The Linkage Between Knowledge Acquisition, Learning Flexibility, and Product Innovation in Small and Medium Enterprises

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Abstract
Knowledge acquisition has been a significant point for research and business practice. Noting that knowledge acquisition (KA) has been identified as an important practice for intellectual development and innovation, this study seeks to establish the relationship between KA through Industry Knowledge and knowledge from prior experience on product innovation (PI). This study, therefore, gives a hypothetical structure to examining knowledge acquisition and product innovation of small and medium scale enterprises; according to the framework, knowledge acquisition interacts with product innovation in the context of a knowledge-based economy. Using Survey data was collected from 500 manufacturing SMEs in the Eastern region of Ghana, the result showed that both knowledge acquisition (Prior Experience and Industry Knowledge) were found to have a statistically significant effect on SMEs' product innovation. The results also revealed that Learning Flexibility partially mediates the relationship between Prior Experience and SME product innovation.
Keywords: Knowledge Acquisition, Learning Flexibility, Product Innovation, Small and Medium Scale Enterprises

Introduction

To maintain a competitive edge in diverse business sectors, new knowledge often arises in which businesses must consistently create new knowledge flows and stocks build-ups and reactivate their knowledge portfolio (Liao & Barnes, 2015). The growing value of knowledge acquisition in recent times has prompted studies on its antecedents and implications (Gligah et al., 2020). Many scholars thus concentrate on the narratives surrounding the development of knowledge (Góra & Góra, 2017; Johnson, 2017; He, et al., 2018). Firms with higher absorptive capacities appear to proactively look for and consume new knowledge irrespective of current performance indicating their learning flexibility (Liao & Barnes, 2015).

Firms need a knowledge base to absorb new ones, without it a firm may be said to be "locked out" for developments (Liao & Barnes, 2015). As firms face various trends, such as changing customer preferences and innovative progression in developing high-quality products are compelled to gather relevant information to respond appropriately to changes by innovating new products to meet customer requirements (Evangelista & Mac, 2016). And that is particularly the case for small and medium-sized businesses (SMEs) which often rely on the capacity to adjust rapidly to client needs as a way of surviving (Al-busaidi, 2020).

Product innovation (PI) which has been perceived as an ever-increasingly pivot to building a sustainable performance measure in an undeniably turbulent marketplace (Cooper, 2014; Li & Atuahene-gima, 2014) has not been fully explored in small and medium scale enterprises (Sok, O'Cass, & Miles, 2016). With the limited knowledge acquisition efforts of SMEs corroborated by the limited resource capabilities in knowledge sources (Simao & Franco, 2018) and the businesses' capability of detecting the importance of knowledge acquisition in enhancing business performance, this study fills that gap (Johnson, 2017; Kaba & Ramaiah, 2019). Noting that, the success of a firm is heavily dependent on its capability to develop innovative products (Donkor et al., 2018; Osei et al., 2016), SMEs in Ghana is expected to continuously explore knowledge as a means to being innovative and competitive (Rajapathirana & Hui, 2018).

Emanating from the need to understand the above concepts in a developing country such as Ghana, this study will explore the effects of knowledge acquisition geared towards product innovation within the manufacturing sector and understand the impact of learning flexibility on the relationship. The rest of the study will present the theoretical background, conceptual and as well as addressing its application to exploring knowledge acquisition and its relationship to product innovation ability. The study then develops hypotheses that examine the direct interaction effects of the dimensions of knowledge acquisition factors and product innovation mediated by learning flexibility. Following it would be the methodology, instruments measurements, analysis and findings, conclusion. Recommendations for future research and constraints are further presented.

Theoretical Background, Hypotheses, and Research Model

The absorptive capacity theory explores to what degree a firm ought to perceive, assimilate, and apply the significance of new external knowledge to accomplish organizational objectives (AHMAD & ERCEK, 2018; Cohen & Levinthal, 1990; Dultra-de-Lima, 2015; Storey & Larbig, 2018; Xie, Zou, & Qi, 2018). Cohen and Levinthal (1990) established the absorptive capacity of an entity as ' a capacity to identify, assimilate, and apply the advantage of new knowledge to beneficial ends. Zahra and George, (2002) offer a point-by-point depiction of

absorptive capacity in which they characterize as a collection of organizational routines and procedures through which organizations obtain, assimilate, transform and leverage information to create dynamic organizational capacity.

