

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
INSTITUTE OF DISTANCE LEARNING (IDL)

KNUST

**THE EFFECT OF PROCESS INNOVATION ON FIRM PERFORMANCE:
THE MEDIATING ROLE OF PRODUCT PACKAGING**

BY

ADAMS ANTHONY

(PG9247921)

A THESIS SUBMITTED TO THE INSTITUTE OF DISTANCE LEARNING,
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY IN
PARTIAL FULFILLMENT FOR THE REQUIREMENT OF DEGREE OF
MASTER OF SCIENCE IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

NOVEMBER, 2023

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, It contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science And Technology, Kumasi or any other educational institution, except where due acknowledgement is made.

NAME: Adams Anthony
(PG 9247921) Signature Date

Certified By:
Dr. Cosmos Benjamin Osei
(Supervisor) Signature Date

Professor David Asamoah
(Head of Department SCIS) Signature Date

DEDICATION

This thesis is dedicated to my grandfather who inspired me in my educational journey

KNUST



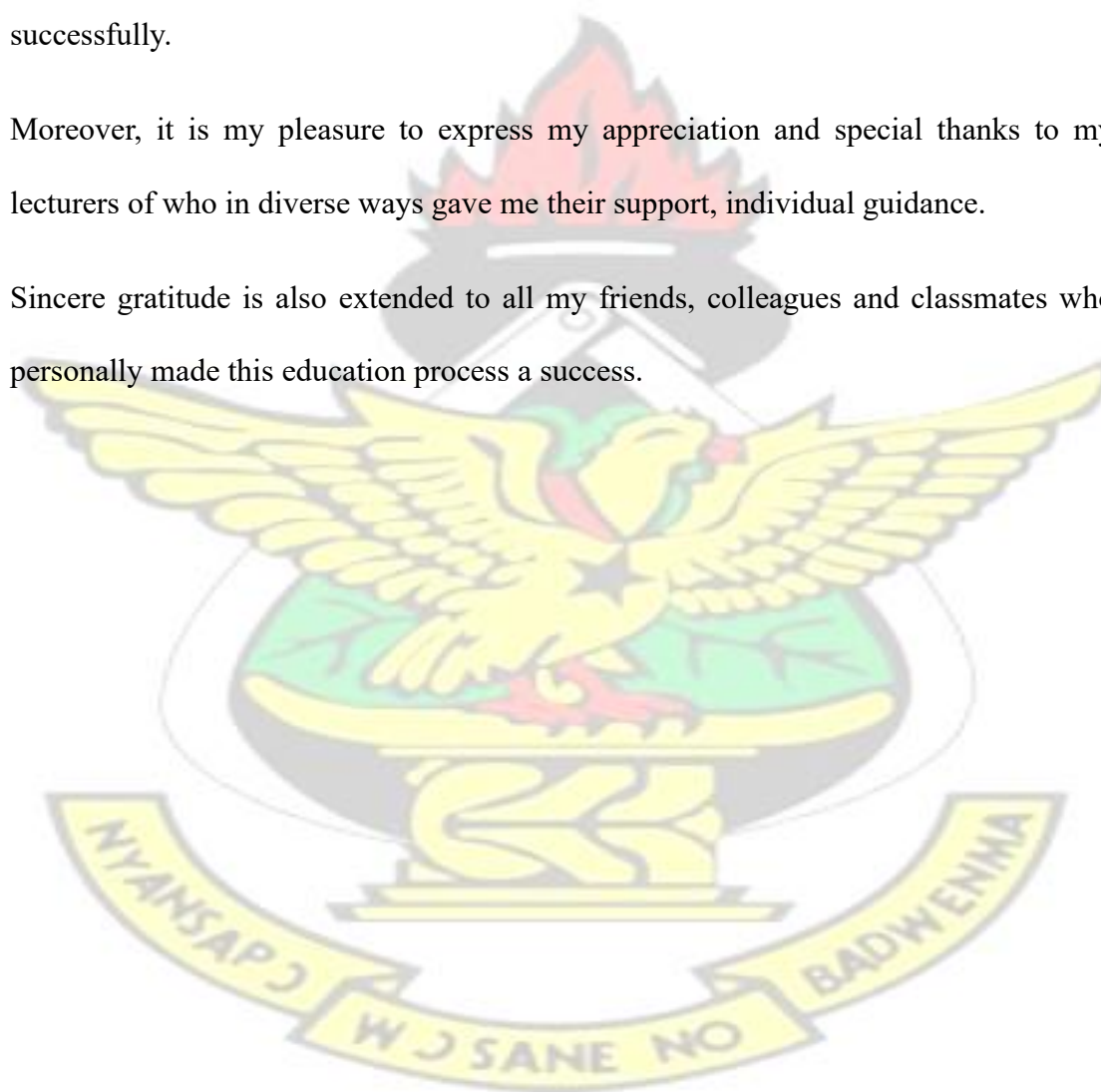
ACKNOWLEDGEMENT

I would like to express my gratitude to Jehovah God for seeing me climb the educational ladder to this level.

I wish to also express my profound gratitude to Dr. Cosmos Benjamin, my supervisor for his kind support throughout this project. He has been a great asset to this project and I thank him so much for his instrumental role in helping me complete this thesis successfully.

Moreover, it is my pleasure to express my appreciation and special thanks to my lecturers of who in diverse ways gave me their support, individual guidance.

Sincere gratitude is also extended to all my friends, colleagues and classmates who personally made this education process a success.



ABSTRACT

The primary purpose of the research was to look at how process innovation affects manufacturing companies' operational performance through the mediating function of product packaging. The study used a cross-sectional explanatory survey methodology, and quantitative data was analysed using inductive reasoning. Quantitative approaches were employed in all phases from data collection and analysis to interpretation. The study included 220 high-ranking business professionals from supply chain and logistics, manufacturing, quality control, and related fields. Participants were purposively selected for the study. Using Structural Equation Modeling, the study confirmed the hypotheses (SmartPLS 4). The data was presented using descriptive statistics. According to the results, process innovation has positive and significant effect on operational performance of the manufacturing firms. The research also found that product packaging mediated the association between process innovation and operational performance. The implication of the results is that manufacturing enterprises would benefit from greater operational performance if they invested in process innovation and product packaging.

TABLE OF CONTENT

DECLARATION.....	ii
DEDICATION	iii
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATION.....	xi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Introduction of the study	1
1.2 Statement of the Problem	4
1.3 Purpose of the Study	5
1.4 Research Questions	6
1.5 Significance of the Study	6
1.6 Scope of the Study.....	7
1.7 Research Methodology.....	7
1.8 Limitations	8
1.9 Organization of the study	8
CHAPTER TWO	10
LITERATURE REVIEW.....	10
2.1 Introduction	10
2.2 Conceptual Review	10
2.2.1 Product Packaging	10
2.2.2 Operational Performance	12
2.2.3 Process Innovation.....	15
2.3 Theoretical Review	17
2.3.1 Resource-Based View (RBV) Theory	18
2.4 Conceptual framework	20
2.5 Empirical Review	23
2.6 Research Hypothesis	29
CHAPTER THREE	31
RESEARCH METHODOLOGY.....	31
3.1 Introduction	31
3.2 Research Design.....	31
3.3 Population of the Study	33
3.4 Sample Size and Sampling Technique	34

3.5 Data Collection.....	35
3.5.1 Construct Operationalization and Measurement	37
3.6 Data Processing and Analysis	38
3.7 Reliability and Validity.....	39
3.7.1 Reliability	39
3.7.2 Validity.....	40
3.8 Ethical limitation	41
3.9 Profile of the study	42
3.10 Chapter Summary.....	45
CHAPTER FOUR.....	46
DATA ANALYSIS, PRESENTATION AND DISCUSSION OF RESULT	46
4.1 Introduction	46
4.2 Demographic Information	46
4.3 Reliability analysis	47
4.3.1 Exploratory Factor Analysis	48
4.3.2 Test for Common Method Bias and Sampling Adequacy	48
4.4.1 Reliability	51
4.4.2 Validity.....	52
4.5 Model Fit Summary	55
4.6 Descriptive Statistics	56
4.7.1 Coefficient of Determination and Predictive Power.....	57
4.8 Hypotheses for Direct and Indirect Relationship	58
4.9 Discussion of Results	61
4.9.1 Effect of Process Innovation on Operational Performance	61
4.9.2 Effect of Process Innovation on Product Packaging.....	62
4.9.3 The mediating role of Product Packaging in the Relationship between Process	64
CHAPTER FIVE	66
SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH.....	66
5.1 Introduction	66
5.2 Summary of Findings	66
5.2.1 Effect of Process Innovation on Operational Performance	66
5.2.2 Effect of Process Innovation on Product Packaging.....	67
5.2.3 The mediating role of Product Packaging in the Relationship between Process Innovation on Operational Performance.....	68
5.3 Conclusion.....	69
5.4 Recommendation.....	69

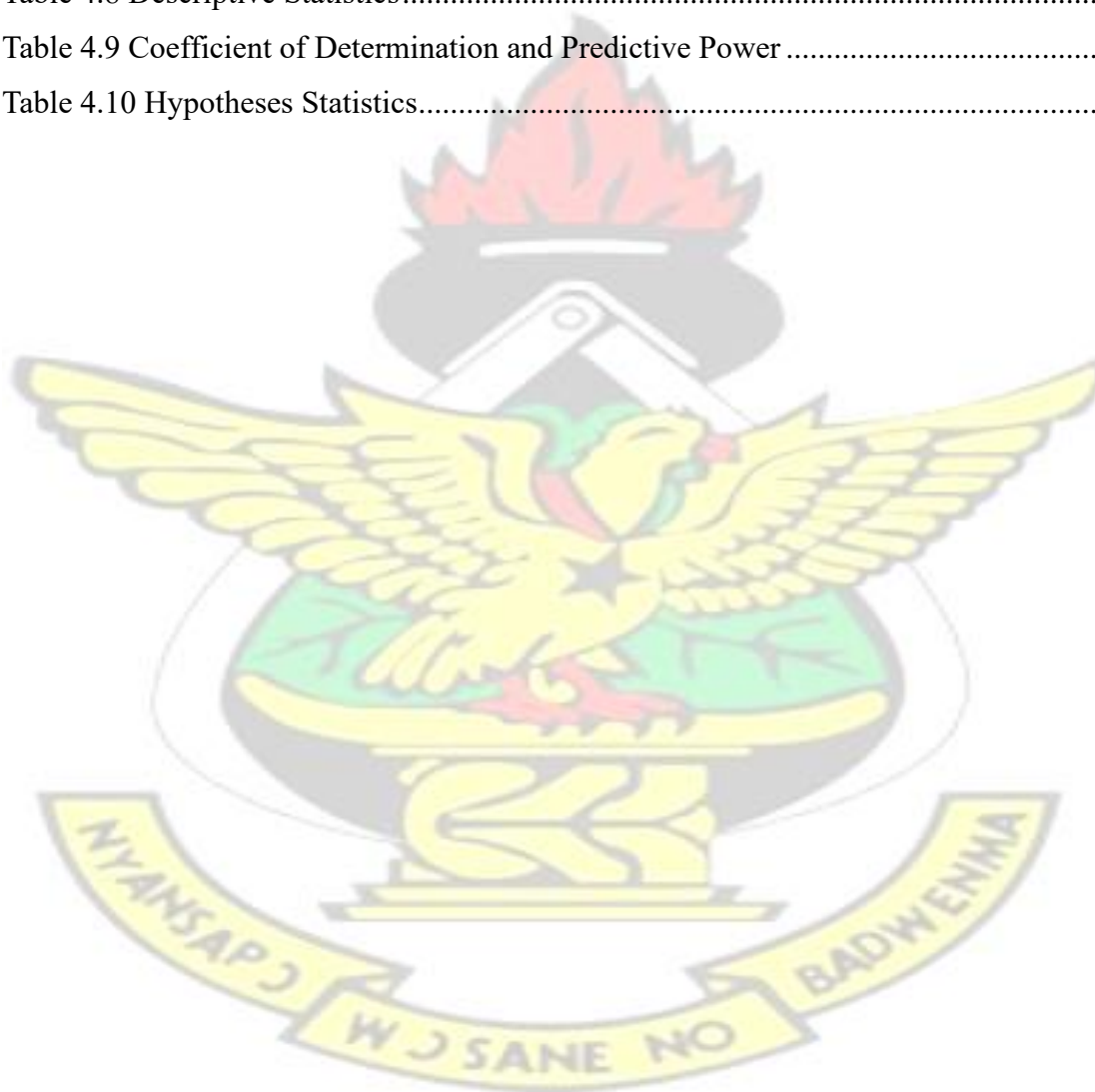
5.5 Limitations and Future Research Direction	71
REFERENCES	72
APPENDICES	88

KNUST



LIST OF TABLES

Table 4.1 Demographic Information.....	47
Table 4.2 Common Method Bias	50
Table 4.3 KMO and Bartlett's Test.....	51
Table 4.4 Confirmatory Factor Analysis	53
Table 4.5 Fornell-Larcker criterion.....	54
Table 4.6 Heterotrait-monotrait ratio (HTMT) - Matrix.....	55
Table 4.7 Fit Summary.....	55
Table 4.8 Descriptive Statistics.....	56
Table 4.9 Coefficient of Determination and Predictive Power	57
Table 4.10 Hypotheses Statistics.....	60



LIST OF FIGURES

Figure 2.1 Conceptual Framework	22
Figure 4.1 Measurement Model Assessment	58
Figure 4.2 Structure Model Evaluation.....	61

KNUST



LIST OF ABBREVIATION

AVE	Average Variance Extracted
CA	Cronbach's alpha
CR	Composite Reliability
FL	Factor Loading
FP	firm Performance
HTMT	heterotrait-Monotrait Ratio
IC	Intellectual Capital
KM	knowledge Management
OP	operational performance
PLS	Partial Least Squares
R&D	Research and Development
RBV	Resource-Based View Theory
SEM	Structural Equation Modelling
SI	supplier integration
SMEs	Small and Medium-Sized Enterprises
SPSS	Statistical Package for the Social Sciences.
TL	Transformational Leadership
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Introduction of the study

Given that developed as well as developing nations' manufacturing sector accounts for the largest share of the industrial sector (Haraguchi, Cheng, and Smeets, 2017). The manufacturing industries refer to those industries which involve the manufacture and processing of articles and indulge in either creating new commodities or adding value (Pfeiffer, 2017). Dangelico and Vocalelli (2017) describe the term as a manufacturing and marketing segment focused on the manufacture, processing, or preparation of raw material and commodity products, the finished products could be used both as a finished good of production or for sale to customers (Xu, Serrano, and Lin, 2017). Whereas, as per Hitomi (2017), a manufacturing sector could be seen as an economic activity wherein, on a large scale, the material is converted into finished products (Kayanula and Quartey 2000). Added to that, the National Manufacturing Association (USA) proposed the term as the firms engaged in manufacturing and processing of products. The indigenous manufacturing industry supports local businesses and employs a major section of the increasing workforce. Manufacturing, food processing, construction, a small glass industry, textiles and clothing, chemicals and pharmaceuticals, metal processing, furniture and wood products, and leather and footwear are among Ghana's most important manufacturing industries (Addo, 2017).

Despite the contribution of manufacturing firms to national development, they face numerous challenges. In the midst of these challenges faced by manufacturing firms, the needs of consumers are progressively extending from just quality to incorporating sustainability, competitive prices, and value for money (Tell et al., 2016). This necessitates the need to reduce waste along the production system and producing

products that meets the demands of the consumer. This is vital to embrace critical changes in the journey to upgrade operational proficiency (Dania et al., 2018). Meanwhile, manufacturing firms noted faces multiple constraints including operational and financial constraints (Hessel and Parker, 2013; Clegg, 2018). Which directly or indirectly affects the operational performance of firms.

Among the issues that have plagued this industry is that most manufacturers have not kept up with technological advancements and have failed to invest in new and modernized equipment, resulting in higher electricity usage (Abor and Quartey, 2010). Inadequacies in terms of innovation, knowledge inadequacies, financial constraints, and the quality of locally produced items, as well as operational inefficiencies, and insufficient knowledge are just a few of the identified constraints faced by manufacturing firms in emerging economies like Ghana (Abor, 2015; Oppong et al., 2014; Quartey et al., 2017; Sitharam and Hoque, 2016). All these challenges affect the operational performance of manufacturing firms.

Operational performance represents the level of improvement in an organization's cost-cutting and competency-upgrading efforts across the whole supply chain (Das, 2018). Delivery and production of quality products, which are dimensions of operational performance, have become one of the most ambitious components that will help manufacturing firms stay and win in the international marketplace when they implement effective operational performance measures (Yu et al., 2018).

Additionally, manufacturing firms operate in a complex, fast-changing environment (Chen et al., 2013; Haleem et al., 2018; Wiengarten et al., 2016), and they increasingly rely on complex networks of supply chain partners to deliver goods and services in the right quantity, at the right time, and in the right place, all while facing

constant cost and quality pressures. To obtain a competitive advantage, companies are increasingly employing advanced marketing tactics such as packaging and branding (Retnowati et al., 2021; Panda et al., 2022).

Packaging is widely recognized to be the most effective tool for informing customers on whatever facts companies choose to transmit about a product to prospective customers (Cachero-Martinez, 2020). People's perceptions of packaged goods are fairly positive at this point, owing to manufacturer competitiveness. It has necessitated the continual decoding of any information believed to be necessary for serving the needs of rational consumers or having an influence on consumers' purchasing decisions. The impact of food labels on customers' purchasing decisions, a rapidly expanding phenomena in the global food industry, has not received enough attention recently, claim Kumar and Kapoor (2017). According to the broad consensus, packaged products may leverage an effective communicable label as a key characteristic for product distinction in a fierce world market context (Kumar and Kapoor, 2017). As a result, packaging is an essential instrument for marketing and crucial for gaining a competitive edge in the marketing sector (Odartei-Lampsey, 2018). Packaging offers several benefits, including enticing customers, safeguarding the product's contents, and providing information about the product. There has been a lot of empirical research in recent years to suggest packaging influences consumer purchase decisions. However, how packaging may aid manufacturing firms to reap superior performance remain unexplored. Hence this study examines the effect of process innovation on firm performance: the mediating role of product packaging among manufacturing firms in Ghana.

1.2 Statement of the Problem

Despite several benefits of manufacturing firms in Ghana's economy, the performance of domestic firms in sub-Saharan Africa, especially, Ghana has been facing a myriad mainly due to lack of effective marketing strategies resulting in slow growth of performance in this industry (Memia, 2018). Packaging as a brand identifier and a producer of brand image is a second study topic that blends marketing and brand management (Al-Samarraie, Eldenfria, Dodoo, Alzahrani, Alalwan, (2019); Karnal, Machiels, Orth, and Mai (2016) also focused on packaging-related factors in their study because of its vital function in a company's marketing communications. Other studies (Al-Samarraie, et al., 2019; Valaskova, Kliestikova, and Krizanova, 2018; Chico et al., 2017; Ampuero and Vila, 2006) focused on the role that packaging plays in influencing customer behavior during advertising and sales promotions. Existing literature on packaging has primarily concentrated on one or two of the following: consumers' awareness, knowledge, understanding, and usage of food labels (Spence et al., 2018; Orzan et al., 2018; Waheed et al., 2018; Retnowati et al., 2021; Retnowati et al., 2021; Panda et al., 2022). However, none of these studies have extended the discussion by exploring how the packaging of manufacturing products may affect the performance of the firm. In the past decade, most companies have heavily invested in packaging, with no empirical justification of whether their performance is being driven by packaging. Managers are therefore uncertain whether to continue investing in packaging. The limited evidence on the phenomena creates a gap in the literature which requires urgent attention to guide managers.

