. Azaranga MR, Gonzalez G, Reavill L. An empirical investigation of the relationship between quality improvement techniques and performance—A Mexican case. *Journal of Quality Management*. 1998; 3(2):265-292.
 148. Dess GG, Robinson Jr RB. Measuring organizational performance in the absence of objective measures: The case of the privately-held firm and conglomerate business unit. *Strategic Management Journal*. 1984;5(3):265-273.

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