The theory expects that for organizations to absorb or retain and utilize new information, they need a knowledge base (Gao et al., 2017). Zahra and George (2002) guarantee that the number of innovations or research projects dependent on new products could be a proportion of a company's level of achievement in change. In essence, the absorptive capability of the receiver of knowledge is defined by the stock of previous knowledge linked *(ibid)*. The theory assumes that the acquisition of new knowledge will permit an organization to turn out to be progressively creative and adaptable and to achieve higher performance levels than it would without acquiring new knowledge (Qiu et al., 2017). The theory also implies that firms with a better ability to absorb new information will have a comparative advantage over lower-skilled firms (Xie et al., 2018).

As a result, proactive behavior of SMEs and competitive aggressiveness through knowledge acquisition will not only enable these manufacturing firms to recognize changes in the market but also act rapidly to cause innovation that can spur firm performance (Hagemeister & Rodríguez-Castellanos, 2019; Liao & Barnes, 2015); such opportunities should, therefore, be identified and implemented by SMEs to fully utilize the benefit for manufacturers to succeed in the market (Bello & Adeoye, 2018).

The Concept of Innovation - Product Innovation (PI)

Innovation has long been argued to be the engine of growth (Fu, Mohnen, & Zanello, 2018). Innovation is crucial to organizational success as the ability to innovate is essential to achieve and maintain a competitive edge(Anning-Dorson, 2017; Fu et al., 2018). Innovation which can be characterized as the application of a firm's innovative concepts is normally premised on creativity, it is thus seen as the triumphant implementation of creative ideas in a firm (Pierre & Fernandez, 2018). Innovation has been discussed in various spheres, dominant amongst them are product and process innovation, incremental and radical innovation, technological and administrative innovation, etc (Cooper, 1997; Li et al., 2006). According to the Oslo Manual (OECD, 2005), the term "innovation" refers to the introduction of a new or enhanced product or procedure as well as a fresh approach to marketing or management method. It suggests the presence of Product innovation, process innovation, marketing innovation, and organizational innovation as four different types of innovation that can be combined categorized into technical and non-technological innovation (Dereli, 2015; Manual, 2018).

In the context of manufacturing firms, innovation may range from innovative processes and knowledge-sharing system intangible assets of the company (Nguyen, et al., 2018), the introduction of a new or enhanced product or procedure advancement (Joueid & Coenders, 2018), a new approach to management (Cooper, 2019; Gao et al., 2017). Noting that innovation is the way toward creating and improving markets, techniques, and products, alongside the objective to the total worth, the advancement in the innovation is fundamental to accomplishing and maintaining a competitive edge (Herman, et al., 2018).

The importance of product innovation as a process has attracted several research studies in different sectors of world economies (Daim & Garces, 2017; Liao & Barnes, 2015; Tohidi & Jabbari, 2014). Product innovation could present itself in various types namely product

improvement and partial changes in the shape or product components, innovating new products and using new techniques in the production process to gain competitive advantage which will transcend into firm performance (Daim & Garces, 2017; Osei et al., 2016; Tohidi & Jabbari, 2014). Product innovation hence encapsulates new products, modifications to the current product design, and the use of new techniques in production methods (Bojica & Fuentes, 2012; Osei et al., 2016; Manual, 2018). Product design innovation refers to the modifications in product shape and packaging without impacting the product's functionality and usage (Brunner et al., 2016). Moreira & Silva (2012) have argued that the entire process of product improvement is driven by customer needs and desires which are translated into specifications to generate business solutions.

When Osei et al (2016) conducted a study on Product Innovation and SMEs Performance in the Manufacturing Sector of Ghana. It studied 400 manufacturing SMEs where respondents were chosen using a non-probability sampling via purposive sampling method. Their results showed a significant relationship between the development of a new product, the introduction of a new product, and the improvement of an existing product with the introduction of a new product having a stronger indication of performance.