Innovation is a definite approach to boosting firm performance in a competitive world, where innovation is a key to success (Osei et al., 2016; Fu, Mohnen, and Zanello, 2018). Firms are still facing a low degree of innovation to provide quality

products to retain and increase their market competitiveness (Asare, 2010; Asiedu, 2015; Kiziloglu, 2015; Osei et al., 2016). Firms will only survive if they can compete with larger (local and international) companies (McKelvie et al., 2017). Given that a country's manufacturing potential and economic growth depend on its inventive success (Abor, 2015; Afriyie et al., 2019), much more has to be done in this area, especially regarding innovative product performance and overall business performance (Liao and Barnes, 2015; Osei et al., 2016; Wadho and Chaudhry, 2018).

Studies show that performance problems might be caused by SME inability to produce new products on time to meet market needs. Firms' innovation is not adequately evaluated, and organizations and methods targeted in these units are inadequate (Ali, et al, 2017; Chong, et al., 2019). A study (Osei et al., 2016) on product innovation by manufacturing in Ghana indicated that new product activities were low. Superior innovation is challenging and few organizations are successful; this is a problem for businesses and their innovation team (Iwu, 2010; Hnell, Rovira, and Tolstoy, 2017). This study examines the link between packaging, innovation, and the operational performance of manufacturing SMEs in Ghana. This study intends to add to the limited research on the innovative performance of Ghanaian manufacturing firms (Shafiwu and Mohammed, 2013). No research has been done in Ghana on manufacturing firm packaging, its contribution to innovation, and operational performance, to the researcher's knowledge.

1.3 Purpose of the Study

This study was conducted to examine the effect of process innovation on firm performance: the mediating role of product packaging among manufacturing firms in developing economies. To achieve the purpose of the study, the research envisages;

1. To examine the relationship between process innovation and firm Performance among manufacturing firms.
2. To assess the relationship between process innovation and product packaging among manufacturing firms.
3. To examine the mediating role of product packaging in the relationship between process innovation and firm Performance among manufacturing firms.

1.4 Research Questions

In order to achieve the main objective of the study, the research seeks to answer the following:

1. What is the relationship between process innovation and firm Performance among manufacturing firms?
2. What is the relationship between process innovation and product packaging among manufacturing firms?
3. What is the mediating role of product packaging in the relationship between process innovation and firm Performance among manufacturing firms?

1.5 Significance of the Study

This study offers multiple contributions. Notwithstanding the numerous types of research on innovation, the roles of packaging and FP are uncertain. Therefore, the researcher contends that, when the packaging is well managed, it is likely to generate innovation which will automatically drive enhanced performance. The study will also improve the knowledge of innovation serving as a mediator in the relationship between process innovation and FP. Thus, the study will test the mediation effect of packaging in line with Pati et al. (2016), which ascertain that the role of testing the mediation effect between process innovation and FP has been ignored in the previous

research. The findings of the study expand perspectives on the variables used in the study. In as much as these variables have received much attention in research, it has been researched separately and in a different context. A combination of these factors in a single study, therefore, presents a unique contribution to the study. Therefore, this study may provide a better understanding to both practitioners and regulatory institutions regarding process innovation, packaging and their outcome in the Ghanaian manufacturing context.

1.6 Scope of the Study

The study investigates the influence of process innovation on FP among manufacturing firms in Ghana, mediated by packaging. This study focuses on packaging, innovation, and firm performance, which has not been adequately explored. Also, reviewed literature identified that packaging has not yet been tested within the manufacturing setting. The study employed the Resource Base View Theory from which the variables of the study are used.

1.7 Research Methodology

This study employed a cross-sectional design. The choice of this survey method lies in its ability to make inferences. Following a review of existing literature, a structured questionnaire will be used to collect primary data for the study. The items will be extracted from existing literature. The population of the study included all senior managers of manufacturing firms in the Greater Accra Region. PLS-SEM (Partial Least Squares Structural Equation Modelling) and SPSS will combine to analyze the data collected.

1.8 Limitations

The research limits the topic to “investigates the influence of process innovation on FP among manufacturing firms in Ghana, mediated by packaging among manufacturing firms in the Greater Accra Region. One likely limitation relates to the use of the straight inquiry approach to information gathering. In this context, conclusions and recommendations are based on the information that are provided by the respondents. As a result, the researcher cannot be so sure of the information they will provide. Again, respondents could be reluctant and suspicious of the information being retrieved from them due to competition in most firms. Another limitation anticipated by the researcher in conducting this research is the issue of time and limited resources.

Finally, the conclusions and recommendations in this study are directly proportional to the data that will be available to the author which is in line with answering the research questions. In spite of these challenges, however, the researcher hopes to give off the best to ensure that this research work is standard and meets the requirements of writing set by the university.

1.9 Organization of the study

There are five key chapters in the research, with chapters one through five being the most significant. The study's introduction is presented in the first chapter. It goes over the study's background, the problem statement, the research questions, the study's objectives, the significance of the study, the scope and limitations of the study, and the organization of the study's chapters. The second chapter, titled Chapter Two, is concerned with the review of existing literature on the subject of the study. Also, chapter three thoroughly deals with the methodology of the study. It covers the research design, data, and source, instrument for data collection, tools for data

analysis, etc. The interpretation of the data and discussion of the findings will be addressed in chapter four, and chapter five will give a summary of the key conclusions and recommendations for further study.

KNUST



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter Two of this thesis is organised into four main sub-headings. The chapter provides information organised under conceptual review, theoretical review, empirical review, and finally the research model and hypotheses development. The conceptual review section provides definitions, operationalizations, and how the constructs have been used in this study. The theoretical review section also provides the theoretical underpinnings of the study. The various prepositions proposed in this study were depicted using a conceptual framework, and various relationships were well discussed. The chapter ends with a summary which also highlights the gap explored in this study.

2.2 Conceptual Review

This section provides definitions, operationalizations and how the constructs have been used in this study. The model has five main constructs (product packaging, operational performance and process innovation). These constructs have been operationalized in subsequent sections below (see 2.2.1-2.2.3).

2.2.1 Product Packaging

According to Klimchuk and Krasovec (2013), packaging is the process of creating a visually appealing container, wrapper, box, etc. in which goods are stored, wrapped, and then sold to customers or prepared for transportation. In addition to safeguarding the goods from harm, beautiful packaging draws in customers and increases sales. Packaging is a crucial marketing strategy for increasing sales. Many businesses utilize packaging to interact with consumers and create a visual connection. The packaging

comes in two varieties. Primary packaging is a type of packaging that marketers use to offer products to final consumers. Packaging used to convey a product from one location to another is referred to as "secondary packaging." Packaging is a branch of marketing in which a company creates the wrapper or container in order to facilitate delivery, handling, and transportation as well as to visually express the brand and its products. Packaging, which can be an integral element of the product or an external container composed of various materials, serves as the primary distribution, storage, and sales tool (Deepak and Jeyakumar, 2019). Packaging is the process of covering that surrounds a consumer product and serves to keep it clean and marketable while also serving to confine, identify, characterize, protect, showcase, and promote it. Packaging is more than simply the attractive face of your goods (Davila, Epstein and Shelton, 2012). Packaging refers to the process of preparing a good or commodity for safe handling, storage, and/or transportation. Blocking, bracing, padding, labeling, sealing, strapping, weatherproofing, and wrapping may be necessary (Kalpana, Priyadarshini, Leena, Moses and Anandharamakrishnan, 2019).

According to Paine and Paine (2012), the fundamental requirement for every product is packaging. The product cannot be kept or transported from one place to another without packing. The product has an identity thanks to its packaging. Therefore, packaging is the act of giving a product a helpful informational cover so that it protects the product throughout handling, storage, and transportation as well as gives relevant information to all parties involved regarding the content of the package. For the steadfastness of this study, the definition of packaging by (Deepak and Jeyakumar, 2019) is adopted, which says: packaging is a branch of marketing by which a company creates the wrapper or container in order to facilitate delivery, handling, and transportation as well as to visually express the brand and its products. Packaging,

which can be an integral element of the product or an external container composed of various materials, serves as the primary distribution, storage, and sales tool. Packages have two primary functions: to keep products safe from the elements and to advertise them (Raheem, Ahmad, Vishnu and Imamuddin, 2014). Consumers' intent to buy can be influenced favourably by several aspects of packaging (Ahmad, Billoo and Lakhan, 2012). Based on their research, Raheem, Ahmad, Vishnu, and Imamuddin (2014) conclude that consumers' decision-making processes are neither objective, consistent, nor reasonable. Consequently, individuals frequently form opinions about the product's quality based solely on its presentation. There has been a lot of research done on the effectiveness of packaging in advertising items and influencing consumer behaviour (Rundh, 2007). Consumers are highly influenced by the packaging a product comes in, particularly its visual appeal (Raheem, Ahmed, Vishnu and Imamuddin, 2014). Some have even gone so far as to call packaging the "ultimate selling proposition" that allows buyers to pick their favourite products (Underwood, 2003; Silayoi and Speece, 2007; Bagozzi, Yi and Baumgartner, 1990).

2.2.2 Operational Performance

The literature lacks a precise definition of firm performance; it is a multi-dimensional entity (Chong, 2015; Tuan et al., 2016). It is an intricate and multifaceted construct (Expósito and Sanchis, 2019). That is, it tackles a range of interrelated metrics, such as growth results (Nastasia and Mironeasa, 2015), quality, innovation and creativity (Wadho and Chaudhry, 2018), personnel participation (Sinisammal et al., 2012; Sousa et al., 2018), customer satisfaction (Fong et al., 2014), and even productivity (Kumar and Rahman, 2015; Fu et al., 2018). Sales growth, market share, customer satisfaction, profitability, and continuing existence are all examples of performance

measures (Fong et al., 2014; Mahmutaj and Krasniqi, 2020; Mardani, Nikoosokhan, Moradi, and Doustar, 2018; Ndiaye et al., 2018; Sharma et al., 2016).

Financial and non-financial viewpoints are the most common ways to define firm performance (Chong, 2015; Kaplan Financial, 2016; Kaplan, 2010; Ndiaye et al., 2018). Business growth, as evaluated by variations in turnover, employee numbers, investments, and profitability, can be described as financial performance (M. Hudson, Lean and Smart, 2001; Nastasia and Mironeasa, 2015; Ndiaye et al., 2018; Sangwa and Sangwan, 2018). Some studies have considered non-financial performance, on the other hand, in terms of brand and market performance (Bilgin, 2018; Unurlu and Uca, 2017). Brand loyalty, brand image, brand awareness, and reputation are all indicators of brand performance. Customer satisfaction, new customer acquisitions, and current customer retention are all indicators of market performance. Other scholars in their research use other measures for a firm's performance, such as speed to market (i.e., getting the products to the market quickly) (Liu and Atuahene-Gima, 2018; Mardani et al., 2018).

According to Mardani et al. (2018), multinational firms manage to produce the product faster and efficiently allocate the RandD expenditure to ensure they achieve higher sales while keeping the production line of a new or improved product controllable and within the target. Hence, the product that enters the market faster than competitors will have several advantages such as opportunity, domination, and feedback, i.e., faster customer feedback for rapid product improvements. A variety of writers have also suggested that a major stumbling block to the expansion of many African firms is the underutilization of higher capacity (Ahiakpor et al., 2014). Generally, the capacity utilisation level of firms shows the extent of the use of productive equipment and the period of use of resources (Siyabi and Bose, 2018). The

better the level of capacity utilization, the greater the operational resource management would be (Shen and Chen, 2017). Moreover, the majority of firms consider a shortfall in sales and demand as a limitation on production at work. The use of capacity utilisation depends on market demand and also how products are produced for the most competitive use of resources (Ndiaye et al., 2018). The current study investigates a firm's ability to achieve desired results and operations that are widely accepted by the business (Lonial and Carter, 2015).

Subjective (financial) and objective (non-financial) metrics, or both, can be used to determine adequate performance (Hudson et al., 2001; Nastasiea and Mironeasa, 2015). Because it can be difficult for firm owners to provide relevant financial information, the addition of non-financial measures is much preferred (Hayat et al., 2019). The performance of the firm will be measured using financial and non-financial measures (Panno, 2020). This is corroborated by the works of Nastasiea and Mironeasa, (2015) and Ndiaye et al., (2018). They argue that a study is permitted to choose which indicators are appropriate for assessing firm performance. Research shows that appropriate performance measurement should focus on both financial indicators such as return on investment, return on sales, and net profits and non-financial aspects such as customer management, new product development, manufacturing process, and employee competencies (Daengs et al., 2019; Fong et al., 2014; Panno, 2020; Sangwa and Sangwan, 2018; Soto-Acosta, et al., 2018). Given the existence of multiple performance measures, a study would have to select the ones that are most significant to the study topic and assess the results of that selection (Nastasiea and Mironeasa, 2015; Ndiaye et al., 2018). This is particularly critical owing to the existence and complexities of the business structure and the degree of the owners-managers' willingness to engage in the processes of identifying facts. In order

to circumvent the above limitation, scholars contend that performance indexes that integrate a variety of distinct performance indicators (Daengs GS et al., 2019; M. Hudson, Lean, and Smart, 2001; Ndiaye et al., 2018). As a result, developing a framework of performance indicators suitable for firm performance in the manufacturing sector is critical for this research.

2.2.3 Process Innovation

According to the Oslo Manual (OECD, 2005), innovation is defined as the introduction of a new or improved product or process, as well as a new marketing or organisational strategy in inter-company operations, workplace organization, and commercial connections. Organizational innovations, according to the Oslo Manual, are improvements in corporate procedures aimed at increasing efficiency, productivity, competitiveness, adaptability, and ingenuity through the use of disembodied knowledge (Oslo Manual, 2018). Organizational innovation is about developing operations over time, such as new enterprise strategies and practices; understanding and adapting organisational practises to enhance performance; and modifying organisational strategies and processes to enhance public relations (Tseng et al., 2019; Karlsson and Tavassoli, 2016; Liao and Barnes, 2015). This is particularly true in business markets, where the pressure to innovate leads to enhanced firm performance. Although the ability to innovate is undeniably important, firms' approaches to innovation are constantly evolving.

As espoused by Wadho and Chaudhry (2018), innovation is the process of developing and improving markets, procedures, and goods, with the goal of increasing aggregate value. In the view of Ritala and Huizingh (2014), innovation is an indication of new product delivery to the market or of solving firm problems through innovative ideas for cost reduction, making processing faster or better, improving the organisational

structure or networks, and developing new or significantly improved systems. Innovation has also been described by Dereli, (2015) as the introduction of a new or improved product or process, as well as new promotional or operational strategies across a workplace organization, as well as promotional or operational strategies among inter-company activities. The Oslo handbook (2005) divides innovation into four types: product innovation, process innovation, marketing innovation, and organisational innovation, which could be further divided into technological and non-technology innovation. Literature on innovation indicates that any organisation needs innovation to succeed and survive in an environment characterised by stiff competition (Jimenez and Sanz-Valle, 2011) and gather a sustainable competitive advantage (Herman, Hady and Arafah, 2018).

Production innovation has indeed been studied in relation to a wide range of management issues, notably emerging-market entrepreneurial ventures (Miocevic and Morgan, 2018; Oduro, 2019; R. Wang and Zhou, 2020). In matured businesses, ongoing innovation is essential (Cucculelli, 2018; Voeten, 2016); partnership networks and consequences from Rand D (Ferraris et al., 2019; Nieth et al., 2018); organisational values and leadership (Anning-Dorson, 2021; Gumusluolu and Ilsev, 2009; Hogan and Coote, 2014; Kahn, 2018; Zhou, Liu, Zhang and Chen, 2016). Innovation occurs when new things (products or services) are created and commercialized, or when performance attributes are enhanced (Rajapathirana and Hui, 2018). Innovations help businesses differentiate themselves from their competition by delivering solutions to critical national problems (Gamage et al., 2020; Metadata and Policies, 2018). Any good or service that is seen as novel by a person or a company is termed "process innovation" (Kotler and Keller, 2012). It also refers to the introduction of new products or services in order to attract new markets or to

satisfy both existing and new customers (Aksoy, 2017; Kuncoro and Suriani, 2018; Najafi-Tavani, et al., 2018). Process innovation necessitates a range of organisational approaches and also unique resources, which together lead to innovative outcomes (Simao and Franco, 2018). Firms' performance is still largely based on process innovation (Cooper, 2014; Liu and Atuahene-gima, 2018; Osei et al., 2016; Wadho and Chaudhry, 2018). That is because enterprises that innovate enhance the quality of their products and services, which improves their performance and competitiveness. Process innovation, according to Federico et al., (2020), Liu and Atuahene-Gima, (2018), protects a firm against the risks of competition, allowing the innovating firm to benefit from the "early innovator" edge. The 4th edition of the Oslo manual (2018) describes process innovation as a new or improved good or service that differs significantly from the firm's previous goods or services and that has been introduced to the market. Process innovation has been established to have a favourable and significant relationship with organisational success, according to Liu and Atuahene-Gima (2018). According to Mahmutaj and Krasniqi (2020), process innovation is highly significant to business growth. Furthermore, Osei et al. (2016) assert that process innovation has a significant impact on business performance. Similarly, Li and Atuahene-gima (2014) found process innovation is linked to a successful business, which Wadho and Chaudhry (2018) corroborated. For every good and progressive firm, the role of innovation is of utmost importance (Rajapathirana and Hui, 2018; Wadho and Chaudhry, 2018). Emanating from the literature gathered, process innovation (PI) influences firm performance.

2.3 Theoretical Review

An abundance of knowledge and information in the scope of innovation makes the research process challenging, difficult, and lengthy (Soetanto, 2017). Thus, to focus

the research direction, two underpinning theories were used as a research foundation in supporting and addressing the gap, and as a guide to align this research into an appropriate direction. In this section, the researcher discusses underpinning theories that form the basis for investigating and studying the phenomenon of product packaging, operational performance, and process innovation. The driving theories of this study are the Resource-Based View Theory (RBV) with its extension to the Dynamic Capability Theory and the Contingency Theory. Theoretical frameworks provide a clear prism or context through which a subject is studied; they explain the context and the connections between the various factors and dimensions.

2.3.1 Resource-Based View (RBV) Theory

According to RBV (Barney, 1991), firms have a collection of unique resources and competencies that are valuable; the success of a company is influenced by how these resources are owned by internal functions and external partners are leveraged (West and Bogers, 2014). The RBV theory, which encapsulates knowledge as intangible competence or assets of the organization, leads to further development of the Knowledge-Based View theory, which asserts that an organization's knowledge is a valuable resource that can create value. The resource-based theory is unique because it focuses on the organization's resources (Barney et al., 2001; Lonial and Carter, 2015). As Grant (2010) puts it, an organization's resources can be divided into three areas: tangible, intangible, and human resources; such tools build the capacities and competencies of the organisation (Barney, 2001; Barney et al., 2001; Lau et al., 2010). According to the Resource-Based View Theory (RBV) (Lonial and Carter, 2015; Davis and Simpson, 2017), a corporation must utilise its resources to gain a competitive advantage, which will, then improve innovation performance. The RBV maintains that firm assets comprise tangible resources (e.g., goods, facilities, and staff) and

intangible resources (e.g., organisational culture, credibility, and knowledge) (Barney, 1991), as well as internal resources (e.g. workforce expertise and raw materials) and external resources. This demonstrates how well the organization's capital and tangible and intangible resources should be leveraged to create a competitive advantage. RBV indicates that a business needs to use its resources in its business development processes to exploit the resources and skills of other companies to boost efficiency in product innovation (Hong, Feng, Wu, and Wang, 2016; Saji and Mishra, 2013). The Resource-Based View (RBV) theory is used in the present study to propose a relationship between firms' knowledge as its asset, which is driven by product packaging and process innovation and influences operational performance. Hence, in this study, antecedent constructs of product packaging and process innovation are relevant and significant variables for firms since these constructs can assist firms in gaining knowledge that might contribute to innovation by allowing control in the external environment to affect the success of the company.