This notwithstanding, majority of studies has considered an innovation in its general form, as a result, the goal of this research is to study particularly the relationship between knowledge acquisition and product innovation of Ghanaian manufacturing SME's.

Knowledge Acquisition

Knowledge acquisition has been espoused as the initial stage in the process of knowledge management (Liao & Barnes, 2015). Knowledge acquisition which could be exerted through internal or external sources concerns the acquisition, assimilation, adaptation, and corroboration of knowledge conceptualization, explanation, question formulation or interpretation, and problem-solving or reaching conclusions (Bojica & Fuentes-fuentes, 2019; Evangelista & Mac, 2016; Góra & Góra, 2017)

The accumulation and exploitation of this knowledge may lead the organization to be innovative (Valio & Gonzalez, 2017); the accumulation of knowledge to be innovative is dependent based on the firm's capability to absorb knowledge through its flexible learning mechanisms (Peterson, Decato, & Kolb, 2015). Nevertheless, researchers in the fields of organizational learning and development of knowledge (Basten & Haamann, 2018; Huber et al., 2014; Nonaka & Lewin, 2011; Crescenzi & Gagliardi, 2018; Marin, Marzucchi, & Zoboli, 2015; Rogers, 1998; Solow, 1994; Venkitachalam et al., 2012) have in various ways boldly predicted that organizational performance is more profoundly affected by particular characteristics of knowledge stocks which relates to how many elements of information a company has accrued over time (Crescenzi & Gagliardi, 2018). In the thinking of Johnson, (2017); Zahra and George (2002) describes acquisition as the capacity to gather, comprehend and gain the extraneous information fundamental for an association's tasks. Acquisition ability may further refer to the company's prior experience; a prior level of knowledge; and strength, speed, and the path to acquiring new information, and the capacity for transformation (Beckman & Haunschild, 2002; Tobias, 1994).

Meanwhile, according to Oslo (2005), knowledge acquisition encapsulates how the firm gains information from suppliers, customers or clients, competitors, and open research

establishments for their development practice. Through experience build-up, organizational routines are developed and established which can be used in creating and developing tacit knowledge to value for the organization (Venkitachalam et al., 2012). Thus, the longer the firms experience, the greater the knowledge accumulation to influence the firms' product innovation activities.

When Evangelista & Mac (2016) discussed the concept of learning from experience and deliberate learning through the absorptive capacity of export performance of manufacturing firms in Australia. They viewed knowledge from experience as the primary source of knowledge, they argued that it is reflective in learning by doing which occurs over time. On the other hand, deliberate learning is the gathering of knowledge through articulation and codification (Evangelista & Mac, 2016). In the thinking of Bojica & Fuentes-Fuentes, 2019, the utilization of new knowledge is what influences its relevance. Consequently, the identification and exploitation of opportunities through knowledge acquisition are pivotal. In this way, firm learning flexibility comes in handy through its ability to adopt and adapt to new knowledge emanating from prior experience and industry knowledge in a proactive way. Fayezi et al (2017); Kolb and Kolb (2017) highlight the relevance of learning flexibility as a source of meeting up with the changing market situational demands in a competitive business space. This study thus presents firm learning flexibility in the relationship between knowledge acquisition and product innovation. Deducing from the above discussion, the reasoning of knowledge is similar to knowing something and being able to reason through it with flexible learning mechanisms in its absorption. Based on the foregoing discussions, this study proposes that;

H1: *Prior Experience has a positive relationship with learning flexibility in manufacturing MSME's*

H2: *Industry knowledge has a positive relationship with learning flexibility in manufacturing MSME's*

H3: *Prior Experience has a positive relationship with product innovation in manufacturing MSME's*

H4: *Industry knowledge has a positive relationship with product innovation in manufacturing MSME's*

Learning Flexibility
Flexibility is a wide notion that has several meanings depending on the situation (Christofi et al., 2021). Flexibility is widely regarded as a multifaceted empirical and conceptual concept (Haq et al., 2020). According to Anning-Dorson (2021), the responsiveness of a company to its market environment and tackle growing issues with inventive responses is critical to its competitive success in manufacturing. The formation of a rapidly integrative learning experience is signified by learning flexibility (Brozovic, 2018). A firm's learning flexibility could be assessed by assessing firm learning responses to a variety of changing situations (Wetering, Mikalef & Pateli, 2017). Knowledge acquisition could therefore present a higher chance of innovativeness based on the assertion of firm learning flexibility (Kolb & Kolb, 2017).

For SMEs to respond to a changing market, a flexible system is required (Anning-Dorson, 2021). According to some academics, learning flexibility can help the firm perceive potential, develop new businesses productively, and attain competitive advantage (Brozovic, 2018; Toni &

Tonchia, 2010). This logic affirms that learning flexibility can respond to a business environment that is constantly evolving, thus it can "enable the firm to modify itself to continue to produce, efficiently and/or effectively, market offerings for some market segment(s)". Deducing from the discussions above, and in the context of this study, learning flexibility is seen as the ease with which the manufacturing firms can adapt to a changing knowledge environment.

The possible impact of learning flexibility on knowledge acquisition and product innovation is affirmed by writers that learning flexibility can contribute to both knowledge utilization and innovativeness. While these arguments are worthwhile, further research as to whether learning flexibility is conducive to ambidextrous knowledge to innovation is yet needed. It would therefore be important to assess the effects of firm learning flexibility on the relationships between firm knowledge acquisition and firm's product innovation. Emanating from the aforementioned discussions, this study will hypothesize the following:

H5: Learning flexibility has a positive relationship with product innovation in manufacturing MSME's

H6a: Learning flexibility mediates the relationship between Prior Experience and product innovation in manufacturing MSME's

H6b: Learning flexibility mediates the relationship between Industry knowledge and product innovation in manufacturing MSME's

The hypotheses are summarized in the diagram below:
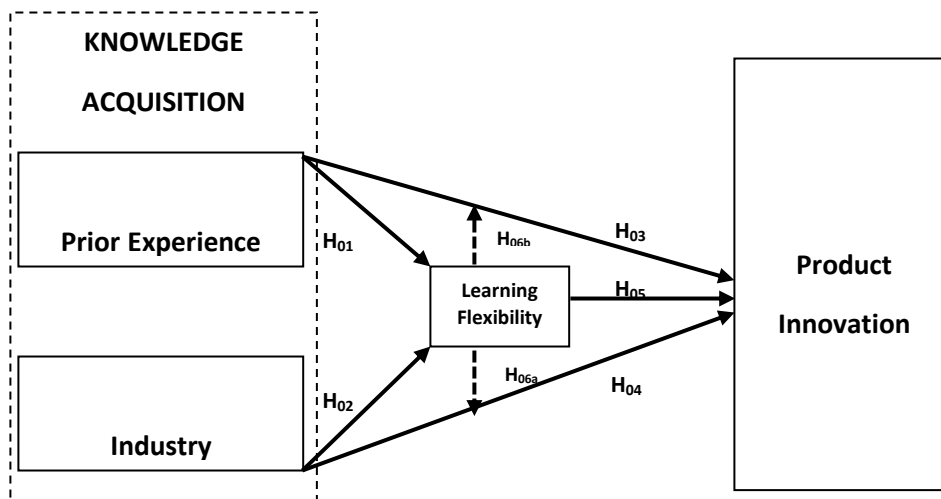
Fig. 1: Research Model

Methodology

Sample and Data Collection

Based on data from the National Board for Small Scale Industries now known as the Ghana Enterprises Agency (GEA) in Ghana, data was gathered from 500 manufacturing SMEs in the Eastern region of Ghana. Responses were generated from on-site data collection from business owners, owner-managers, and managers using a simple random sampling method. The MoTI's definition of SMEs based on a headcount of fewer than 100 employees was followed. The sample identification followed two distinct steps. First, was clustering the SME operators and secondly

selecting the various sample respondents from the 17 operating districts under the National Board for Small Scale Industries. After these 2 steps, 500 firms fulfilled the selection criteria. Of these, 254 firms filled in the questionnaire, out of these 14 responses were rejected due to incomplete responses representing a 48% valid response rate.