Literature indicates that organisations will do better in the market if they combine their competencies and capabilities in creating and retaining value to create a competitive advantage through innovation (Koska, 2013; Liao and Barnes, 2015). It is important to know that the knowledge, processes, and capabilities that help a firm to achieve enhanced performance can be considered as the resources of the organisation from the point of view of RBV (Liao and Barnes, 2015). Additionally, innovation literature in the context of firms specifically relates to the general lack of resources and competencies confronting firms as a major difficulty in the resource-based perspective (Liao and Barnes, 2015; Ndiaye et al., 2018; Quaye and Mensah, 2019; Yamoah and Arthur, 2014) and economies of scale and scope are often lower (Afriyie et al., 2019; Donkor, Donkor, and Kwarteng, 2018). RBV, therefore,

corresponds to the firm's competencies, which are important resources for realising superior business performance through innovation. The RBV is therefore a valid theory for developing firm frameworks to gain an innovative advantage. Emanating from the RBV literature, it can be inferred that knowledge resources, innovation capabilities, external support mechanisms, attitudes, and competencies can be considered to play an important role in the success of operational performance.

In this study, RBV is used as a basis for the development of knowledge-resource-based analysis of product packaging, process innovation, and a firm's operational performance. This is further clarified by Liao and Barnes, (2015); Osei et al., (2016) that firm performance depends on the firm's resources, which are linked to the innovativeness of the firm, i.e., the firm's turnover and total staff. Furthermore, RBV has been proven in several studies on process innovation (Alegre et al., 2013; Arslanagic-kalajdzic, Balboni, et al., 2017; Danneels, 2002; Eisenhardt, 2000; Liao and Barnes, 2015; Osei et al., 2016). Finally, resource-based view theory sheds light on how firms can utilise their resources in terms of their capacity to innovate and gain improved performance. Relatively, in this study, RBV theory was used as a basis for the development of relationships between knowledge resources via packaging and innovation to influence the operational performance of firms. In this study, RBV theory was used as a basis for the development of knowledge resources such as packaging and process innovation in order to drive operational performance in the manufacturing space.

2.4 Conceptual framework

RBV remains a solid pillar that supports our theoretical model (see Figure 2.1).

Owing to the dynamic nature of the business environment in recent times, the DCV has acquired a lot of traction among management researchers in their quest

to combine firm resources and competencies to give a firm a competitive advantage in a highly uncertain environment. The ability to sense, seize, and respond to emerging trends is considered a solution to uncertainty, which is consistent with earlier reasoning. Volatile and complicated work contexts, where high levels of uncertainty make efficient planning and decision-making difficult, exacerbate the requirement for packaging and process innovation. Drawing from the DCT, firm competencies of various forms are more beneficial in highly uncertain contexts. In this regard, it is expected that a direct link from product packaging to both process innovation and operational performance will be made. The study further examined the indirect role of process innovation in the link between product packaging and operational performance, as shown in Figure 2.1 below. Several empirical studies have established the importance of product innovation towards an organization's performance (Cooper, 2014; Ma et al., 2018; Osei et al., 2016; Regina, Oliveira, Lino, and Boer, 2017). Among the benefits of products, innovation is the contribution of firm output, which is reflected in sales growth, profit growth, market share growth, etc. It could also be a panacea for increasing firms' knowledge stock (Osman et al., 2016). Meanwhile, other studies have revealed inconsistent effects (Mahmud et al., 2017; Sok et al., 2016). In a related study conducted by Brunner et al. (2016) on the impact of symbolic product design on brand evaluations, The study, which used 490 respondents in four product categories, revealed positive product design associations in consumer information processing on brand evaluations. It further states that product design is important in improving brand associations.

Silva et al. (2014) 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. An investigation into the creation and performance of innovative products in the Malaysian banking market. As predictors of product innovation and consumer happiness, they looked at firm image, brand strength, market sensing capabilities, product innovativeness, and new product quality. The results of the study showed that four types of new product creation indicators were observed to be linked positively, namely firm image, brand value, product innovation, and new product performance (Fong et al., 2014). When Shafiwu and Mohammed (2013) researched the impact of product modification on profitability in Ghana's petroleum sector, their research consisted of 15 oil marketing companies in Ghana where respondents were chosen using a methodology of non-probability sampling-purposeful sampling. The results of the study showed a significant relationship between product modification and productivity. However, their use of the non-probability sampling method could raise issues in generalization. Likewise, when Osei et al. (2016) conducted a study on product innovation on the performance of manufacturing SMEs in Ghana using a quantitative approach with 400 SME owner-managers, their study revealed that the introduction of new products has the highest bearing on performance.

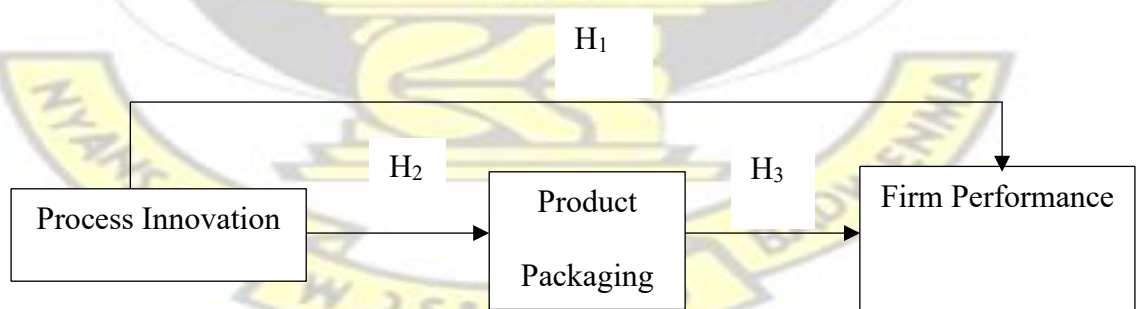


Figure 2.1 Conceptual Framework

2.5 Empirical Review

Raheem et al. (2014) did a study to look at the impact of packaging on Pakistani consumers' purchasing decisions. Data for the study was gathered quantitatively. According to the research, package characteristics including color, material, wrapper design, and innovation are more crucial when people are making a purchasing choice. The study made the recommendation that other researchers who wish to investigate packaging should take other aspects and facets of marketing into consideration.

Hussain (2022) looked into how customer perception and purchasing intention are impacted by product packaging in Pakistan. Data for the study was gathered via a quantitative method. The findings indicated that packaging has a significant role in influencing customer purchasing decisions and conveying product information. According to the study's findings, managers should use cutting-edge retail tactics to maintain market performance, including digital platforms (social networking sites and websites), eco-friendly advertising, and product rebranding.

Ahmad et al. (2012) conducted research to look into how product packaging affects customer purchasing choices. The study employed a quantitative approach to collect information from Pakistani businesses. The findings showed that container colours and images or pictures of purchases had a substantial impact on customers' purchasing decisions. According to the study, brand name use plan execution must be successful in the units.

Ali et al. (2020) investigated the impact of product packaging on consumer perception and purchase intention. A quantitative research method was used to collect data in Pakistan. The findings revealed that packaging is an important factor in consumer purchasing behaviour and communicating product information.

Mazhar et al. (2019) investigated the influence of product packaging on customer purchasing behaviour in Karachi. The quantitative technique was utilised to collect data from enterprises in Pakistan for the study. According to the study's findings, packaging is the most essential instrument in the marketing of any product. Additional researchers should examine other issues while preparing to do a packaging study, according to the authors.

Hamdar and Al Chawa (2018) investigated the economic implications of product packaging on customer purchasing behaviour in Lebanon. The quantitative research approach was used to collect data from Lebanon's businesses. The research indicated that packaging plays a significant influence in Lebanon companies' advertising and promotion operations. The research indicated that a future strategy based on package design should be developed.

Alhamdi (2020) did research to explore the idea and importance of packaging and its function in capturing customer attention, as well as to assess the challenges that enterprises face in the field of packaging in Saudi Arabia. Data was collected from Saudi industrial enterprises using a quantitative research approach. The research findings verified the importance of packaging in customer appeal in the study sample with all dimensions (design, color, size, and shape).

Amin et al.'s (2019) investigation of how product packaging affects customer purchasing decisions. Data from industrial companies in Pakistan was gathered using a quantitative research approach for the study. The study's conclusions showed that package components including color, substance, and wrapper design are more significant when customers are making purchasing decisions. According to the study,

package materials, sizes, and wrapper designs should receive greater attention in marketing strategies since they are crucial factors in boosting product sales.

Ahsan Ansari and Siddiqui (2019) looked at how package artwork and colour affected Karachi customers' purchasing decisions. Data from manufacturing companies in Pakistan was gathered using a quantitative research approach. According to the study, there is a considerable correlation between customers' purchasing behaviour and the graphic colors, package size, shape, and product information. The study was only able to cover a small portion of Karachi, so more research on the subject has to be done in other parts of Pakistan using packaging other than food products.

Shah et al. (2021) looked at how packaging affects Pakistani consumers' purchasing decisions. The study employed a quantitative research approach to gather information from Pakistani industrial companies. The study's findings indicated that packaging is a crucial factor that significantly affects customer purchasing decisions. Future researchers should expand the study to include additional locations in Pakistan, according to the report's recommendation.

Mohamad et al. (2019) investigated the influence of four categories of innovation capability on the operational performance of manufacturing SMEs: organizational, product, process, and marketing innovation capability. The data was gathered through a survey of 124 Indonesian manufacturing SMEs. For analysis, structural equation modelling and suitable statistical approaches were applied. According to the findings, the four categories of innovation capabilities are connected to the operational performance of Indonesian SMEs. The findings help to clarify the link between innovation capabilities and corporate operational success.

Tarigan (2018) investigated the influence of organisational commitment on operational performance through the planning and control process, process innovation, and product innovation. A questionnaire was utilised to collect data from 84 responders from shoe companies and the industry organization. The data was analysed using the partial least squares (PLS) approach and smart PLS software. According to the findings, process innovation impacts product innovation. The research indicated that SMEs' owners and managers encourage innovation in order to generate a unique product based on client interest in order to improve marketing effectiveness.

Afriyie and Musah (2019) looked at how SME's performed in terms of innovation and marketing in an emerging economy: the moderating impact of transformational leadership. A quantitative research methodology was adopted in order to gather information from SMEs in Ghana. The results indicated that the performance of marketing is positively impacted by innovation. The study made the recommendation that more research be done on the impact of transformational leadership (TL) and other factors that may be influenced by team dynamics (or groups), such as team trust, team creativity, and team innovative performance.

Haudi et al. (2020) carried out research to examine the impact of product innovation and marketing techniques on customer purchase decisions in the Indonesian light steel industry. Data was analysed using regression analysis, which was utilised in the research's explanatory framework. According to the findings, product innovation has a big impact on consumers' buying choices. The study found that in order to produce high-quality products, businesses in the zinc roofing steel industry needed to have a better market orientation.

Atalay et al. (2013) investigated the links between innovation and company performance. Data from questionnaires was collected from top-level managers at 113 companies in Turkey's automotive supplier business. The SPSS statistical package tool was used to examine the data. The study found that technological innovation (including product and process innovation) had a significant and favourable influence on business performance. The study suggested that organisations should place a specific emphasis on product and process innovations since these forms of innovation have been shown to be essential tools for obtaining a long-term competitive advantage.

Al-Sa'di et al. (2017) investigated the influence of product and process innovations in mediating the link between knowledge management and operational performance in Jordanian manufacturing firms. A questionnaire was circulated to Jordanian industrial enterprises to collect data. To test the hypothesis, the SPSS multiple-mediator PROCESS macro was utilized. The findings suggest that process innovation strongly mediates the link between knowledge management and operational performance. The study suggested that future studies look at the influence of control factors such as firm size, company age, industry type, process type, technology type, and age on the study's outcome.

Jose et al. (2018) investigated whether executing specific innovation techniques and establishing a portfolio of innovations improves the link between supplier integration (SI) and operational performance (OP). Data was gathered from 173 companies by interviewing managers, presidents, and directors from 10 European nations and nine industries. The links between SI and OP were estimated using structural equation modelling (SEM). According to the research, adopting an incremental product innovation strategy strengthens the bond between internal and external OP and

promotes SI. According to the study's findings, suppliers and industrial partners must achieve a specific degree of SI by working together to create new technologies, participating in a variety of innovations, and building crucial links within the logistics network.

Durmuş-Zdemir, et al. (2017) investigated the mediating function of innovation elements in the association between knowledge management methods and performance. The top-level management of a company that operates in the Turkish telecommunications market were polled on the research questions. The findings showed that innovation in marketing, products, and processes acts as mediators in the connection between performance and the knowledge management process. Because the study's sample was too small to evaluate the assumptions that were made for it, future studies should make use of a longitudinal sample collected at various points in time to further the study's goals.

Amjad Iqbal, et al. (2018) conducted an empirical investigation on the impact of knowledge management (KM) enablers on KM processes at research universities, as well as testing the hypothesis that KM processes directly influence OP. This study also plans to look at the mediating roles that intellectual capital (IC) and innovation play in the connection between KM practices and university performance. The associations between the variables were examined using a partial least squares structural equation modelling approach on a sample of 217 academic and administrative staff from Pakistani research universities. The findings showed that KM procedures have an impact on organisational performance (OP) both directly and indirectly via IC. The study suggested that bigger samples be used in future research using a random sampling approach across public and private colleges in order to generalize the findings.

Saunila (2014) investigated the link between organisational innovation capabilities and company performance. The study adds to current knowledge by identifying key components of organisational innovation capabilities that influence company success. A web-based questionnaire was used to collect data from Finnish small and medium-sized organisations (SMEs). The findings revealed that three dimensions of innovation capabilities, namely ideation and organisational structures, participative leadership culture, and know-how development, all had an impact on various areas of business performance. Further research is required to develop metrics for both elements of innovation capability and company performance in order to identify the causal linkages.

2.6 Research Hypothesis

The hypotheses related to the effect of process innovation on firm performance, mediated by product packaging, will be developed. These hypotheses serve as the foundation for the empirical investigation and aim to test the relationships between the variables of interest.

This hypothesis proposes that firms that engage in process innovation initiatives will experience improved overall performance. Process innovation, which involves the implementation of new and improved methods, technologies, or practices in the production and operational processes, has been widely recognized as a driver of increased efficiency, cost reduction, and quality improvement. Therefore, it is expected that firms that embrace process innovation will achieve enhanced performance outcomes.

(H1): Process innovation positively influences firm performance.

This hypothesis suggests that the adoption of process innovation positively affects the way products are packaged. Process innovation has the potential to optimize production processes, allowing for greater flexibility, customization, and efficiency. These improvements can extend to the packaging stage, enabling firms to develop innovative, attractive, and functional packaging solutions that align with customer preferences and market demands.

(H2): Process innovation positively influences product packaging.

This hypothesis posits that effective product packaging positively contributes to overall firm performance. Packaging plays a crucial role in influencing consumers' perception of a product, attracting attention, communicating brand values, and ensuring product safety and integrity. Therefore, firms that invest in well-designed, appealing, and functional packaging are likely to enjoy increased customer satisfaction, brand loyalty, and market share, ultimately leading to improved firm performance.

(H3): Product packaging positively influences firm performance

This hypothesis proposes that product packaging acts as a mediating mechanism through which the effect of process innovation on firm performance is transmitted. It suggests that the positive impact of process innovation on firm performance is partially or fully mediated by the improvements in product packaging resulting from process innovation. In other words, the influence of process innovation on firm performance is expected to be partially explained by the enhancements in product packaging brought about by the innovative processes.

(H4): Product packaging mediates the relationship between process innovation and firm performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in the study, including the research design, population, and study sample. Methods of data collection, validity and reliability, and data analysis techniques.

3.2 Research Design

Research design, according to Huntington-Klein (2021), is a systematic framework or action that illustrates the steps and techniques to gather and analyze the anticipated data/information in carrying out the research project. Research design involves making a decision that often than not includes the research question, diagnosing the problem of the study, envisaging and sticking to the contents of the study, gathering and interrogating the research data, and interpreting the findings (O'Shea et al., 2021). The research design has to do with the specific data investigative procedures a particular researcher may deem fit for a study. It is therefore very important and critical in choosing the correct research design for any research project. Zikmund et al. (2010), have outlined three types of research designs namely; exploratory, descriptive, and causal/hypothesis testing.

Melnikovas (2018) explains exploratory research design as that type of study generally directed towards new insights with the ultimate aim of asking questions to explore facts in a new environment. Descriptive research on the other hand is carried out in an environment where there exists some comprehension and interpretation of an existing problem and a more vivid elucidation of the problem is made available and

hypothesis testing or causal research elucidates the type of association that exists amongst variables in a study.

According to Sekaran's definition of research design, this study primarily entails testing hypotheses among five independent variables and two dependent variables. As a result, it adheres to the causal research or hypotheses testing paradigm. Standardized questionnaires are used in this study to gather data. According to Neuman (1997), survey research is less expensive, more common, and has a wider range of applications. It enables and empowers the researcher to gather data from a variety of sources to quantify a variety of aspects of the research study and examine a variety of hypotheses. For survey investigations, a unit of analysis that denotes persons is preferred (Bhattacharjee, 2012). To test theories, a quantitative technique was used to explain the connection between management practices and staff retention. Once more, the study used the survey approach, which is typically associated with the deductive strategy. In business and management research, the survey method is a popular and widespread strategy that is typically used to address who, what, where, how much, and how many questions. The quantitative technique was adopted because it allows for the application of logical reasoning to safeguard study outcomes against bias and to generalize and replicate results (Saunders et al., 2016).

A cross-sectional study design will be used for this investigation. The cross-sectional study design allowed for a snapshot of the population to be taken at a single time, allowing for comparisons between subsets of the population at that time. It will also be made possible to assess how well packaging contributed to the consumer buying behaviour among customers/consumers of Twellium Industrial Company. Contrary to longitudinal studies, where cases are typically investigated for more than one point in time, a cross-sectional survey was used as part of the research design where data

obtained at a point in time from respondents will be measured once (Saunders et al., 2016). Cross-sectional research is used because it is more affordable and requires less time. Due to its applicability in these circumstances, the survey approach is used in the majority of cross-sectional studies (Saunders et al., 2016). Finally, research hypotheses, which represent positivist attitude beliefs, were developed from the body of literature and put to an empirical test the knowledge gap by analyzing the influence of packaging on OP among manufacturing firms in Ghana, mediated by innovation.

3.3 Population of the Study

The quality of the study is greatly influenced by the relevance of the research population. Thus, if the wrong, unqualified, and inappropriate respondents are chosen for the study, the results will be severely undermined. Therefore, before data is collected, it is crucial to define the population and the target population. It's critical to distinguish between the accessible population and the target audience to comprehend the research population. The accessible population stands for the real participants that the researcher may include in the study, whereas the target population represents the overall group that is of interest to the researcher. This depends on the unit of analysis as well; if the researcher plans to study at the organizational level, it is best to use a single response; if the study is at the individual level, it is better to utilize several responses. The focus might then be on numerous case study responses. Since this study is undertaken at the organizational level, all manufacturing SMEs in Ghana are among the target populations. There are approximately 777 registered manufacturing companies in Ghana, according to the Registrar's Department of Ghana database (as cited in Agyaben-Mensah et al., 2020). Therefore, the 777 manufacturing enterprises in Ghana make up the study's target population. Top managers or executives of all Ghanaian manufacturing SMEs provide the information.

3.4 Sample Size and Sampling Technique

The question of how many participants should be included in a study or what sample size is sufficient has attracted varying opinions in social science research. Diverse researchers have given varying opinions in this regard. The sample size was determined using the following formula. The formula is given to us;

$$n = \frac{N}{1 + N(e^2)}$$

Where n is the sample size, N is the population size, and e is the level of precision.