Variables and Measures

Using a Five-point Likert scale point (1="Strongly Disagree" to 5= "Strongly Agree"), each item was measured. Knowledge acquisition measures comprising of Industry knowledge and knowledge from prior experience were adopted and adapted from the works of Hailikari, et al (2008); Huber (2014). The scale for Learning Flexibility was operationalized using three items from literature influenced by (Brozovic, 2018) the items are related to the absorption coordination of the firms. Measures for product innovation which is the last scale was adopted and modified from Harahap, et al., (2017); Osei et al., (2016). It is comprised of six items reflecting the capacity of the firm in coming up with new products, product design modification, product styles, and features, new product lines, modifying current products and business processes. The demographic profile of the respondents formed the preliminary part.

Data Analysis Approach

For this study, Statistical Package for Social Sciences (SPSS) version 23 and Smart PLS 3.0 software were utilized to conduct descriptive statistics and inferential statistics respectively. Researchers have evaluated Smart PLS 3 as one of the statistical data analysis techniques they utilize because of its applicability for any sample size, i.e., it can be used with small and unlimited sample sizes as well as of formative indicators (Hair et al., 2013). The data analysis procedure was initiated by coding, cleaning, and preparing for analysis screening.

Validity of the model measurement was reported through the model loading, reliability, and validity. Cross loading and discriminant validity was assessed using Fornell and Larcker criterion (Hair et al., 2014). Hetero trait-Mono trait (HTMT), which was also developed to arrest the insensitivity of the Fornell and Larcker and cross-loading criterion of ratio (Henseler et al., 2016). Finally, based on the confidence, 5000 bootstrapping with replacement and standard error was used to test hypotheses (Hair et al., 2013). Collinearity, f-value, p-value, path coefficient, coefficients of determination (R^2) f^2 effect size, and q^2 effect size were considered in the study under the structural model.

Results and Discussions
Firm Characteristics

With a study sample of 500 manufacturing SMEs in the eastern region of Ghana and a total of 240 valid responses, 130 were male representing 54.2% as against 110 females representing 45.8%. This indicates that more males are in the SME manufacturing sector than their female counterparts. Ninety-nine (99) representing 41.2% respondents were within the 30-39 age bracket, followed by 40-49 years, 73 respondents constituting 30.9%. In all, 40 respondents representing 16.7% were within the 20-29 age bracket. Again, 24 respondents representing 10% were above 50 years. The findings indicate that the SMEs field is characterized by predominantly young people. When asked whether firms have an R&D unit, the majority of the SMEs (192 representing 80%) said No as against 48 respondents representing 20.0%

responded in the affirmative. This indicates the appalling state of R&D units in Ghanaian SMEs. The majority of the manufacturing SMEs engaged in food processing (93 representing 38.8%), indicating the dominance of food-related production in manufacturing SMEs in Ghana operating over the year. More so, 92 responses representing 42.0% of the sample are owner-managers, 66 responses representing 30.1% are firm executives and 61 responses representing 27.9% are Managers. This gives credence to the fact that most Ghanaian SMEs are Owner-Managed. Further demographic information is presented in Table 4 below:

Table 1: Firm Characteristics/Respondent Data

Variables	Category	Frequency (N = 240)	Percent (%)
Firm Specific Factors			
Industry	Metal Fabrication	51	21.2
	Food Processing	93	38.8
	Agro-based	31	12.9
	Others	65	27.1
Firm Size (Employees)	2 – 30	205	85.4
	31 – 99	31	12.9
	> 99	4	1.7
Research & Dev't (R&D)	Yes	48	20.0
	No	192	80.0
Respondent Factors			
Gender	Male	130	54.2
	Female	110	45.8
Respondent Age (years)	< 20	4	1.7
	20-29	40	16.7
	30-39	99	41.2
	40-49	73	30.4
	50+	24	10.0
Position in the Firm	Owner-Manager	92	42.0
	Executive	66	30.1
	Manager	61	27.9

Source: Field Survey (2021)

Descriptive and Correlation Analyses

The descriptive analysis shows that all the two (2) constructs of *knowledge acquisition* explored in the study scored a mean above 3.50 indicating a significant role in stimulating Product Innovation through Learning Flexibility. Table 2 below shows the correlation analysis among the various constructs of the study.

Table 2: Descriptive Statistics and Correlation Analysis

Variables	Mean	StD	1	2	3	4
1. Product Innovation	4.165	0.762	1			
2. Learning Flexibility	3.910	1.104	.499**	1		
3. Prior Experience	3.740	1.069	.796**	.511**	1	
4. Industry Knowledge	4.093	1.195	.627**	.460**	.637**	1

Table 2 above, also showed Product Innovation scored (Mean = 4.165; SD=0.762). Industry Knowledge scored (Mean = 3.98; SD=0.975) and Prior Experience scored (Mean = 3.910; SD=1.104). The result showed that all two (2) dimensions of *knowledge acquisition* correlated positively with the Learning Flexibility of the firms relatively yielded the highest influence on the Product Innovation of the SMEs. The observations are in line with extant previous literature that emphasizes that innovation is a social process rooted in the environment of the local socio-institution that eventually precipitates greater social ties which further stimulate a higher level of innovation in a competitive environment (Mehralian et al., 2018; Tracey & Stott, 2017).

Measurement Model Assessment
The study employed CFA to assess the validity and reliability of the constructs used in the study. The study used composite reliability.

Table 3: Validity and Reliability

Constructs	Items	Loading	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Prior Experience	KE1	0.827	0.836	0.838	0.891	0.671
	KE2	0.832				
	KE3	0.811				
	KE4	0.805				
Industry Knowledge	KI1	0.795	0.876	0.879	0.910	0.669
	KI2	0.820				
	KI3	0.807				
	KI4	0.855				
	KI5	0.810				
Learning Flexibility	LF1	0.879	0.858	0.859	0.913	0.779
	LF2	0.873				
	LF3	0.895				
Product Innovation	PI1	0.799	0.934	0.937	0.948	0.753
	PI2	0.878				
	PI3	0.913				
	PI4	0.882				
	PI5	0.896				
	PI6	0.835				

From table 3 above, the result showed good construct reliability. All the latent variables showed CR values above 0.7 as recommended by (Hair et al., 2011). The study further explores the internal consistency of the latent variables using Cronbach Alpha. The result as presented in Table 3 revealed that all the latent variables recorded CA values above 0.6 thresholds recommended by (Huang et al., 2017; Nuanally and Berntein, 1994). AVE was further employed to examine convergent validity. The result of the AVE showed that all the constructs scored AVE values above 0.5 as recommended by (Hair et al., 2017; Henseler et al., 2016). Additionally, discriminant validity was explored using the Fornell & Larcker, (1981) criterion and the HTMT test as suggested by (Henseler et al., 2016). Both tests as shown in Tables 4 and 5 respectively, confirming the existence of discriminant validity in the constructs.

Table 4 Discriminant Validity (Fornell Larcker Criterion)

Constructs	1	2	3	4
1. Prior Experience	0.819			
2. Industry Knowledge	0.537	0.818		
3. Learning Flexibility	0.548	0.701	0.882	
4. Product Innovation	0.654	0.656	0.653	0.868

Source: Field Survey, 2021

Table 5: Heterotrait-Monotrait Ratio (HTMT)

Constructs	1	2	3	4
Prior Experience				
Industry Knowledge	0.622			
Learning Flexibility	0.643	0.806		
Product Innovation	0.737	0.716	0.729	