When this formula is applied to the above example, we get:

$$n = \frac{777}{1 + 777(0.05^2)}$$

$$n = 264 \text{ firms}$$

Having established the required sample, the method to select these firms is also another issue of concern. The sampling technique can also be used to designate the process of selecting a section from the entire population (Bryman, 2012). Sampling is largely about choosing persons or entities as a subset of a defined population to assess the characteristics of the entire population (Collis and Hussey, 2009). It is ideal in cases where the researcher cannot reach the full community because of obstacles like financial and logistical limitations (Saunders et al., 2007). Understanding the appropriate sampling technique is crucial since it enables the researcher to choose the best respondents for the study. It is ideal in circumstances where time and financial restrictions prevent the researcher from reaching the whole sample or population (Saunders et al., 2007). Probability (random) and non-probability are the two basic methods utilized in sampling. Every member of the population has an equal chance of being chosen when using probability or random sampling. Non-probability sampling,

however, reduces the likelihood that every subject in the population will be chosen (Bhattacharjee, 2012; Kothari, 2004). "Probability (random) sampling techniques include simple random sampling, stratified sampling, systematic sampling, and cluster/area sampling, whereas non-probability sampling methods include judgment sampling, quota sampling, and convenience sampling" (Kothari, 2004, p.15). A sample frame will be obtained from the Ghana Statistical Service to identify the companies in each of the strata and reach out to them through a survey with an online and self-administered questionnaire, taking into account the potential heterogeneity in the characteristics of the samples that will be drawn from each stratum (Belt/Zone) and to increase precision and to minimize sampling bias. To get a total sample size of 264 respondents, a proportionate and sufficient sample size will be drawn from each group. Target respondents from the target audience who had in-depth knowledge of packaging and operational difficulties were chosen for the study using stratified random selection techniques.

3.5 Data Collection

According to Sekaran (2003), data can be acquired in a variety of methods in various circumstances. Interviews (electronic, telephone, and face-to-face), surveys (given directly or electronically), observations (videos and audio), and motivating tactics are among them (p. 221). While all of these data-gathering methods are significant, the survey questionnaire method was chosen more suited for this study's data collection due to the study's goal and objective, which is to evaluate the interrelationships among variables using a quantitative approach. The survey method is a way of gathering information about a big group of people's perceptions, judgments, and attributes (Malhotra and Birks, 2007). The basic purpose of surveys, according to positivist philosophy, is to create systematic observation using organized research

questions to give uniformity and standardization (Bryman and Bell, 2015). For researchers who want to collect primary data about a group that is too vast to examine or observe directly, a survey is usually the best option.

According to Babbie (2004), a survey approach entails the researcher selecting a representative sample with characteristics that mirror the larger population, as well as the use of well-developed standardized questionnaires to ensure that all respondents reply in the same way. The strength of the survey approach, according to Malhotra and Birks (2007) and Saunders et al. (2009), is found in its standardized measurements. The data is usually quantitative and may be compared and examined using a variety of statistical approaches with ease (Creswell, 2014). Again, employing a questionnaire for data collection makes tabulation and data analysis easier and more straightforward, as well as provides some level of reliability (Smith and Albaum, 2005). In keeping with Sekaran's beliefs, this study used a survey approach of data collecting, to elicit direct replies from customers on their perceptions of whether product packaging plays any positive role in their buying decisions.

Before the questionnaire is given out, each responder will receive a brief explanation of its aim and key ideas. Additionally, the respondents will be guaranteed their confidentiality. They will be reminded once more that participation in the study is entirely voluntary. The respondents' permission will be requested in the survey instructions. Permission will be requested before contacting the respondents to ask the top managers or executives of all manufacturing SMEs in Ghana. The relevant literature will be used as the foundation for the questionnaire's design. The data collection process, which will involve a self-administered questionnaire, is anticipated to take a month to complete. To protect their confidentiality, the respondents would be given the option of either hand delivery or online submission. English will be used to

deliver each questionnaire. The questionnaire was adapted to examine the relationship between packaging, innovation and operational performance. The questionnaire was divided into three sections, section A was the demographic characteristics of the respondent, section B was Packaging Material, Background Image, Package Innovation, and Packaging Color, section C was Operational Performance and D was capture innovation.

3.5.1 Construct Operationalization and Measurement

Packaging

According to Klimchuk and Krasovec (2013), product packaging is the process of creating a visually appealing container, wrapper, box, etc. in which goods are stored, wrapped, and then sold to customers or prepared for transportation. In this study, packaging was measured as a multi-dimensional construct made of Package Innovation, Package Colour, Package Material and Package Background Image. 24 items were used to measure packaging, items used were sources from previous studies (Desai et al., 2019; Farooq et al., 2015; Zaidi, S.H.A. and Muhammad, 2012; Spack et al., 2012).

Firm Performance

The literature lacks a precise definition of firm performance; it is a multi-dimensional entity (Chong, 2015; Tuan et al., 2016). It is an intricate and multifaceted construct (Expósito and Sanchis, 2019). That is, it tackles a range of interrelated metrics, such as growth results (Nastasea and Mironeasa, 2015), quality, innovation and creativity (Wadho and Chaudhry, 2018), personnel participation (Sinisammal et al., 2012; Sousa et al., 2018), customer satisfaction (Fong et al., 2014), and even productivity (Kumar and Rahman, 2015; Fu et al., 2018). Sales growth, market share, customer satisfaction, profitability, and continuing existence are all examples of performance

measures (Fong et al., 2014; Mahmutaj and Krasniqi, 2020; Mardani, Nikoosokhan, Moradi, and Doustar, 2018; Ndiaye et al., 2018; Sharma et al., 2016). The current study investigates a firm's ability to achieve desired results and operations that are widely accepted by the business (Lonial and Carter, 2015). Subjective (financial) and objective (non-financial) metrics, or both, can be used to determine adequate performance (Hudson et al., 2001; Nastasica and Mironeasa, 2015). Because it can be difficult for firm owners to provide relevant financial information, non-financial measures are much preferred (Hayat et al., 2019). The performance of the firm will be measured using non-financial measures (Panno, 2020). 10 Items were used to measure operational performance. Items used were sourced from (Wadho and Chaudhry, 2018; Sinisammal et al., 2012; Sousa et al., 2018; Fong et al., 2014; Kumar and Rahman, 2015; Fu et al., 2018).

Innovation

According to the Oslo Manual (OECD, 2005), innovation is defined as the introduction of a new or improved product or process, as well as a new marketing or organisational strategy in inter-company operations, workplace organization, and commercial connections. This study measured process and product innovation using eight (8) items sourced from (Martinez-Conesa et al., 2017; Guerrero-Villegas et al., 2018; Wang and Wang, 2012).

3.6 Data Processing and Analysis

To fulfil the goal outlined in chapter one, this study used descriptive analysis and multivariate data analyses such as factor analysis and Structural Equation Modeling (SEM). The Statistical Package for Social Sciences (SPSS) version 26.0 and Smart PLS 3 were used as analysis tools. The SPSS program was used for data coding and

input, as well as data cleaning and exploration before the data set was transferred to Smart PLS for further analysis. Before being transferred, the collected data were checked to reduce errors and confirm that all of the scores were within the scale range used and that no values were entered incorrectly.

3.7 Reliability and Validity

Measurement plays a vital role in any research. Reliability and validity are the two most important fundamental features in the evaluation of any measurement instrument for good research. They are the most appropriate concepts for the introduction of remarkable settings in business research. Mohajan, (2017), stressed that reliability identifies the faith that one can have in collecting data from the identified instrument. Thus, it is the degree to which any measuring tool controls for random error. The validity on the other hand represents the truthfulness of the findings.

3.7.1 Reliability

Cronbach alpha (the most often used indicator of reliability) and composite reliability were utilized to assess the research instrument's dependability in this study (Cooper and Schlinder, 2006; Cronbach, 1951). Cronbach alpha is a measure of the correlations between the various items used to assess a construct (Creswell, 2014). Despite the fact that the literature says that correlation coefficients of 0.7 and higher are acceptable (Hair et al., 2010), other researchers believe that in exploratory investigations, a correlation coefficient of 0.5 is adequate reliability (Malhotra and Birks, 2007). In light of this, this study used Cronbach alpha and composite reliability tests, which are routinely used in SEM research, to examine the research instrument's dependability (see Hair et al., 2010). Due to the limitations of relying just on Cronbach's alpha, a composite reliability test was conducted to assess the overall

reliability of the full set of items used to measure each construct. A composite reliability score of less than 0.6, according to Hair et al. (2014, p.102), indicates weak internal consistency dependability, but indicator values of 0.6 and above are regarded as acceptable.

3.7.2 Validity

The content validity of this study was determined by soliciting the opinions of other experts in the field as well as a pre-test of the measuring equipment (Ghauri and Gronhaug, 2005). The researcher established validity by enabling marketing professionals (from academia and practice) to examine the suggested scale for the study and then pre-testing the questionnaire. This stage's contributions were then incorporated into the final instrument that was administered. Construct validity is divided into two types: convergence and discriminant validity (Hair et al., 2010). Discriminant validity explains the distinctions between different constructs by ensuring that the items used to measure one construct are distinct indicators of that construct (Hair et al., 2009). This implies that correlations between items measuring distinct constructs must be low or very low (Naresh, 2010).

Convergent validity, on the other hand, explains the close relationship between a construct's numerous metrics. As a result, it assures that the framework's numerous constructs are accurately reflected by their distinct metrics (Hair et. al., 2014). The following steps are advised to satisfy the criterion for convergent validity. All factor loadings should be significant, meaning they should be 0.6 or higher (Chin, 1998). Each construct's Composite Reliability (CR) should be 0.7 or greater (Hair et al., 2016). Estimates of Average Variance Extracted (AVE) should be 0.5 or above (Hair et al., 2016; Henseler et al., 2009). The square root of the minimum average variance

extracted (AVE) must be greater than the strongest inter-construct correlation for a reflective scale to satisfy the requirements for discriminant validity (Barclay et al., 1995; Fornell and Larcker, 1981; Hair et al., 2016). An author can also check the item cross-loadings to make sure there aren't any substantial cross-loadings. The Fornell and Larcker criterion alone is not conclusive on discriminant validity, according to recent research on variance-based structural equation modelling (Henseler et al., 2015). In addition to the Fornell and Larcker criterion, the authors advocate using the heterotrait-monotrait ratio (HTMT) of correlations. Cross loadings of indicators, according to the authors, account for 0% of discriminant validity, whereas Fornell-Larcker and HTMT criteria account for 20.82 per cent and 97 to 99 per cent of discriminant validity, respectively. They used three HTMT criteria to test discriminant validity: HTMT specificity ratio of 0.90, HTMT specificity ratio of 0.85, and HTMT inference score ranging from -1 to 1 (-1 HTMT 1), with the HTMT specificity ratio of 0.85 being the most cautious approach.

3.8 Ethical limitation

These restrictions are essential for study integrity and participant and stakeholder welfare. Informed permission is essential for human research. Researchers must educate participants of the study's objective, procedures, risks, and benefits before they volunteer. Participants' autonomy and rights depend on informed consent. Clear and intelligible information and the ability to ask questions or withdraw consent at any moment during the study are crucial (World Medical Association, 2013).

Participant confidentiality and privacy are crucial to protecting sensitive information. Data privacy should be protected by research protocols. Data should be secure and

restricted to authorized users. Make sure research participants and organizations can't be recognized (American Psychological Association, 2017).

Researchers should disclose potential conflicts of interest that could affect research results. Financial, professional, or personal conflicts can taint judgment. The Committee on Publication Ethics (2019) advises researchers to report and manage relevant conflicts to ensure research credibility.

Maintaining research ethics requires data accuracy and integrity. Following research guidelines, researchers should gather and analyze data rigorously. Transparency, reproducibility, and scrutiny of research findings require accurate recording of research protocols, data sources, and analysis methods (National Institutes of Health, 2021).

3.9 Profile of the study

A Comprehensive Analysis of Senior Managers in Manufacturing Firms within the Greater Accra Region , the senior managers within manufacturing enterprises located in the Greater Accra Region occupy significant leadership roles and exert substantial influence over the strategic trajectory and overall effectiveness of their respective organizations. Executives bear the responsibility of making critical choices, overseeing the allocation of resources, and fostering innovation and expansion within their respective organizations. Presented below is a comprehensive overview of senior managers employed in manufacturing enterprises located within the Greater Accra Region.

In manufacturing organizations, senior managers have diverse job titles and responsibilities, such as Chief Executive Officer (CEO), Managing Director, General Manager, Operations Manager, Production Manager, Supply Chain Manager,

Marketing Manager, and Research and Development (R&D) Manager. These positions encompass many functional domains and duties within the industrial entity.

In manufacturing organizations, senior managers are often characterized by their extensive industry experience and specialized knowledge. The individual possesses a comprehensive understanding of manufacturing procedures, prevailing trends within the sector, the dynamics of the market, and the regulatory obligations that must be adhered to. A considerable number of senior executives has advanced academic qualifications, such as Master's or Doctoral degrees, in disciplines such as business administration, engineering, or closely related fields. Moreover, individuals in such positions frequently possess a robust foundation in management, leadership, and strategic planning.

Senior managers bear the responsibility of formulating strategic decisions that have a wide-ranging impact on the entirety of the manufacturing organization. Business professionals are responsible for the development and execution of corporate strategies, establishment of performance objectives, allocation of resources, and mitigation of risks. Leadership and direction are offered by individuals in order to ensure the efficient and effective operation of their teams within an organization. Senior managers have a pivotal role in cultivating a corporate environment that promotes innovation and ongoing enhancement inside their organizations.

Senior managers in manufacturing organizations exhibit a profound understanding of the industry and actively maintain their awareness of current trends, technologies, and optimal methodologies within their specific sectors. The individuals engage in active involvement with industry groups, trade fairs, conferences, and networking events in order to enhance their professional connections and acquire knowledge regarding

advancements within the sector. This enables organizations to maintain their competitiveness and make well-informed choices pertaining to process innovation and product packaging.

Senior managers in manufacturing organizations are involved in interactions with several stakeholders, encompassing employees, suppliers, consumers, government agencies, and industry partners. Organizations establish and sustain relationships with various stakeholders in order to facilitate seamless operations, establish secure alliances, and fulfill customer needs. Senior managers are responsible for navigating regulatory frameworks and ensuring compliance with industry norms and rules.

Manufacturing enterprises function within a dynamic and frequently arduous operational context. In order to effectively navigate difficult situations, it is imperative for senior managers to possess adaptability and problem-solving skills. The individuals engage in the examination of market conditions, the identification of prospective opportunities, and the mitigation of any risks and impediments. The organization actively pursues creative solutions and utilizes process innovation and product packaging methods in order to attain a competitive advantage.

Senior executives in manufacturing companies establish a distinct vision for their enterprises and formulate comprehensive strategic plans for the long term. The organization strategically aligns its business objectives with the prevailing market demands and the expectations of its customers. The individuals or entities in question identify specific areas within their processes that could benefit from improvement. To achieve this, they allocate resources towards the acquisition of technology, machinery, and the development of their workforce. The ultimate goal of these efforts is to boost the overall operational efficiency and productivity of the organization.

3.10 Chapter Summary

This chapter of the study was dedicated to the methodology section of the entire study. It depicts the research design for the study, as well as outlines the individuals and figures that will constitute the study. The method to adopt in sampling the population as well as the measurement of the research instrument is also mentioned and finally how to ensure some ethical standards are adhered to is enumerated to close the chapter on this section.



CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION OF RESULT

4.1 Introduction

This section presents the data analysis performed by the researcher. There were five parts to this chapter. firstly, background information on the study's participants was provided. The evaluation of the measurement model was then discussed after the findings of exploratory factor analysis were presented. The results of the descriptive statistics were presented in the third part. In the other part, the results of the SmartPLS of the hypotheses were presented in the next section. The research most crucial results were then discussed.

4.2 Demographic Information

The participants demographic information is presented in this section. The findings are presented in the table 4.1 below. The findings showed that 69.5% of the participants were males whiles 30.5% were females. Also, 34.1% of the participants were between 18-30 years, 46.4% were between 31-40 years and 9.1% of the remaining were above 50 years. The data also shows that 7.3% of the participants had junior high school certificate, 9.5% had senior high school certificate, 15.0% had diploma certificate, 44.5% also had bachelor's degree, 16.8% had masters/Ph. D certificate and 6.8% of the remaining had other certificates.

Table 4.1 Demographic Information

Variables	Frequency	Percent
<i>Gender</i>		
Male	153	69.5
Female	67	30.5
<i>Age</i>		
18-30 years	75	34.1
31-40 year's	102	46.4
41-50 years	23	10.5
Above 50 years	20	9.1
<i>Level of Education</i>		
Junior High School	16	7.3
Senior High School	21	9.5
Diploma	33	15.0
Bachelor Degree	98	44.5
Graduate Studies (Master / Ph.D.)	37	16.8
Others	15	6.8
Total	220	100.0

4.3 Reliability analysis

Reliability analysis is a statistical technique used to assess the consistency and stability of measurements or scales. It is commonly employed in research studies to evaluate the reliability or internal consistency of survey instruments, questionnaires, or tests. The primary goal of reliability analysis is to determine the extent to which a measurement instrument produces consistent and dependable results. In other words, it measures the degree to which the items within a scale or instrument measure the same underlying construct consistently across different situations or time points.

This method involves administering the same test or questionnaire to a group of participants at two different time points. The scores obtained from the two

administrations are then compared using statistical techniques (e.g., Pearson correlation) to assess the degree of consistency over time. Test-retest reliability is appropriate for measuring stable constructs that are not expected to change significantly between the two administrations. Internal consistency reliability assesses the degree of consistency among the items within a scale or instrument. It is typically measured using Cronbach's alpha coefficient, which ranges from 0 to 1. A higher Cronbach's alpha indicates greater internal consistency. This method is suitable when the measurement instrument consists of multiple items that are intended to measure the same construct.

4.3.1 Exploratory Factor Analysis

Understanding the theoretical underpinnings and conjectural structures that may explain the structure and ordering of the observed data is essential for finding latent variables in multivariate statistics (Watkins, 2018). The EFA is meant to unravel information that is moderately to strongly correlated within itself but only weakly correlated with external influences, such as information dealing with internal processes. The EFA has a wide range of potential uses. Watkins (2018) proposes using 10–15 participants for each independent variable. Particularly weighted criteria have to be graded using a ratio or interval scale.

4.3.2 Test for Common Method Bias and Sampling Adequacy

Participants filled out surveys to provide the data. Even when adhering to tried and established methodologies, every survey still faces the possibility of being biased. Short lines of explanation accompany certain survey questions in an effort to simplify difficult ideas and provide context for the research. The primary goal was to improve the survey's usefulness to the respondent. Harman's one-factor test was used to

analyse the data for bias (Podsakoff et al., 2003). Table 4.2 displays the results of the factor analysis; eigenvalues greater than 1 explain 71.971% of the total variance. As the amount of variance described by the first component was lower than half (or 29.332%), there was no problem with common method bias.