Source: Field Survey, 2021

Structural Model and Hypotheses Testing

The study envisaged contributing to the development and validation of the Absorptive Capacity Theory by evaluating SMEs ' view on the role of *knowledge acquisition* in generating learning flexibility to stimulate product innovation among SMEs.
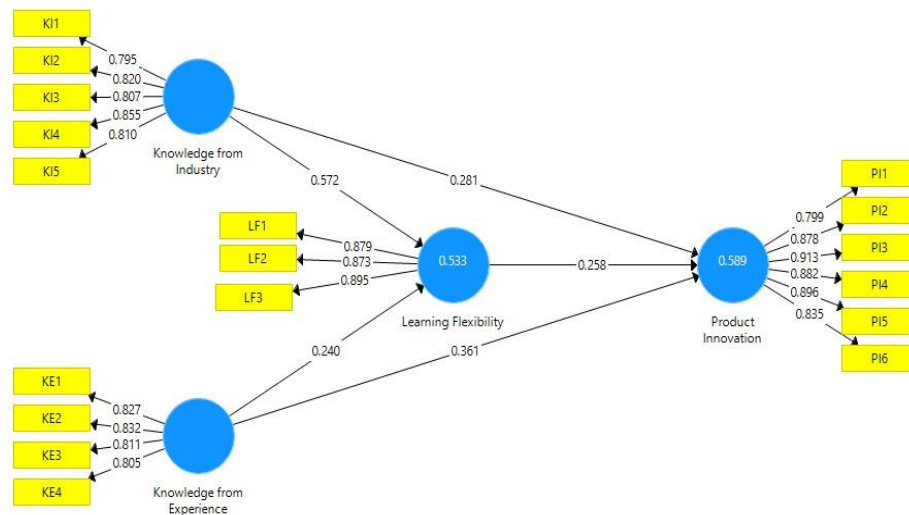

Figure 2: Measurement Model for SMEs Product Innovation Performance

Figure 2 above indicates the hypotheses and construct relationships that were tested using the standardized path coefficients. The path's significance level was calculated using the bootstrap resampling procedure (Vinzi, 2013; Henseler et al., 2009) with 500 iterations of resampling (Chin, 1998). The results as presented, show that the model accounts for 53% of variations in Learning Flexibility and 59% toward Product Innovation as depicted by Figure 2

above. The results presented in Table 6 below show that both dimensions of *knowledge acquisition (*Prior Experience and Industry Knowledge) were found to have a statistically significant effect on Learning Flexibility (all with p< 0.05, thus confirming hypotheses H_1 and H_2. The result again showed that both *knowledge acquisition (*Prior Experience and Industry Knowledge) were found to have a statistically significant effect on SMEs' product innovation (all with p< 0.05, thus confirming hypotheses H_3 and H_4.

Again, the result showed that learning flexibility was found to have a statistically significant effect on SMEs' product innovation (with p< 0.05), thus confirming hypothesis H_5. In all, all four (4) direct hypotheses were supported.

The study further examined the indirect (mediating) relationships using Preacher & Hayes, (2008) recommended compliance by Hair et al. (2013). This study envisaged that factors (learning flexibility) play an important mediating role in the model. The results also revealed that Learning Flexibility partially mediates the relationship between Prior Experience and SME product innovation (β=0. 064, t=2.084, p<0.05), learning flexibility partially mediates the relationship between Industry Knowledge and SME product innovation (β=0. 147, t=2.274, p<0.05). The sixth hypothesis of the study is therefore confirmed and concludes that learning flexibility plays an important mediating role between *knowledge acquisition* and SMEs product innovation. The outcome of the study revealed that all six [6] hypotheses were supported as shown in Table 6 below. Table 6 illustrates the summary of the structural model hypotheses testing results.

Table 6: Structural Model and Hypotheses Testing

Hypotheses	Path Coefficient	T Statistics	P Values	Results
H_1: Prior Experience -> Learning Flexibility	0.243	3.765	0.000	Supported
H_2: Industry Knowledge -> Learning Flexibility	0.570	9.127	0.000	Supported
H_3: Prior Experience -> Product Innovation	0.351	3.834	0.000	Supported
H_4: Industry Knowledge -> Product Innovation	0.291	2.641	0.009	Supported
H_5: Learning Flexibility -> Product Innovation	0.260	2.751	0.006	Supported
H_{6a}:Prior Experience -> Learning Flexibility -> Product Innovation	0.064	2.084	0.038	Supported
H_{6b}:Industry Knowledge -> Learning Flexibility -> Product Innovation	0.147	2.724	0.007	Supported

Conclusion and Contributions

By examining SMEs' views on the importance of knowledge acquisition in fostering learning flexibility to drive product innovation among SMEs, the study aimed to make a significant contribution and assessment of SME Absorptive Capacity. Acquiring new knowledge would enable an organization to become increasingly innovative and adaptive, as well as to attain higher levels of performance than it would otherwise. According to the findings of the study as discussed earlier, both of the primary components i.e. prior experience and industry knowledge play a major influence in encouraging product innovation through learning flexibility.