Table 4.2 Common Method Bias

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.973	29.332	29.332	9.973	29.332	29.332
2	4.244	12.483	41.815	4.244	12.483	41.815
3	2.68	7.881	49.696	2.68	7.881	49.696
4	2.124	6.247	55.943	2.124	6.247	55.943
5	1.748	5.14	61.084	1.748	5.14	61.084
6	1.441	4.238	65.322	1.441	4.238	65.322
7	1.225	3.602	68.924	1.225	3.602	68.924
8	1.036	3.048	71.971	1.036	3.048	71.971
9	0.861	2.531	74.502			
10	0.732	2.152	76.654			
11	0.669	1.969	78.624			
12	0.64	1.882	80.506			
13	0.586	1.722	82.228			
14	0.543	1.598	83.826			
15	0.464	1.365	85.191			
16	0.452	1.331	86.522			
17	0.417	1.227	87.749			
18	0.4	1.177	88.926			
19	0.368	1.084	90.01			
20	0.366	1.075	91.085			
21	0.334	0.984	92.069			
22	0.287	0.845	92.914			
23	0.28	0.823	93.737			
24	0.268	0.788	94.525			
25	0.264	0.775	95.3			
26	0.244	0.718	96.018			
27	0.235	0.691	96.709			
28	0.21	0.619	97.328			
29	0.194	0.571	97.899			
30	0.182	0.536	98.435			
31	0.167	0.492	98.927			
32	0.137	0.403	99.33			
33	0.124	0.365	99.695			
34	0.104	0.305	100			

Extraction Method: Principal Component Analysis.

The findings of the KMO analysis, which show how representative the sample was, are shown in Table 4.3. The KMO scale indicates that there was a large enough sample to derive meaningful conclusions (0.922). It is essential to remember that the values of zero and identity matrices are intrinsically linked to these particular whole

numbers. Exploratory factor analysis may help increase the validity of findings when working with a limited sample size. If the p-value in table 4.3 is less than 0.05, the results might be regarded significant. High-quality measurement tools are easily accessible, allowing for in-depth investigation of the issue.

Table 4.3 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.863
Bartlett's Test of Sphericity	Approx. Chi-Square	4659.745
	df	561.000
	Sig.	0.000

4.4 Measurement Model Assessment

The quality of the measurement models used in this research was evaluated using the criteria established by Hair et al. (2019). SmartPLS version 4, a programme for creating partial least squares structural equation models, was used in this investigation (Ringle et al., 2015). The indicators' loadings were calculated, and they were all determined to be more than 0.70. This is encouraging since it indicates the construct is strong enough to account for more than half the variation in the indicator, which means the constructs are valid. Each factor loading with a score lower than 0.700 was eliminated as stated in table 4.4.

4.4.1 Reliability

The reliability and validity of the constructs can be checked in two main ways. Cronbach's alpha and composite reliability (CR) are two measures of internal consistency (CA). Cronbach's alpha is a reliability measure based on correlations among apparent indicator constructs, whereas composite reliability (CR) examines how well one set of items predicts another set's latent variable. If a construct has a

Cronbach's alpha (CA) and composite reliability (CR) of 0.70 or higher, it is highly reliable. Listed below are the results in Table 4.4. Tests of the model's reliability indicate a CR ranging from 0.924 to 0.970 for operational performance, process innovation and product packaging, and a CA ranging from 0.902 to 0.965 for the same variables. This result proves the model has a single dimension and consistently give the same result.

4.4.2 Validity

A construct is said to have significant convergent validity when findings from many indicators are consistent with one another. If it corresponds well with other tests using the same or similar criteria, then the test may be said to be convergently valid. Indicators of convergent validity might be theoretical or empirical. Multiple tests can be run on the same item to determine how accurately they measure the same attribute. It is generally agreed that standardised tests are quantitatively comparable. Consider a link that is somewhere between very strong and quite weak as an example of convergence. Popular measurements of convergent validity include factor loading (FL) and average variance extracted (AVE). The convergent validity findings are presented in Table 4.4. Loading levels over 0.7 are preferred by researchers, whereas values below 0.7 are discouraged. If the CA, CR, or AVE values are above the threshold, then the indicator with a loading of 0.4 to 0.7 requires attention. Indications that are known to reduce CA, CR, and AVE should not be eliminated. Most users would consider an AVE score of 0.5 or higher to be satisfactory. All indicator loadings were found to be greater than 0.7. With an AVE greater than 0.5, it was clear that the model is valid.

Table 4.4 Confirmatory Factor Analysis

Constructs	Items	Loadings	T-Value	P-Value	VIF
<i>Operational Performance (CA=0.960; CR=0.970; AVE=0.867)</i>					
	OP1	0.793	27.556	0.000	2.001
	OP2	0.970	209.275	0.000	1.331
	OP3	0.970	232.639	0.000	1.100
	OP4	0.959	106.459	0.000	1.438
	OP5	0.952	123.626	0.000	2.582
<i>Process Innovation (CA=0.902; CR=0.924; AVE=0.710)</i>					
	PINNO1	0.839	38.231	0.000	2.026
	PINNO2	0.821	71.510	0.000	2.649
	PINNO3	0.794	29.131	0.000	1.657
	PINNO4	0.883	25.578	0.000	2.248
	PINNO5	0.873	23.992	0.000	2.087
<i>Product Packaging (CA=0.965; CR=0.970; AVE=0.803)</i>					
	PPACK1	0.898	56.317	0.000	2.629
	PPACK2	0.838	63.181	0.000	2.042
	PPACK3	0.914	58.537	0.000	2.328
	PPACK4	0.884	36.157	0.000	1.785
	PPACK5	0.927	61.114	0.000	2.450
	PPACK6	0.911	47.211	0.000	2.896
	PCOL1	0.878	80.825	0.000	2.339
	PCOL2	0.912	61.973	0.000	1.413

Moreover, AVE may be used to evaluate the discriminant power of a latent construct across its component parts (Fornell and Larcker, 1981; Henseler et al., 2015). It is calculated by looking at how well the squared AVE correlates with the latent constructs. By comparing the construct's loadings with those of other indicator variables, as shown in the cross-loadings table, one may get an idea of how well the construct holds up in terms of validity and reliability (Alqershi et al. 2021). Table 4.5 summarizes the findings from applying the proposed validity standards, suggesting that the latent AVE variables were greater than the minimum value of 0.50, and that the AVE square roots are greater than the correlation coefficients of the latent constructs, indicating discriminant validity (Fornell and Larcker 1981).

Table 4.5 Fornell-Larcker criterion

Constructs	1	2	3
Operational Performance	0.931		
Process Innovation	0.796	0.843	
Product Packaging	0.800	0.683	0.896

To replace the unreliable Fornell-Larcker criteria, the ratio of correlations between heterotraits and monotraits (HTMT) was created (Hair et al., 2019; Henseler et al., 2015; Voorhees et al., 2016). The vast majority of studies have shown that HTMT values under 0.90 are optimal. It is possible to achieve this by dividing the average value of the items' associations across variables by the geometric mean of the correlations across scales measuring the same variable (Henseler et al., 2015). Table 4.6 shows that the maximum HTMT is 0.824, which is lower than the expected maximum of 0.9.

Table 4.6 Heterotrait-monotrait ratio (HTMT) - Matrix

Constructs	1	2	3
Operational Performance			
Process Innovation	0.814		
Product Packaging	0.824	0.692	

4.5 Model Fit Summary

The capacity of the SEM to explain the data was assessed using a number of different goodness-of-fit criteria in this research (Shi and Maydeu-Olivares, 2020). Table 4.7 displays the outcomes with respect to the model fit indices. Chi-square = 1005.532, SRMR = 0.092, and Fitness of Extracted-Index = 0.817 all indicate that the model provides a very good fit to the data within the allowed error margins. Both the extraction index and the abnormality index fall well short of the typical threshold of 0.9. It is preferable if the squared residual does not approach 0 and has a common root.

Table 4.7 Fit Summary

Indices	Saturated model	Estimated model
SRMR	0.092	0.092
d_ ULS	1.454	1.454
d_ G	0.885	0.885
Chi-square	1005.532	1005.532
NFI	0.817	0.817

4.6 Descriptive Statistics

Data visualization and analysis are simplified using SmartPLS. The response rate and reliability of the survey may be understood by an assessment of the acquired data. With the use of descriptive statistics, one can quantitatively examine how well each criteria performs (such as the mean, median, maximum, standard deviation, excess kurtosis, and skewness, among others). This may be aided by using the standard deviation. Process innovation (Mean=3.47, SD=1.454), product packaging (Mean=4.20, SD=1.524), and operational performance (Mean=3.85, SD=0.878) all have higher mean and lowest standard deviations (Table 4.8). None of the distributions included any outlier values.

Table 4.8 Descriptive Statistics

Constructs	Mean	Standard Deviation
Process Innovation	3.47	1.454
Product Packaging	4.20	1.524
Operational Performance	4.35	1.259

4.7 Boot Trapping Resampling Technique

The capacity to forecast the behavior of a subset of the variables of interest may be enhanced by using a structural equation model, also known as an internal model. The researcher resamples the data 5,000 times to check on the precision of the model's coefficients, keeping in mind the standard error (Hair et al., 2014). Collinearity, p-value, path coefficient, coefficient of determination, effect size (f^2), and impact size are only few of the quantitative metrics that may be computed using the structural model (g^2). This concept, which implies a close connection between numerous features, is often seen in scholarly works. The variance inflation factor (VIF) was

used to measure the degree of collinearity between the regressors. Hence, the VIF was acknowledged as an important instrument for evaluating these concerns. According to Table 4.4, no VIF was found to have a value higher than 3.3 (Hair et al., 2019).

4.7.1 Coefficient of Determination and Predictive Power

Values of R^2 between 0.75 and 0.50 are considered extremely significant by Henseler (2018), whereas those below 0.25 are not. The significance of understanding R^2 in practice cannot be underestimated (Chin et al., 2020). As demonstrated in Table 4.9 and Figure 4.1, the model has a satisfactory R^2 for predicting operational performance and product packaging. The findings indicated that process innovation can explain 75.6%, and 46.6% of the variation in operational performance and product packaging.

Q^2 (correlation squared) is a metric used to evaluate the predictive power of the PLS path model (Geisser, 1974; Stone, 1974). Even before the conclusion of the second quarter, an internal, data-driven structural model may be more successful in some circumstances (Hair et al., 2019). Table 4.9 shows that the model is robust and can resist extensive scrutiny with Q^2 values of 0.629 for operational performance and 0.458 for product packaging. The results validate the model's predictive abilities.

Table 4.9 Coefficient of Determination and Predictive Power

Endogenous Constructs	R-square	Q^2 predict
Operational Performance	0.757	0.629
Product Packaging	0.466	0.458

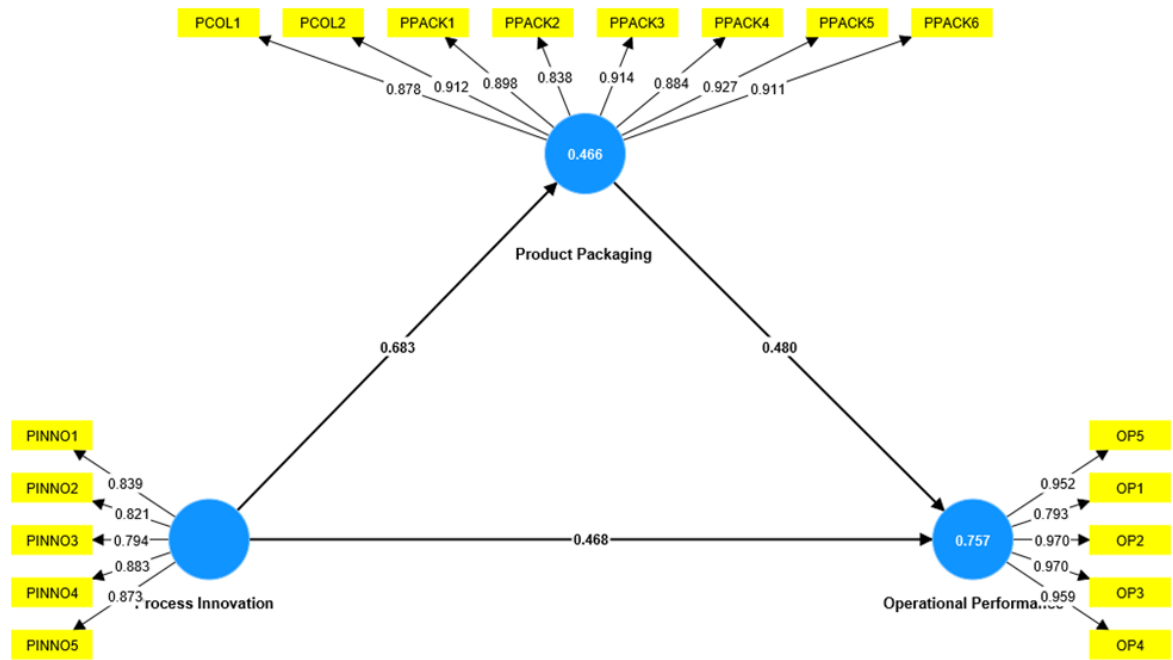


Figure 4.1 Measurement Model Assessment

4.8 Hypotheses for Direct and Indirect Relationship

The propose hypotheses in the study were tested using smartPLS 4. The main goal of the study was to investigate the effect of process innovation on operational performance of manufacturing firms through the mediating role of product packaging. The results are displayed in the table 4.10 and figure 4.2 below.

It was hypothesized in the study that manufacturing firms' operational performance is positively and significantly influenced by process innovation. Table 4.10 and Figure 4.2 illustrate that there is a significant positive connection between the firms process innovation and their operational performance ($\beta=0.468$; $t=8.649$; $p\text{-value}=0.000 < 0.05$). The results of the study provide support for the hypothesis that the factors under consideration are related. It also shows that, all else being equal, the observed variations in operational performance in the firms (46.8%) may be explained by the extent to which process innovation is handled. Results suggested that if the firms

emphasized process innovation, it might lead to better sustainable and equitable operational performance.

Secondly, it was also hypothesized that process innovation has positive influence on product packaging in manufacturing firms in Ghana. Table 4.10 and Figure 4.2 demonstrate that there was a significant and positive connection between process innovation and product packaging ($\beta=0.683$; $t=17.131$; $p\text{-value}=0.000 < 0.05$). This study's results provide support to the idea that the two are linked. When other variables are held constants, the research found that process innovation were responsible for 68.3% of the variance in operational performance in the firms. There is a need for the firms to prioritize process innovation to improve product packaging in the firms.

Thirdly, it was also hypothesized that manufacturing firms' operational performance is significantly and positively enhanced by product packaging. Table 4.10 and Figure 4.2 illustrate that there is a significant positive connection between product packaging and operational performance in the firms ($\beta=0.480$; $t=8.879$; $p\text{-value}=0.000 < 0.05$). The results of the study provide support for the hypothesis that the factors under consideration are related. It also shows that, all else being equal, the observed variations in operational performance in the firm's 48.0% may be explained by the extent to which process innovation is handled. Results suggested that if the firms emphasized process innovation, it might lead to better sustainable and equitable operational performance.

Finally, the study again also hypothesized that product packaging mediates the association between process innovation and operational performance in Ghanaian manufacturing firms. Product packaging has a positive and statistically significant

mediating influence on the link between process innovation and operational performance, as shown in Figure 4.2 and Table 4.10 ($\beta=0.328$; $t=6.917$; $p\text{-value}=0.000 < 0.05$). The study's findings confirm the hypothesized relationship between the factors. The study implies that, the connection between process innovation and operational performance is improved by 32.8%. This is due to the advent of product packaging. The study found that increases in product packaging may increase the positive effects of process innovation on operational performance for the manufacturing.

Table 4.10 Hypotheses Statistics

Hypotheses	Original sample	T statistics	P value	Decision
Process Innovation -> Operational Performance	0.468	8.649	0.000	Supported
Process Innovation -> Product Packaging	0.683	17.131	0.000	Supported
Product Packaging -> Operational Performance	0.480	8.879	0.000	Supported
Process Innovation -> Product Packaging -> Operational Performance	0.328	6.917	0.000	Supported

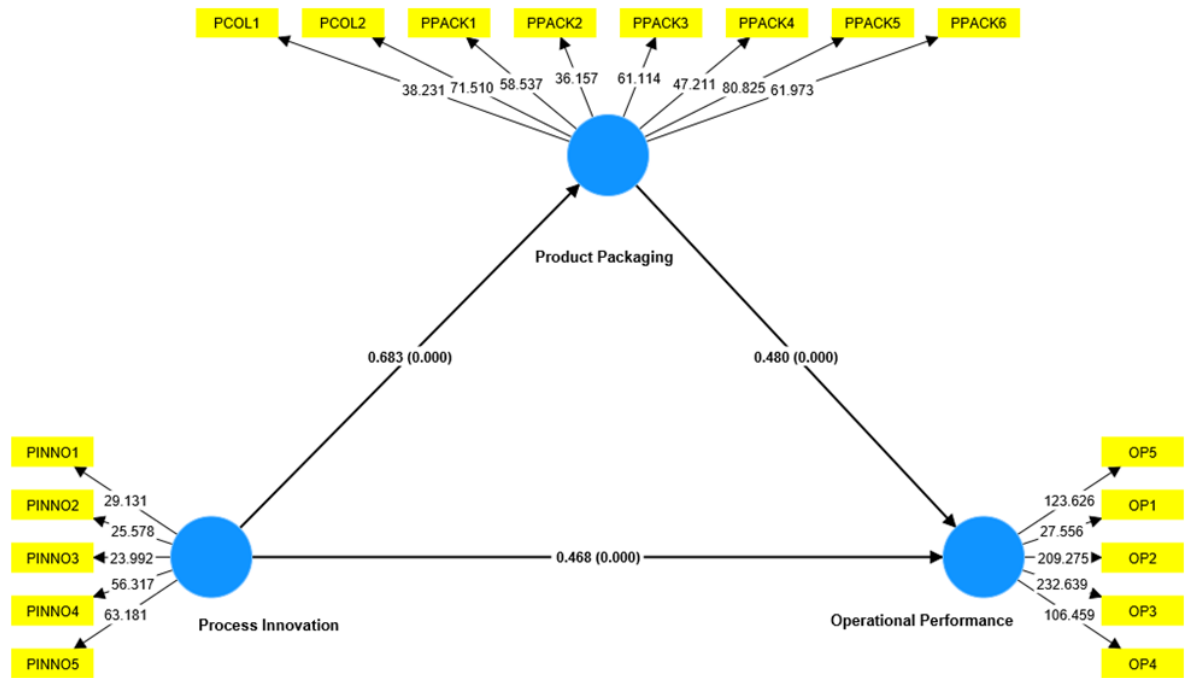


Figure 4.2 Structure Model Evaluation

4.9 Discussion of Results

This section displays the study's most important findings which will be explained in the context of the relevant literature. The main goal of the study was to investigate the impact of process innovation on operational performance of manufacturing firms through the mediating role of product packaging. The study used RBV as the theoretical underpin of the study. The key findings are discussed in the sections below.

4.9.1 Effect of Process Innovation on Operational Performance

The objective of the study was to investigate the effect of process innovation on operational performance of manufacturing firms. It was hypothesized in the study that manufacturing firms' operational performance is positively and significantly influenced by process innovation. The findings illustrated that there is a significant positive connection between the firms process innovation and their operational performance. The results of the study provide support for the hypothesis that the

factors under consideration are related. It also shows that, all else being equal, the observed variations in operational performance in the firms may be explained by the extent to which process innovation is handled. Results suggested that if the firms emphasized process innovation, it might lead to better sustainable and equitable operational performance.

Process innovation involves major upgrades to methods, hardware, and software. In order to make informed decisions about how to maximize a service before introducing it to the market, process innovation techniques are essential. It helps businesses create plans that save both money and time. The findings imply that manufacturing organizations will experience a significant increase in performance after adopting a new production or delivery method that involves substantial changes in technique, equipment, and software. The results provide credence to the Resource-Based View Theory (RBV), which states that in order for a company to have a competitive edge, it must engage and make use of its resources (Lonial and Carter, 2015; Davis and Simpson, 2017). From an RBV perspective, a company's resources include its people, facilities, and equipment, as well as the information, systems, and procedures that enable the company to operate at peak efficiency (Liao and Barnes, 2015). These results also corroborate those of Mahmutaj and Krasniqi (2020), who discovered that introducing new processes into an organization greatly contributes to its success. Osei et al. (2016) made a similar claim, arguing that process innovation significantly affects corporate performance.

4.9.2 Effect of Process Innovation on Product Packaging

The objective two of the study was to examine the influence of process innovation on product packaging. It was hypothesized that process innovation has positive

influence on product packaging in manufacturing firms in Ghana. The findings demonstrated that there was a significant and positive connection between process innovation and product packaging. This study's results provide support to the idea that the two are linked. When other variables are held constants, the research found that process innovation were responsible for the variance in operational performance in the firms. There is a need for the firms to prioritize process innovation to improve product packaging in the firms.

Innovations in packaging design and the adoption of new materials are made with the goal of lessening the product's negative effects on the environment. Agriculture, industry, retail, and consumers all make use of packaging at some point throughout the distribution of food and drink. Improvements in packaging might save money by cutting down on waste, as well as boost revenue by increasing product appeal. The results of the research suggest that when the manufacturing sector adopts substantial changes in their production processes and equipment or transportation method, it will affect the packaging of their products. Innovations in packaging design and the adoption of new materials are made with the goal of lessening the product's negative effects on the environment. Agriculture, industry, retail, and consumers all make use of packaging at some point throughout the distribution of food and drink. Improvements in packaging might save money by cutting down on waste, as well as boost revenue by increasing product appeal. The results of the research suggest that when the manufacturing sector adopts substantial changes in their production processes and equipment or transportation method, it will affect the packaging of their products. The results back up RBV, which suggests that a company should utilize its assets in its business development processes to leverage the assets and expertise of other businesses in order to increase the effectiveness of product creation (Hong,

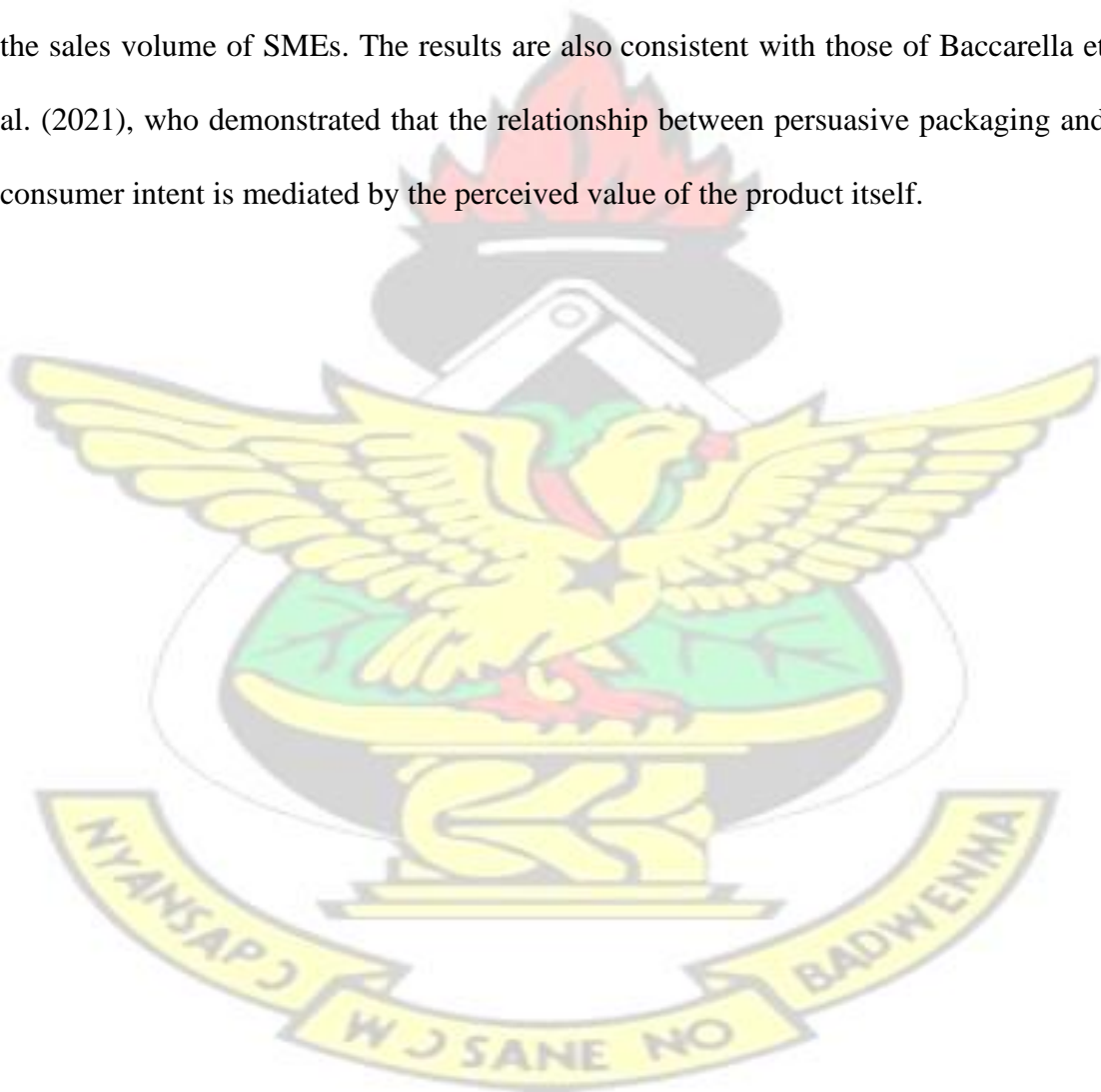
Feng, Wu, and Wang, 2016; Saji and Mishra, 2013). The results are also consistent with the findings of Sumrin et al. (2021), who discovered that process innovation greatly improves product packaging. The results corroborate the findings of Ul-Durar et al. (2023), who observed that new ideas spur product packaging.

4.9.3 The mediating role of Product Packaging in the Relationship between Process Innovation on Operational Performance

The third objective of the study was to investigate the mediating role of product packaging on the relationship between process innovation and operational performance. The study again also hypothesized that product packaging mediates the association between process innovation and operational performance in Ghanaian manufacturing firms. The findings showed that product packaging has a positive and statistically significant mediating influence on the link between process innovation and operational performance. The study's findings confirm the hypothesized relationship between the factors. The study implies that, the connection between process innovation and operational performance is improved due to the advent of product packaging. The study found that increases in product packaging may increase the positive effects of process innovation on operational performance for the manufacturing.

Using attractive and practical packaging is a proven method of boosting sales. Several companies use packaging as a means of communicating with customers visually. Paine & Paine (2012) argue that packaging is the backbone of every product. Packing is necessary for storage and delivery of the product. The packaging gives the product a distinct character. Packaging, therefore, is the process of providing a product with a protective and informative covering that serves to safeguard the object during

handling, storage, and transport while also informing the recipient about the contents of the package. The findings imply that process innovation may boost a manufacturing business's operational performance if the organization adopts better product design and evaluation. The results back up the claim that buyers are heavily affected by a product's packaging, especially its aesthetic attractiveness (Raheem, Ahmed, Vishnu and Imamuddin, 2014). The results are also consistent with the findings of Chukwuma et al. (2018), who discovered that product packaging increases the sales volume of SMEs. The results are also consistent with those of Baccarella et al. (2021), who demonstrated that the relationship between persuasive packaging and consumer intent is mediated by the perceived value of the product itself.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 Introduction

This last part of the study provides a summary of the findings as well as suggestions for areas that need more research. Both the overall scope of this research as well as its possible influence on studies to come in the future were taken into consideration.

5.2 Summary of Findings

The main goal of the study was to investigate the impact of process innovation on operational performance of manufacturing firms through the mediating role of product packaging. The most important findings are subdivided and presented with reference to the aforementioned analyses and the earlier studies. When viewed in light of the aims of the study, the findings that are presented below are entirely reasonable.

5.2.1 Effect of Process Innovation on Operational Performance

The objective of the study was to investigate the effect of process innovation on operational performance of manufacturing firms. It was hypothesized in the study that manufacturing firms' operational performance is positively and significantly influenced by process innovation. The findings illustrated that there is a significant positive connection between the firms process innovation and their operational performance. The results of the study provide support for the hypothesis that the factors under consideration are related. It also shows that, all else being equal, the observed variations in operational performance in the firms may be explained by the extent to which process innovation is handled. Results suggested that if the firms

emphasized process innovation, it might lead to better sustainable and equitable operational performance.

Process innovation involves major upgrades to methods, hardware, and software. In order to make informed decisions about how to maximize a service before introducing it to the market, process innovation techniques are essential. It helps businesses create plans that save both money and time. The findings imply that manufacturing organizations will experience a significant increase in performance after adopting a new production or delivery method that involves substantial changes in technique, equipment, and software.

5.2.2 Effect of Process Innovation on Product Packaging

The objective two of the study was to examine the influence of process innovation on product packaging. It was hypothesized that process innovation has positive influence on product packaging in manufacturing firms in Ghana. The findings demonstrated that there was a significant and positive connection between process innovation and product packaging. This study's results provide support to the idea that the two are linked. When other variables are held constants, the research found that process innovation were responsible for the variance in operational performance in the firms. There is a need for the firms to prioritize process innovation to improve product packaging in the firms.

Innovations in packaging design and the adoption of new materials are made with the goal of lessening the product's negative effects on the environment. Agriculture, industry, retail, and consumers all make use of packaging at some point throughout the distribution of food and drink. Improvements in packaging might save money by cutting down on waste, as well as boost revenue by increasing product appeal. The

results of the research suggest that when the manufacturing sector adopts substantial changes in their production processes and equipment or transportation method, it will affect the packaging of their products.

5.2.3 The mediating role of Product Packaging in the Relationship between Process Innovation on Operational Performance

The third objective of the study was to investigate the mediating role of product packaging on the relationship between process innovation and operational performance. The study again also hypothesized that product packaging mediates the association between process innovation and operational performance in Ghanaian manufacturing firms. The findings showed that product packaging has a positive and statistically significant mediating influence on the link between process innovation and operational performance. The study's findings confirm the hypothesized relationship between the factors. The study implies that, the connection between process innovation and operational performance is improved due to the advent of product packaging. The study found that increases in product packaging may increase the positive effects of process innovation on operational performance for the manufacturing.

Using attractive and practical packaging is a proven method of boosting sales. Several companies use packaging as a means of communicating with customers visually. It is argued that packaging is the backbone of every product. Packing is necessary for storage and delivery of the product. The packaging gives the product a distinct character. Packaging, therefore, is the process of providing a product with a protective and informative covering that serves to safeguard the object during handling, storage, and transport while also informing the recipient about the contents of the package. The findings imply that process innovation may boost a manufacturing business's

operational performance if the organization adopts better product design and evaluation.

5.3 Conclusion

The primary purpose of the research was to look at how process innovation affects manufacturing companies' operational performance through the mediating function of product packaging. The study used a cross-sectional explanatory survey methodology, and quantitative data was analyzed using inductive reasoning. Quantitative approaches were employed in all phases from data collection and analysis to interpretation. The study included 220 high-ranking business professionals from supply chain and logistics, manufacturing, quality control, and related fields. Participants were purposively selected for the study. Using Structural Equation Modeling, the study confirmed the hypotheses (SmartPLS 4). The data was presented using descriptive statistics. According to the results, process innovation has positive and significant effect on operational performance of the manufacturing firms. The research also found that product packaging mediated the association between process innovation and operational performance. The implication of the results is that manufacturing enterprises would benefit from greater operational performance if they invested in process innovation and product packaging.

5.4 Recommendation

The primary purpose of the research was to look at how process innovation affects manufacturing companies' operational performance through the mediating function of product packaging. According to the results, process innovation has positive and significant effect on operational performance of the manufacturing firms. The research also found that product packaging mediated the association between process

innovation and operational performance. This further demonstrates that manufacturing enterprises would benefit from greater operational performance if they invested in process innovation and product packaging. The following recommendations were suggested based on the findings.

- According to the findings, business operations benefit greatly from process innovation. According to the results, manufacturing companies will experience a dramatic improvement in performance following implementing radical changes in their production and distribution processes. The leadership of manufacturing companies must embrace new technology in order to boost productivity and performance. Process innovation teams can make recommendations to management regarding the acquisition of such technologies as automation tools, which optimize the manual tasks in a given process, as well as customer-centric strategies, which enhance client satisfaction and facilitate both data-driven and intuitive decision-making.
- The research revealed that firm-level product packaging is highly impacted by process innovation. According to the findings, product packaging is impacted when manufacturers make major adjustments to their production methods, equipment, or modes of delivery. Partnerships with key stakeholders within the company are crucial to successful innovation. Successful innovation requires companies to forge bonds with their staff, clients, vendors, and neighbors. Also, the firms should use data for informed decision-making.
- Moreover, product packaging is shown to be a mediator between process innovation and operational performance. The results suggest that if a manufacturing company implements improved product design and assessment, process innovation may improve the company's operational performance.

Management should perform a thorough packaging sustainability audit in a bid to better comprehend the service life of packing goods and supplies and to inform a high-level packaging design review that will help improve packaging design by examining its flaws, benefits, economic aspects, efficiency, and more.

5.5 Limitations and Future Research Direction

While evaluating the findings of the study, it's important to keep in mind a few limitations. First, the study used a cross-sectional research approach, which suggests that the findings may not be reliable since it produce data over a short period of time. Secondly, the researcher employed PLS SEM for the study, and as it is a variance-based programme, the findings may not be legitimate when compared to the more reliable outcomes produced by co-variance software such as Lisrel, regression analysis, and Amos. As the research was limited to a single industry (manufacturing), its results may not be applicable to other settings. As a cross-sectional study only takes a short amount of time, the factors in the study may not be investigated further, and it is advised that future research employ a longitudinal research design to be able to gather data over a long period of time to confirm the studies findings. The study also suggested using parametric tools (co-variance analysis tools) such as regression analysis, Lisrel, and Amos for future studies to do further data robustness checks. More companies should be included in future research to verify the findings.

REFERENCES

- Abor, I.J., 2015. The need to effectively prepare the technological education teacher for quality education in Nigeria for social transformation, self-reliance, and economic development.
- Abor, J. and Quartey, P., 2010. Issues in SME development in Ghana and South Africa. *International research journal of finance and economics*, 39(6), pp.215-228.
- Abor, P.A., 2015. The effects of healthcare governance and ownership structure on the performance of hospitals in Ghana. *International Journal of Law and Management*.
- Addo, E.O., 2017. The impact of manufacturing industries on Ghana's economy. *Int J Res Stud Manage*, 6, pp.73-94.
- Afriyie, S., Du, J. and Ibn Musah, A.A., 2019. Innovation and marketing performance of SME in an emerging economy: the moderating effect of transformational leadership. *Journal of Global Entrepreneurship Research*, 9(1), pp.1-25.
- Ahiakpor, F., Dasmani, I., Annim, S.K. and Nordjo, R.E., 2021. Access to Finance and Efficiency of Firms in Ghana. *African Finance Journal*, 23(2), pp.22-35.
- Ahmed, M., Ullah, S. and Paracha, Z.U.H. 2012. The retail food sector in Pakistan. *International Journal of Academic Research in Business and Social Sciences*, 2(12), p. 122.
- Ahmed, R., Vishnu, P., Ahmad, N., Warraich, U.A. and Khoso, I., 2014. The communication mix in pharmaceutical marketing. *The Pharma Innovation Journal*, 3(5), pp.46-53.
- Ahsan Ansari, M.U. and Siddiqui, D.A., 2019. Packaging features and consumer buying behavior towards packaged food items. *Ansari, MUA and Siddiqui, DA (2019). Packaging Features and Consumer Buying Behavior towards Packaged Food Items. Global Scientific Journal*, 7(3), pp.1050-1073.
- Alegre, J., Sengupta, K. and Lapiedra, R., 2013. Knowledge management and innovation performance in a high-tech SMEs industry. *International Small Business Journal*, 31(4), pp.454-470.
- Alhamdi, F., 2020. Role of packaging in consumer buying behavior. *Management Science Letters*, 10(6), pp.1191-1196.
- Ali, A., Sherwani, M., Ali, A., Ali, Z. and Sherwani, M., 2020. Investigating the antecedents of halal brand product purchase intention: an empirical investigation. *Journal of Islamic Marketing*, 12(7), pp.1339-1362.
- Ali, T., Tripathi, P., Azam, A., Raza, W., Ahmed, A.S., Ahmed, A. and Muneer, M., 2017. Photocatalytic performance of Fe-doped TiO₂ nanoparticles under visible-light irradiation. *Materials Research Express*, 4(1), p.015022.
- AlQershi, N., Abas, Z. and Mokhtar, S., 2021. The intervening effect of structural capital on the relationship between strategic innovation and manufacturing SMEs' performance in Yemen. *Management Science Letters*, 11(1), pp.21-30.

- Al-Sa'di, Ahmad Fathi; Abdallah, Ayman Bahjat; Dahiyat, Samer Eid (2017). *The mediating role of product and process innovations on the relationship between knowledge management and operational performance in manufacturing companies in Jordan*. *Business Process Management Journal*,
- Al-Samarraie, H., Eldenfria, A., Dodoo, J.E., Alzahrani, A.I. and Alalwan, N., 2019. Packaging design elements and consumers' decision to buy from the Web: A cause and effect decision-making model. *Color Research & Application*, 44(6), pp.993-1005.
- Al-Siyabi, M., Amin, G.R., Bose, S. and Al-Masroori, H., 2019. Peer-judgment risk minimization using DEA cross-evaluation with an application in fishery. *Annals of Operations Research*, 274(1), pp.39-55.
- American Psychological Association. (2017). Ethical principles of psychologists and code of conduct. Retrieved from <https://www.apa.org/ethics/code>
- American Psychological Association. (2020). Publication manual of the American Psychological Association (7th ed.). American Psychological Association.
- Amjad Iqbal, Fawad Latif, Frederic Marimon, Umar Farooq Sahibzada, Saddam Hussain, (2018). From knowledge management to organizational performance: Modelling the mediating role of innovation and intellectual capital in higher education. *Journal of Enterprise Information Management*.
- Ampuero, O. and Vila, N., 2006. Consumer perceptions of product packaging. *Journal of consumer marketing*.
- Ampuero, O. and Vila, N., 2006. Consumer perceptions of product packaging. *Journal of consumer marketing*.
- Anning-Dorson, T., 2021. The level matters: building capabilities for innovation and enterprise performance through customer involvement. *European Journal of Innovation Management*.
- Asare-Akoto Frimpong, F.R.A.N.K., Gyekye, E. and Abbiw, M.F., 2013. *Changing customer attitude through the use of packaging in the food and beverage industry* (Doctoral dissertation).
- Asiedu, R.R.O., 2017. *Online Brand Community And Brand Loyalty: The Role Of Brand Trust And Brand Commitment* (Doctoral dissertation, University of Ghana).
- Atalay, M., Anafarta, N. and Sarvan, F., 2013. The relationship between innovation and firm performance: Empirical evidence from Turkish automotive supplier industry. *Procedia-Social and Behavioral Sciences*, 75, pp.226-235.
- Babbie, E., 2004. Survey research. *The practice of social research*, 10(1), pp.242-280.
- Baccarella, C.V., Maier, L. and Voigt, K.I., 2021. How consumption-supportive packaging functionality influences consumers' purchase intentions: the mediating role of perceived product meaningfulness. *European Journal of Marketing*, 55(8), pp.2239-2268.