The results as presented showed that both dimensions of *knowledge acquisition (*Prior Experience and Industry Knowledge) were found to have a statistically significant effect on Learning Flexibility. Learning flexibility was thus proven to have a statistically significant effect on SMEs' product innovation. Knowledge accumulation and exploitation influences innovation in the organization. It is therefore critical for firms to continuously improve their ability to accommodate innovations since the accumulation of information required to be inventive is dependent on the firm's ability to absorb knowledge through its flexible learning mechanisms.

The study outcome unveiled both prior experience (prior knowledge) and industry expertise (industry knowledge) were found to have a statistically significant impact on SMEs' product innovation. Thus the outcome of this study indicates that knowledge acquisition has a positive relationship with product innovation. The works of Mehralian et al., (2018) and Tracey & Stott, (2017) agree with the findings of this study highlighting that innovation is a dynamic system grounded in the organizations' socio-economic environment, which in turn stimulates more innovation in a competitive setting. In furtherance to that, this outcome supports the previous view on product innovation (Liao & Barnes, 2015; Osei et al., 2016).

On another score, the evidence of this study gives a clear indication of SME learning flexibility on knowledge acquisition and product innovation. Learning Flexibility partially mediates the association between prior experience and SME product innovation, confirming and concluding that learning flexibility represents an essential mediating function between acquiring knowledge and SME product innovation. In light of the study conducted, learning flexibility has been seen to serve as a significant mediating role in the model in this study. Hence this study concludes that learning flexibility strengthens the relationship between knowledge acquisition and SMEs product innovation'. Thus a flexible system is required for SMEs to adjust to a changing market. As a result, learning flexibility can assist a company in seeing potential, developing new enterprises effectively, and gaining a competitive advantage.

The introduction of learning flexibility in the relationship between SME knowledge acquisition and product innovation presents a unique perspective of the Ghanaian SME knowledge base. The study is further presented as one of the first studies to examine knowledge acquisition measures and product innovation in the Ghanaian SME context. It is worth noting that the majority of SMEs are not having any R&D unit in pursuit of firm innovation agenda.

The study makes an important contribution to the absorptive capacity theory, by introducing SME learning flexibility in the knowledge absorption and product innovation relationship. In other words, for Ghanaian SME firms to incorporate knowledge acquired, they should be able to enhance their learning absorption flexibility to foster innovation. Furthermore, the study adds to the extant literature on SME knowledge management especially in knowledge acquisition and its mediation influence. Consequentially, the effectiveness of knowledge

acquired by SMEs is subject to other influential factors. The partial mediation of learning flexibility calls for its attention in the full realization of beneficial knowledge acquisition.

Concerning the practical contributions, the study presents a relevant perspective for managers. The implications of the empirical evidence show that to realize product innovation success, more attention must be accorded to the firm's learning flexibility. A successful product innovation drive of firms is therefore enhanced by effective knowledge acquisition mechanisms. The study further suggests that in the context of SME knowledge-base, the concept of learning flexibility should be emphasized in knowledge absorptive studies.

Limitations and Future Research

The present study is cross-sectional and not longitudinal, and the effects of new knowledge acquisition on product innovation require a margin of time for assimilation and application. Similar research work applying longitudinal measures may be conducted to corroborate the research findings.

Noting that the study results indicated SME learning flexibility partially mediates its knowledge acquisition and product innovation, this rather interesting revelation needs further studies. Also, the variables can be replicated in different sectors to establish their effects. These limitations notwithstanding, the study has unveiled relevant contributions to the knowledge field.

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