- Bagozzi, R.P., Yi, Y. and Baumgartner, J., 1990. The level of effort required for behaviour as a moderator of the attitude–behaviour relation. *European Journal of Social Psychology*, 20(1), pp.45-59.
- Barclay, D., Higgins, C. and Thompson, R., 1995. *The partial least squares (PLS) approach to casual modeling: personal computer adoption ans use as an Illustration*.
- Barney, J., 1991. Firm resources and sustained competitive advantage. *Journal Of Management*, 17(1), pp.99-120.
- Barney, J.B., 2001. Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27(6), pp.643-650.
- Bhattacharjee, A., 2012. Social science research: Principles, methods, and practices.
- Bilgin, Y., 2018. The effect of social media marketing activities on brand awareness, brand image and brand loyalty. *Business and management studies: An International Journal*, 6(1), pp.128-148.
- Blay Jnr, A.V.K., Kukah, A.S.K., Opoku, A. and Asiedu, R., 2022. Impact of competitive strategies on achieving the sustainable development goals: Context of Ghanaian construction firms. *International Journal of Construction Management*, pp.1-12.
- British Educational Research Association. (2018). Ethical guidelines for educational research. Retrieved from <https://www.bera.ac.uk/wp-content/uploads/2018/04/BERA-Ethical-Guidelines-2018.pdf>
- Bryman, A. and Bell, E., 2015. Business research methods (Vol. 4th). *Glasgow: Bell & Bain Ltd.*
- Bryman, A., 2012. Social research methods 4th ed.
- Bukhari, S.F.H., Woodside, F.M., Hassan, R., Shaikh, A.L., Hussain, S. and Mazhar, W., 2019. Is religiosity an important consideration in Muslim consumer behavior: Exploratory study in the context of western imported food in Pakistan. *Journal of Islamic Marketing*.
- Cachero-Martínez, S., 2020. Consumer behaviour towards organic products: The moderating role of environmental concern. *Journal of Risk and Financial Management*, 13(12), p.330.
- Chico, J. R., Sanchez, A. R. P., & Garcia, M. J., 2017. Food exports competitiveness in E.U. by countries. *Economic and Managerial Spectrum*, 11 (1), 25–36.
- Chin, W., Cheah, J.H., Liu, Y., Ting, H., Lim, X.J. and Cham, T.H., 2020. Demystifying the role of causal-predictive modeling using partial least squares structural equation modeling in information systems research. *Industrial Management & Data Systems*, 120(12), pp.2161-2209.
- Chin, W.W., 1998. The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), pp.295-336.

- Chong, J., Wishart, D.S. and Xia, J., 2019. Using MetaboAnalyst 4.0 for comprehensive and integrative metabolomics data analysis. *Current protocols in bioinformatics*, 68(1), p.e86.
- Chukwuma, A.I., Ezenyilimba, E. and Aghara, V.N., 2018. An Assessment on How Intensive Distribution by Small and Medium Scale Bakeries in South-Eastern Nigeria Affects Their Sales Volume. *Scholars Journal of Economics Business and Management (SJEEM)*, 5(3), pp.864-873.
- Clegg, L.J., Voss, H. and Tardios, J.A., 2018. The autocratic advantage: Internationalization of state-owned multinationals. *Journal of World Business*, 53(5), pp.668-681.
- Collis, V. and Hussey, Y., 2009. Sampling techniques.
- Committee on Publication Ethics. (2019). Code of Conduct and Best Practice Guidelines for Journal Editors. Retrieved from <https://publicationethics.org/resources/code-conduct>
- Cooper, D.R. and Schindler, P.S., 2006. *Marketing research*. New York: McGraw-Hill/Irwin.
- Creswell, J.W., 2014. Qualitative, quantitative and mixed methods approaches.
- Dangelico, R.M. and Vocalelli, D., 2017. "Green Marketing": An analysis of definitions, strategy steps, and tools through a systematic review of the literature. *Journal of Cleaner production*, 165, pp.1263-1279.
- Das, C. and Jharkharia, S., 2018. Low carbon supply chain: A state-of-the-art literature review. *Journal of Manufacturing Technology Management*, 29(2), pp.398-428.
- Davila, T., Epstein, M. and Shelton, R., 2012. *Making innovation work: How to manage it, measure it, and profit from it*. FT press.
- Deepak, R.K.A. and Jeyakumar, S., 2019. *Marketing management*. Educreation Publishing.
- Demirdöğen, O., Erdal, H. and Akbaba, A.İ., 2018. The analysis of factors that affect innovation performance of logistics enterprises in Turkey. In *German-Turkish Perspectives on IT and Innovation Management* (pp. 143-164). Springer Gabler, Wiesbaden.
- Dereli, D.D., 2015. Innovation management in global competition and competitive advantage. *Procedia-Social and behavioral sciences*, 195, pp.1365-1370.
- Desai, M.A.S., Qureshi, M.F. and Fazal, S., 2019. Impact of packaging on consumer buying behavior: a study made on millennial of karachi. *IBT J Busin Stud*, 2, pp.109-25.
- Durmuş-Özdemir, Eren; Abdukhoshimov, Khamroz (2017). *Exploring the mediating role of innovation in the effect of the knowledge management process on performance. Technology Analysis and Strategic Management*

- Expósito, A. and Sanchis-Llopis, J.A., 2019. The relationship between types of innovation and SMEs' performance: A multi-dimensional empirical assessment. *Eurasian Business Review*, 9(2), pp.115-135.
- Ezekowitz, J.A., O'Meara, E., McDonald, M.A., Abrams, H., Chan, M., Ducharme, A., Giannetti, N., Grzeslo, A., Hamilton, P.G., Heckman, G.A. and Howlett, J.G., 2017. 2017 Comprehensive update of the Canadian Cardiovascular Society guidelines for the management of heart failure. *Canadian Journal of Cardiology*, 33(11), pp.1342-1433.
- F. Hair Jr, J., Sarstedt, M., Hopkins, L. and G. Kuppelwieser, V., 2014. Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European business review*, 26(2), pp.106-121.
- Farooq, S., Habib, S. and Aslam, S., 2015. Influence of product packaging on consumer purchase intentions. *International Journal of Economics, Commerce and Management*, 3(12), pp.538-547.
- Federico, G., Morton, F.S. and Shapiro, C., 2020. Antitrust and innovation: Welcoming and protecting disruption. *Innovation Policy and the Economy*, 20(1), pp.125-190.
- Fong, K.F., Lee, C.K. and Zhao, T.F., 2017. Effective design and operation strategy of renewable cooling and heating system for building application in hot-humid climate. *Solar Energy*, 143, pp.1-9.
- Fornell, C. and Larcker, D.F., 1981. Structural equation models with unobservable variables and measurement error: Algebra and statistics.
- Fornell, C. and Larcker, D.F., 1981. Structural equation models with unobservable variables and measurement error: Algebra and statistics.
- Fudhlaa, A.F., Rachmawati, W. and Retnowati, D., 2021, February. Analysis of sugar import policy effects on sugar cane farmer's income in East Java: A system dynamic approach. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1072, No. 1, p. 012023). IOP Publishing.
- Gamage, K.A., Silva, E.K.D. and Gunawardhana, N., 2020. Online delivery and assessment during COVID-19: Safeguarding academic integrity. *Education Sciences*, 10(11), p.301.
- Geisser, S., 1974. A predictive approach to the random effect model. *Biometrika*, 61(1), pp.101-107.
- Ghauri, P. and Gronhaug, K., 2005. Research methods in business studies: A practical Guide (E-book). New York. *Financial Times Prentices*, 75.
- Gomez-Conde, J., Lunkes, R.J. and Rosa, F.S. (2019), "Environmental innovation practices and operational performance: The joint effects of management accounting and control systems and environmental training", *Accounting, Auditing and Accountability Journal*, Vol. 32 No. 5, pp. 1325-1357
- Gorsuch, R.L., 1993. Common factor analysis versus component analysis: Some well and little known facts. *Multivariate Behavioral Research*, 25(1), pp.33-39.

- Gow, I.D., Kaplan, S.N., Larcker, D.F. and Zakolyukina, A.A., 2016. *CEO personality and firm policies* (No. w22435). *National Bureau of Economic Research*.
- GS, A., Kurniasih, N., Reni, A., Istanti, E., Zuhroh, D. and Qomariah, N., 2019. The effect of business sphere on competitive advantage and business performance of SMEs. *Management Science Letters*, 9(8), pp.1153-1160.
- Guerrero-Villegas, J., Sierra-García, L. and Palacios-Florencio, B., 2018. The role of sustainable development and innovation on firm performance. *Corporate Social Responsibility and Environmental Management*, 25(6), pp.1350-1362.
- Guertin, W.H. and Bailey, J.P., 1970. *Introduction to modern factor analysis*. Edwards Brothers.
- Hair Jr, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G., 2014. Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European business review*.
- Hair Jr, J.F., Sarstedt, M., Matthews, L.M. and Ringle, C.M., 2016. Identifying and treating unobserved heterogeneity with FIMIX-PLS: part I—method. *European Business Review*.
- Hair, J.F., Anderson, R.E., Babin, B.J. and Black, W.C., 2010. Multivariate data analysis: A global perspective (Vol. 7).
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E., 2009. Multivariate data analysis. Upper Saddle River, NJ [etc.]. *Pearson Prentice Hall, New York, NY: Macmillan*, 24, p.899.
- Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. *European business review*, 31(1), pp.2-24.
- Hamdar, B.C., Al Dana, M. and Al Chawa, G., 2018. Economic Effects of Product Packaging on Consumer Shopping Behavior: The Case of Lebanon. *American Journal of Theoretical and Applied Business*, 4(2), pp.44-47.
- Hameed, I., Waris, I. and Amin ul Haq, M., 2019. Predicting eco-conscious consumer behavior using theory of planned behavior in Pakistan. *Environmental Science and Pollution Research*, 26(15), pp.15535-15547.
- Haraguchi, N., Cheng, C.F.C. and Smeets, E., 2017. The importance of manufacturing in economic development: has this changed?. *World Development*, 93, pp.293-315.
- Haudi, H., Wijoyo, H. and Cahyono, Y., 2020. Effect of Product Innovation and Marketing Strategy on Consumer Purchase Decisions in Indonesia's Lightweight Roof Steel Industry. *Journal of Critical Reviews*, 7(13).
- Hendrayati, H. and Gaffar, V., 2016. Innovation and marketing performance of womenpreneur in fashion industry in Indonesia. *Procedia-Social and Behavioral Sciences*, 219, pp.299-306.
- Henseler, J., Ringle, C.M. and Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), pp.115-135.

- Henseler, J., Ringle, C.M. and Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43, pp.115-135.
- Henseler, J., Ringle, C.M. and Sinkovics, R.R., 2009. The use of partial least squares path modeling in international marketing. In *New challenges to international marketing*. Emerald Group Publishing Limited.
- Herman, Hendri, Hamdy Hady, and Willy Arafah. "The influence of market orientation and product innovation on the competitive advantage and its implication toward Small and Medium Enterprises (UKM) performance." *International Journal of Science and Engineering Invention* 4, no. 08 (2018): 08-to.
- Hitomi, K., 2017. *Manufacturing Systems Engineering: A unified approach to manufacturing technology, production management, and industrial economics*. Routledge.
- Hogan, S.J. and Coote, L.V., 2014. Organizational culture, innovation, and performance: A test of Schein's model. *Journal of business research*, 67(8), pp.1609-1621.
- Hudson, M., Lean, J. and Smart, P.A., 2001. Improving control through effective performance measurement in SMEs. *Production Planning and Control*, 12(8), pp.804-813.
- Hullova, D., Trott, P. and Simms, C.D., 2016. Uncovering the reciprocal complementarity between product and process innovation. *Research policy*, 45(5), pp.929-940.
- Humphreys, L.G., Ilgen, D., McGrath, D. and Montanelli, R., 1969. Capitalization on chance in rotation of factors. *Educational and Psychological Measurement*, 29(2), pp.259-271.
- Huntington-Klein, N., 2021. *The effect: An introduction to research design and causality*. Chapman and Hall/CRC.
- Hussain, Z., 2022. Intention to Purchase Halal Cosmetic Products in an Islamic Pakistani Culture. *Journal of Islamic Economics and Finance Studies*, 3(1), pp.1-11.
- Iwu-Egwuonwu, D. and Chibuike, R., 2010. Corporate reputation & firm performance: Empirical literature evidence. *Ronald Chibuike, Corporate Reputation & Firm Performance: Empirical Literature Evidence (August 16, 2010)*.
- Jiménez-Jiménez, D. and Sanz-Valle, R., 2011. Innovation, organizational learning, and performance. *Journal of business research*, 64(4), pp.408-417.
- Jose Benedicto Duhaylongsod, Pietro De Giovanni, (2018) "The impact of innovation strategies on the relationship between supplier integration and operational performance", *International Journal of Physical Distribution and Logistics Management*.
- Kahn, K.B., 2018. NPD process formality across global regions. *International Journal of Innovation Science*.

- Kalkan, A., Bozkurt, Ö.Ç. and Arman, M., 2014. The impacts of intellectual capital, innovation and organizational strategy on firm performance. *Procedia-Social and Behavioral Sciences*, 150, pp.700-707.
- Kalpana, S., Priyadarshini, S.R., Leena, M.M., Moses, J.A. and Anandharamakrishnan, C., 2019. Intelligent packaging: Trends and applications in food systems. *Trends in Food Science and Technology*, 93, pp.145-157.
- Kapoor, S. and Kumar, N., 2019. Does packaging influence purchase decisions of food products? A study of young consumers of India. *Academy of Marketing Studies Journal*, 23(3), pp.1-16.
- Karlsson, C. and Tavassoli, S., 2016. Innovation strategies of firms: What strategies and why? *The Journal of Technology Transfer*, 41(6), pp.1483-1506.
- Karnal, N., Machiels, C.J., Orth, U.R. and Mai, R., 2016. Healthy by design, but only when in focus: Communicating non-verbal health cues through symbolic meaning in packaging. *Food Quality and Preference*, 52, pp.106-119.
- Kayanula, D. and Quartey, P., 2000. Paper on the policy environment for prompting small and medium-sized enterprise in Ghana and Malawi. *University of Manchester: Crawford House*.
- Keller, R.L., Feng, R., DeMauro, S.B., Ferkol, T., Hardie, W., Rogers, E.E., Stevens, T.P., Voynow, J.A., Bellamy, S.L., Shaw, P.A. and Moore, P.E., 2017. Bronchopulmonary dysplasia and perinatal characteristics predict 1-year respiratory outcomes in newborns born at extremely low gestational age: a prospective cohort study. *The Journal of Pediatrics*, 187, pp.89-97.
- Khan, M.I., Haleem, A. and Khan, S., 2018, April. Defining halal supply chain management. In *Supply Chain Forum: An International Journal* (Vol. 19, No. 2, pp. 122-131). Taylor & Francis.
- Kiziloglu, M., 2015. The Effect of Organizational Learning on Firm Innovation Capability: An Investigation in the Banking Sector. *Global Business & Management Research*, 7(3).
- Klimchuk, M.R. and Krasovec, S.A., 2013. *Packaging design: Successful product branding from concept to shelf*. John Wiley and Sons.
- Klimczak, K.M. and Shachmurove, Y. eds., 2021. *Organizational Change and Relational Resources*. Routledge.
- Kothari, C.R., 2004. *Research methodology: Methods and techniques*. New Age International.
- Krejcie, R.V. and Morgan, D.W., 1970. Determining sample size for research activities. *Educational and psychological measurement*, 30(3), pp.607-610.
- Kuhlgert, S., Austic, G., Zegarac, R., Osei-Bonsu, I., Hoh, D., Chilvers, M.I., Roth, M.G., Bi, K., TerAvest, D., Weebadde, P. and Kramer, D.M., 2016. MultispeQ Beta: a tool for large-scale plant phenotyping connected to the open PhotosynQ network. *Royal Society open science*, 3(10), p.160592.

- Kumar, N. and Kapoor, S., 2017. Do labels influence purchase decisions of food products? Study of young consumers of an emerging market. *British Food Journal*.
- Li, C.Z., Zhong, R.Y., Xue, F., Xu, G., Chen, K., Huang, G.G. and Shen, G.Q., 2017. Integrating RFID and BIM technologies for mitigating risks and improving schedule performance of prefabricated house construction. *Journal of cleaner production*, 165, pp.1048-1062.
- Liao, Y. and Barnes, J., 2015. Knowledge acquisition and product innovation flexibility in SMEs. *Business Process Management Journal*.
- Liu, W. and Atuahene-Gima, K., 2018. Enhancing product innovation performance in a dysfunctional competitive environment: The roles of competitive strategies and market-based assets. *Industrial Marketing Management*, 73, pp.7-20.
- Lonial, S.C. and Carter, R.E., 2015. The impact of organizational orientations on medium and small firm performance: A resource-based perspective. *Journal of Small Business Management*, 53(1), pp.94-113.
- Lonial, S.C. and Carter, R.E., 2015. The impact of organizational orientations on medium and small firm performance: A resource-based perspective. *Journal of Small Business Management*, 53(1), pp.94-113.
- Lopez-Vega, H., Tell, F. and Vanhaverbeke, W., 2016. Where and how to search? Search paths in open innovation. *Research policy*, 45(1), pp.125-136.
- Lutz, S., Balboni, T., Jones, J., Lo, S., Petit, J., Rich, S.E., Wong, R. and Hahn, C., 2017. Palliative radiation therapy for bone metastases: Update of an ASTRO Evidence-Based Guideline. *Practical radiation oncology*, 7(1), pp.4-12.
- Ma, X., Wang, Y., Houle, M.E., Zhou, S., Erfani, S., Xia, S., Wijewickrema, S. and Bailey, J., 2018, July. Dimensionality-driven learning with noisy labels. In *International Conference on Machine Learning* (pp. 3355-3364). PMLR.
- Mahmud, I., Ramayah, T. and Kurnia, S., 2017. To use or not to use: Modelling end user grumbling as user resistance in pre-implementation stage of enterprise resource planning system. *Information Systems*, 69, pp.164-179.
- Mahmutaj, L.R. and Krasniqi, B., 2020. Innovation types and sales growth in small firms evidence from Kosovo. *The South East European Journal of Economics and Business*, 15(1), pp.27-43.
- Malhotra, N. and Birks, D.F., 2007. An applied approach. *Marketing research*. London: Prentice Hall.
- Mardani, A., Nikoosokhan, S., Moradi, M. and Doustar, M., 2018. The relationship between knowledge management and innovation performance. *The Journal of High Technology Management Research*, 29(1), pp.12-26.
- Martinez-Conesa, I., Soto-Acosta, P. and Palacios-Manzano, M., 2017. Corporate social responsibility and its effect on innovation and firm performance: An empirical research in SMEs. *Journal of cleaner production*, 142, pp.2374-2383.

- McKechnie, S., 1992. Consumer buying behaviour in financial services: an overview. *International Journal of Bank Marketing*.
- Melnikovas, A., 2018. Towards an explicit research methodology: Adapting research onion model for futures studies. *Journal of Futures Studies*, 23(2), pp.29-44.
- Memia, F.K., 2018. *Influence of contemporary supply chain practices on performance of large manufacturing firms in Kenya* (Doctoral dissertation, JKUAT-COHRED).
- Mihaela, O.O.E., 2015. The influence of the integrated marketing communication on the consumer buying behaviour. *Procedia Economics and Finance*, 23, pp.1446-1450.
- Miocevic, D. and Morgan, R.E., 2018. Operational capabilities and entrepreneurial opportunities in emerging market firms: Explaining exporting SME growth. *International Marketing Review*.
- Mohajan, H., 2017. Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University Economics Series*, (4).
- N. Mohamad, S. Kamaruddin and U. S. Purwanto, "The effects of organizational innovation on operational performance and other types of innovation," *2015 International Conference on Industrial Engineering and Operations Management (IEOM)*, 2015, pp. 1-7
- Naresh, M., 2010. *Marketing Research: An Applied Orientation* (6* edition).
- Nastasia, M. and Mironeasa, C., 2016. Key performance indicators in small and medium sized enterprises. *Total quality management, 1*, p.2.
- National Academies of Sciences, Engineering, and Medicine. (2019). *Reproducibility and replicability in science*. National Academies Press.
- National Institutes of Health. (2021). *Protecting research participants*. Retrieved from <https://grants.nih.gov/policy/human-policies/index.htm>
- Ndiaye, N., Razak, L.A., Nagayev, R. and Ng, A., 2018. Demystifying small and medium enterprises'(SMEs) performance in emerging and developing economies. *Borsa Istanbul Review*, 18(4), pp.269-281.
- Neuman, W.L., 1997. Qualitative research design. *Social research methods: Qualitative and quantitative approaches*, pp.333-335.
- O'Shea, G., Farny, S. and Hakala, H., 2021. The buzz before business: A design science study of a sustainable entrepreneurial ecosystem. *Small Business Economics*, 56(3), pp.1097-1120.
- Odartei Lamptey, E., 2018. *Effects of labelling attributes of packaged products on consumer's choice in the Cape Coast Metropolis* (Doctoral dissertation, University of Cape Coast).
- Oduro, S., 2019. Examining open innovation practices in low-tech SMEs: Insights from an emerging market. *Journal of Science and Technology Policy Management*.

- Oppong, M., Owired, A. and Churchill, R.Q., 2014. Micro and small scale enterprises development in Ghana. *European Journal of Accounting Auditing and Finance Research*, 2(6), pp.84-97.
- Orzan, G., Cruceru, A. F., Bălăceanu, C. T., & Chivu, R.-G., 2018. Consumers' Behavior Concerning Sustainable Packaging: An Exploratory Study on Romanian Consumers. *Sustainability*, 10(6), 1787.
- Osei Sekyere, J., 2016. Current state of resistance to antibiotics of last-resort in South Africa: a review from a public health perspective. *Frontiers in public health*, 4, p.209.
- Osei Sekyere, J., 2016. Current state of resistance to antibiotics of last-resort in South Africa: a review from a public health perspective. *Frontiers in public health*, 4, p.209.
- Osei, A., Yunfei, S., Appienti, W.A. and Forkuoh, S.K., 2016. The antecedents of process innovation and SMEs growth: Empirical evidence from shoe manufacturing sector in the Ashanti Region of Ghana. *European Scientific Journal*, 12(10), pp.1-11.
- Paine, D.P. and Kiser, J.D., 2012. *Aerial photography and image interpretation*. John Wiley and Sons.
- Panda, D., Masani, S. and Dasgupta, T., 2022. Packaging-influenced-purchase decision segment the bottom of the pyramid consumer marketplace? Evidence from West Bengal, India. *Asia Pacific Management Review*, 27(2), pp.145-153.
- Panda, D., Masani, S. and Dasgupta, T., 2022. Packaging-influenced-purchase decision segment the bottom of the pyramid consumer marketplace? Evidence from West Bengal, India. *Asia Pacific Management Review*, 27(2), pp.145-153.
- Pandit, H.J., O'Sullivan, D. and Lewis, D., 2018. Queryable provenance metadata for GDPR compliance. *Procedia Computer Science*, 137, pp.262-268.
- Panno, A., 2019. Performance measurement and management in small companies of the service sector; evidence from a sample of Italian hotels. *Measuring business excellence*.
- Pereira, V., 2018. Institutional Investors of Portuguese Banks. In *Proceedings of 44th Annual Conference of European International Business Academy* (p. 65). 44th Annual Conference of European International Business Academy.
- Pfeiffer, M., Schaeuble, M., Nieto, J., Siegwart, R. and Cadena, C., 2017, May. From perception to decision: A data-driven approach to end-to-end motion planning for autonomous ground robots. In *2017 IEEE International Conference on Robotics and Automation (ICRA)* (pp. 1527-1533). IEEE.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), p.879.

- Popa, S., Soto-Acosta, P. and Perez-Gonzalez, D., 2018. An investigation of the effect of electronic business on financial performance of Spanish manufacturing SMEs. *Technological Forecasting and Social Change*, 136, pp.355-362.
- Press, S.J., 1972. Estimation in univariate and multivariate stable distributions. *Journal of the American statistical association*, 67(340), pp.842-846.
- Quartey, S.H., 2017. Examining employees' safety behaviours: an industry-level investigation from Ghana. *Personnel Review*.
- Raheem, A., R., Ahmad, N., Vishnu, P., and Imamuddin, K., 2014. Role of Packaging and Labeling on Pakistani Consumers Purchase Decision. *European Journal of Scientific Research*, 10(16), 464-473.
- Rajapathirana, R.J. and Hui, Y., 2018. Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation and Knowledge*, 3(1), pp.44-55.
- Retnowati, E., Lestari, U.P., Mardikaningsih, R., Sinambela, E.A., Darmawan, D., Putra, A.R. and Arifin, S., 2021. The Effect of Packaging, Product Variance, and Brand Equity on Nutella Consumer Trust. *Asian Journal of Management, Entrepreneurship and Social Science*, 1(1), pp.169-180.
- Ringle, C., Da Silva, D. and Bido, D., 2015. Structural equation modeling with the SmartPLS. Bido, D., da Silva, D., & Ringle, C.(2014). *Structural Equation Modeling with the Smartpls*. *Brazilian Journal Of Marketing*, 13(2).
- Ritala, P., Huizingh, E., Almpapoulou, A. and Wijnbenga, P., 2017. Tensions in RandD networks: Implications for knowledge search and integration. *Technological Forecasting and Social Change*, 120, pp.311-322.
- Rummel, R.J., 1970. *Applied factor analysis*. Northwestern University Press.
- Rundh, B., 2007. International marketing behaviour amongst exporting firms. *European Journal of Marketing*.
- Saji, K.B. and Mishra, S.S., 2013. Investigating the role of firm resources and environmental variables in new product commercialization. *Journal of Product and Brand Management*.
- Sangroya, D. and Nayak, J.K., 2017. Factors influencing buying behaviour of green energy consumer. *Journal of cleaner production*, 151, pp.393-405.
- Sangwa, N.R. and Sangwan, K.S., 2018. Leanness assessment of organizational performance: a systematic literature review. *Journal of Manufacturing Technology Management*.
- Sangwa, N.R. and Sangwan, K.S., 2018. Leanness assessment of organizational performance: a systematic literature review. *Journal of Manufacturing Technology Management*.
- Santoro, G., Ferraris, A. and Winteler, D.J., 2019. Open innovation practices and related internal dynamics: case studies of Italian ICT SMEs. *EuroMed Journal of Business*.

- Saunders, M., Lewis, P. and Thornhill, A., 2009. *Research methods for business students*. Pearson education.
- Saunders, M., Lewis, P. and Thornhill, A., 2016. *Research methods for business students (Seventh)*. Nueva York: Pearson Education.
- Saunders, M., Lewis, P.H.I.L.I.P. and Thornhill, A.D.R.I.A.N., 2007. *Research methods. Business Students 4th edition Pearson Education Limited, England*.
- Saunila Minna , (2014),"Innovation capability for SME success: perspectives of financial and operational performance", *Journal of Advances in Management Research*,
- Sehnem, S., Jabbour, C.J.C., Pereira, S.C.F. and de Sousa Jabbour, A.B.L., 2019. Improving sustainable supply chains performance through operational excellence: circular economy approach. *Resources, Conservation and Recycling*, 149, pp.236-248.
- Sekaran, U., 2003. *Research methods for business*. New York, USA: Hermitage Publishing Services.
- Shafiwu, A.B. and Mohammed, A., 2013. The effect of product differentiation on profitability in the petroleum industry of Ghana. *European Journal of Business and Innovation Research*, 1(4), pp.49-65.
- Shafiwu, A.B. and Mohammed, A., 2013. The effect of product differentiation on profitability in the petroleum industry of Ghana. *European Journal of Business and Innovation Research*, 1(4), pp.49-65.
- Sharma, S. and Modgil, S., 2019. TQM, SCM and operational performance: an empirical study of Indian pharmaceutical industry. *Business Process Management Journal*.
- Shi, C., Chen, H., Chen, W., Zhang, S., Chong, D. and Yan, J., 2015. 1D model to predict ejector performance at critical and sub-critical operation in the refrigeration system. *Energy Procedia*, 75, pp.1477-1483.
- Shi, D. and Maydeu-Olivares, A., 2020. The effect of estimation methods on SEM fit indices. *Educational and psychological measurement*, 80(3), pp.421-445.
- Silayoi, P. and Speece, M., 2007. The importance of packaging attributes: a conjoint analysis approach. *European journal of marketing*.
- Simao, L. and Franco, M., 2018. External knowledge sources as antecedents of organizational innovation in firm workplaces: a knowledge-based perspective. *Journal of Knowledge Management*.
- Sinisammal, J., Belt, P., Harkonen, J., Mottonen, M. and Vayrynen, S., 2012. Successful performance measurement in SMEs through personnel participation.
- Sitharam, S. and Hoque, M., 2016. Factors affecting the performance of small and medium enterprises in KwaZulu-Natal, South Africa. *Problems and perspectives in Management*, 14(2), pp.277-288.
- Smith, S.M. and Albaum, G.S., 2005. *Fundamentals of marketing research*. Sage.

- Soetanto, D., 2017. Networks and entrepreneurial learning: coping with difficulties. *International Journal of Entrepreneurial Behavior and Research*.
- Spack, J.A., Board, V.E., Crighton, L.M., Kostka, P.M. and Ivory, J.D., 2012. It's easy being green: The effects of argument and imagery on consumer responses to green product packaging. *Environmental Communication: A Journal of Nature and Culture*, 6(4), pp.441-458.
- Spence, C. and Velasco, C., 2018. On the multiple effects of packaging colour on consumer behaviour and product experience in the 'food and beverage' and 'home and personal care' categories. *Food quality and preference*, 68, pp.226-237.
- Stone, M., 1974. Cross-validation and multinomial prediction. *Biometrika*, 61(3), pp.509-515.
- Sumrin, S., Gupta, S., Asaad, Y., Wang, Y., Bhattacharya, S. and Foroudi, P., 2021. Eco-innovation for environment and waste prevention. *Journal of business research*, 122, pp.627-639.
- Sumrin, S., Gupta, S., Asaad, Y., Wang, Y., Bhattacharya, S. and Foroudi, P., 2021. Eco-innovation for environment and waste prevention. *Journal of business research*, 122, pp.627-639.
- Tarigan, Z.J.H., 2018. *The impact of organization commitment to process and product innovation in improving operational performance* (Doctoral dissertation, Petra Christian University).
- Tsai, C.L., Wang, Y.H., Kwan, M.H., Chen, P.C., Yao, F.W., Liu, S.C., Yu, J.L., Yeh, C.L., Su, R.Y., Wang, W. and Yang, W.C., 2017, December. Smart GaN platform: performance and challenges. In *2017 IEEE International Electron Devices Meeting (IEDM)* (pp. 33-1). IEEE.
- Ul-Durar, S., Awan, U., Varma, A., Memon, S. and Mention, A.L., 2023. Integrating knowledge management and orientation dynamics for organization transition from eco-innovation to circular economy. *Journal of Knowledge Management*.
- Underwood, R.L., 2003. The communicative power of product packaging: creating brand identity via lived and mediated experience. *Journal of marketing theory and practice*, 11(1), pp.62-76.
- UNURLU, Ç., 2019. The Mediating Role of Brand Performance on the Relationship between Confusion-Brand Loyalty and Uncertainty Avoidance-Brand Loyalty. *İzmir İktisat Dergisi*, 34(4), pp.491-510.
- Usman, M. and Hayat, N., 2019. Use of CNG and Hi-octane gasoline in SI engine: a comparative study of performance, emission, and lubrication oil deterioration. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, pp.1-15.
- Valaskova, K., Klietkova, J. and Krizanova, A., 2018. Consumer perception of private label products: An empirical research. *Journal of Competitiveness*, 10(3), p.149.

- Verma, P., Kumar, V., Mittal, A., Rathore, B., Jha, A. and Rahman, M.S., 2021. The role of 3S in big data quality: a perspective on operational performance indicators using an integrated approach. *The TQM Journal*.
- Voorhees, C.M., Brady, M.K., Calantone, R. and Ramirez, E., 2016. Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies. *Journal of the academy of marketing science*, 44, pp.119-134.
- Wadho, W. and Chaudhry, A., 2018. Innovation and firm performance in developing countries: The case of Pakistani textile and apparel manufacturers. *Research Policy*, 47(7), pp.1283-1294.
- Wadho, W. and Chaudhry, A., 2018. Innovation and firm performance in developing countries: The case of Pakistani textile and apparel manufacturers. *Research Policy*, 47(7), pp.1283-1294.
- Waheed, S., Khan, M.M. and Ahmad, N., 2018. Product packaging and consumer purchase intentions. *Market Forces*, 13(2).
- Waheed, S., Khan, M.M. and Ahmad, N., 2018. Product packaging and consumer purchase intentions. *Market Forces*, 13(2).
- Wang, L., Liu, H., Zhang, W., Yu, T., Jin, Q., Fu, B. and Liu, H., 2018. Recovery of organic matters in wastewater by self-forming dynamic membrane bioreactor: Performance and membrane fouling. *Chemosphere*, 203, pp.123-131.
- Wang, Z. and Wang, N., 2012. Knowledge sharing, innovation and firm performance. *Expert systems with applications*, 39(10), pp.8899-8908.
- Watkins, M.W., 2018. Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44(3), pp.219-246.
- West, J. and Bogers, M., 2014. Leveraging external sources of innovation: a review of research on open innovation. *Journal of product innovation management*, 31(4), pp.814-831.
- Wiengarten, F., Humphreys, P., Gimenez, C. and McIvor, R., 2016. Risk, risk management practices, and the success of supply chain integration. *International Journal of Production Economics*, 171, pp.361-370.
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191-2194.
- Xu, J., Serrano, A. and Lin, B., 2017. Optimal production and rationing policy of two-stage tandem production system. *International Journal of Production Economics*, 185, pp.100-112.
- Xu, M., Wang, Z., Wang, F., Hong, P., Wang, C., Ouyang, X., Zhu, C., Wei, Y., Hun, Y. and Fang, W., 2016. Fabrication of cerium doped Ti/nanoTiO₂/PbO₂ electrode with improved electrocatalytic activity and its application in organic degradation. *Electrochimica Acta*, 201, pp.240-250.
- Yamane, T., 1967. *Problems to accompany" Statistics, an introductory analysis"*. Harper & Row.

- Yu, W., Chavez, R., Jacobs, M.A. and Feng, M., 2018. Data-driven supply chain capabilities and performance: A resource-based view. *Transportation Research Part E: logistics and transportation review*, 114, pp.371-385.
- Zafar, M.Z., Maqbool, A., Cioca, L.I., Shah, S.G.M. and Masud, S., 2021. Accentuating the interrelation between consumer intention and healthy packaged food selection during COVID-19: A case study of Pakistan. *International Journal of Environmental Research and Public Health*, 18(6), p.2846.
- Zaidi, S.H.A. and Muhammad, B., 2012. Awareness of Pakistani consumers towards nutritional labeling on product packaging in terms of buying behavior. *International Journal of Business and Social Science*, 3(16).
- Zhang, F., Sun, S., Liu, C. and Chang, V., 2020. Consumer innovativeness, product innovation and smart toys. *Electronic Commerce Research and Applications*, 41, p.100974.
- Zhou, H., Wang, Q. and Zhao, X., 2020. Corporate social responsibility and innovation: A comparative study. *Industrial Management and Data Systems*.
- Zikmund, W.G., Babin, B.J., Carr, J.C. and Griffin, M., 2010. Business research methods: Sampling design and sampling procedures. In *Mason, OH: Library of Congress*.



APPENDICES
SURVEY QUESTIONNAIRE

Dear Sir/ Madam,

My name is, a postgraduate student at the Kwame Nkrumah University of Science and Technology, Kumasi, Department of Logistics and Supply Chain. This survey instrument has been designed to enable me to research the topic: **“The Effect of Process Innovation on Firm Performance: The Mediating Role of Product Packaging”**. Any information provided will be used for academic purposes ONLY. There are no risks associated with your participation, and your responses will remain confidential and anonymous.

SECTION A: RESPONDENT’S BIOGRAPHY

When completing this questionnaire, please tick [√] in the applicable box or provide an answer as applicable.

Please answer the following questions:

1. Gender: Male ☐ Female ☐
2. Age
18-30 years ☐ 31-40 year’s ☐ 41-50 years ☐ Above 50 years ☐
3. Level of Education
Junior High School ☐ Senior High School ☐ Diploma ☐ Bachelor Degree ☐
☐ Graduate Studies (Master / Ph.D.) ☐ Others ☐ For Others,
Please specify:.....

SECTION B: Packaging ((Desai et al., 2019; Farooq et al., 2015; Zaidi, S.H.A. and Muhammad, 2012; Spack et al., 2012).

To what extent do the following statements describe your perception of the Company packaging?

, using a scale of 1 to 5: Not at all – A very great extent

Package Innovation	1	2	3	4	5
I like attractive and interesting packaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The package being pretty forms effect on my purchase decision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I see the packaging of the product is usable, I buy it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I see the packaging of the product is suitable for my children at home, I buy it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I buy products whose packaging has a function for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer products with packaging-specific forms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Package Colour	1	2	3	4	5
When I go to the store, I pay attention to colourful packaging first	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I want to buy products for children, I buy colourful packaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think if the packaging has a variety of colours, it makes the decision easier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The packaging colour makes it attractive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Separable packaging label is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am satisfied, if I can remove the label on it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Package Material	1	2	3	4	5
When I want to purchase a product, the packaging is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packaging is meant to protect the product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packaging is not waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The packaging material is important because the environment is important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The plastic, glass and cardboard packaging is reusable, if well designed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think reusing the package after using the product, makes the packaging material important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Package Background Image	1	2	3	4	5
If the package is offered in different sizes, I decide more comfortably	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When a product is new, the package size is more important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer smaller packages because a product novel is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not utilise excessively large packages because this is feasible. The product's package must be of this captivating appearance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When buying time, I pay attention to the size	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not use too big packages because I cannot fit them in my house	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C: INNOVATION ((Martinez-Conesa et al., 2017; Guerrero-Villegas et al., 2018; Wang and Wang, 2012).

Please use a scale of 1=worse than competitors; to 5=much better than competitors, how would you rate this firm's innovativeness along the items shown in the table below:

	Statements/Measurement items	1	2	3	4	5
	PROCESS					
PR1	Improvising new methods when you cannot solve a problem using conventional methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PR2	Developing new processes to deliver products/services to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PR3	Introducing new service delivery processes to add value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PR4	Pursuing continuous improvement in operational processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	PRODUCT/SERVICE					
PS1	Developing new products that enhance service to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PS2	Delivering cutting-edge services/products that are not delivered by competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PS3	Promoting new product offerings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PS4	Constantly experimenting with new products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION E: FIRM PERFORMANCE (Wadho and Chaudhry, 2018; Sinisammal et al., 2012; Sousa et al., 2018; Fong et al., 2014; Kumar and Rahman, 2015; Fu et al., 2018).

Using a scale of 1 – 5 [where 1=much worse; 5=much better], indicate this firm's performance in relation to that of key competitors for the past 3 years:

	Statements/Measurement items	1	2	3	4	5
	OPERATIONAL PERFORMANCE					
OP1	The extent of flexibility in production/service delivery processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP2	The time it takes to serve customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP3	Consistency in meeting the needs of customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP4	The extent of variety in products/services offered to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP5	The nature of product/service support to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP6	Resource utilisation (e.g. human skills, time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP7	Cost of production/operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP8	The time it takes to introduce new products/service offerings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP9	The extent of product returns/service failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OP10	The ability to handle varied customer/market needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for participating in the survey.