

**Arab American University
Faculty of Graduate Studies
Department of Administrative and
Financial Science
Master Program in Strategic Planning and
Fundraising**



**The Role of Product and Process Innovation in Achieving Competitive
Advantage in Palestinian Food Industries Sector**

Shahd Sadek Ahmad Sandouka

202112689

Supervision Committee:

Dr. Raed Najjar

Dr. Raid Shomali

Dr. Rani Shahwan

**This Thesis Was Submitted in Partial Fulfilment of the Requirements for
the Master Degree in Strategic Planning and Fundraising**

Palestine, Jan/ 2026

© Arab American University. All rights reserved.

Arab American University
Faculty of Graduate Studies
Department of Administrative and
Financial Science
Master Program in Strategic Planning and
Fundraising



Thesis Approval

The Role of Product and Process Innovation in Achieving Competitive Advantage in Palestinian Food Industries Sector

Shahd Sadek Ahmad Sandouka

202112689

This thesis was defended successfully on 20.1.2026 and approved by:

Thesis Committee Members:

Name	Title	Signature
1. Dr. Raed Najjar	Main Supervisor	
2. Dr. Raid Shomali	Member of Supervision Committee	
3. Dr. Rani Shahwan	Member of Supervision Committee	

Palestine, Jan/ 2026

Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is substantially my own work and has not been submitted for any other degree at the Arab American University or any other institution.

Student Name: Shahd Sadek Ahmad Sandouka

Student ID: 202112689

Signature: Shahd Sandouka

Date of Submitting the Final Version of the Thesis: 2.3.2026

Dedication

I dedicate this document to the Almighty God of my blessing with an enabling environment to complete this master thesis.

To my family for their encouragement and support, to all students who want to learn and to everybody will gain benefit from it.

Shahd Sadek Ahmad Sandouka

Acknowledgements

To begin with, I would most importantly like to acknowledge God's guidance and support in enabling me to finish this project. My sincere appreciation goes to my supervisor Doctor Raed Najjar for giving me the required guidance, wisdom, constructive feedback, and continuous encouragement that greatly contributed to the completion of this research. His guidance advice, effective and prompt response at each stage in the preparation and execution of this master thesis speeded the process. Special thanks go to the faculty members of the Arab American University for their support and for providing a stimulating academic environment.

I also wish to thank my colleagues and friends who offered their help and moral support during the process. I can't leave behind the management of Arab American University for their cooperation and enabling environment that facilitates searching and finding all necessary information required for the completion of this research. I would be unfair not to thank all Palestinian food processing companies' management and staff especially the respondents for their cooperation and support in answering my questionnaires. Lastly, to my family thanks for the patience, prayers, encouragement and emotional support and always being a call away for advice.

The Role of Product and Process Innovation in Achieving Competitive Advantage in Palestinian Food Industries Sector

Shahd Sadek Ahmad Sandouka

Supervision Committee:

Dr. Raed Najjar

Dr. Raid Shomali

Dr. Rani Shahwan

Abstract

This master thesis investigates the influence of product and process innovation on competitive advantage in the Palestinian food processing industries (PFPI) located in the West Bank. It also examines the mediating role of dynamic capabilities, specifically internal learning and reconfiguration capabilities, in these relationships. The study aims to identify how different innovation types and organizational capabilities interact to enhance firms' competitive positions in a challenging and dynamic market environment.

A mixed-method was adopted to enhance an explanatory and correlational research design, targeting managers from 72 companies operating in the sector. Data were collected through interviews with PFIU and some managers in addition to structured electronic questionnaires, yielding 204 valid responses. The analysis was conducted using Smart-PLS software, applying descriptive statistics, measurement model evaluation, structural model testing, and mediation analysis to validate the proposed relationships.

The findings revealed that both product and process innovation individually exert significant positive effects on competitive advantage, whereas their combined implementation (complementarity) does not yield a stronger effect. Furthermore, internal learning capabilities were found to significantly mediate the relationship between product innovation and competitive advantage, while reconfiguration capabilities mediated the relationship between process innovation and competitive advantage. These results highlight

that dynamic capabilities serve as vital mechanisms through which innovation translates into sustained competitiveness.

The study concludes that enhancing innovation initiatives alongside internal learning and reconfiguration processes strengthens firms' adaptive capacity and market responsiveness. Accordingly, it recommends that managers prioritize continuous learning, resource flexibility, and innovation-focused strategies to achieve long-term competitive advantage in the Palestinian Food Industries.

Keywords: Competitive Advantage, Dynamic Capabilities, Internal Learning, Palestinian Food Industries, Process Innovation.

Table of Contents

#	Title	Page
	Declaration	I
	Dedication	II
	Acknowledgments	III
	Abstract	IV
	List of Tables	IX
	List of Figures	XI
	List of Appendices	XIII
	List of Definitions of Abbreviations	XIV
Chapter One	Introduction	1
1.1	Background of the Study	1
1.2	Problem Statement	5
1.3	Research Objectives	6
1.4	Research Questions	7
1.5	Research Hypotheses	7
1.6	Significance of the Study	8
1.7	Scope of the Study	11
1.8	Potential Obstacles	14
1.9	Conceptual Definitions	15
1.10	Structure of the Thesis	16
Chapter Two	Literature Review	17
2.1	Introduction	17
2.2	Innovation	17
2.2.1	Definitions of Innovation	19
2.2.2	Product Innovation	26
2.2.3	Process Innovation	33
2.2.4	The Relationship between Product and Process Innovation	38
2.2.5	The Role of Automation and Artificial Intelligence in Food Production	41
2.3	Competitive Advantage	44
2.3.1	Competitive Strategies	52
2.3.2	Theoretical Approaches to Building Sustainable Competitive Advantage and Methods of Measurement it	55
2.3.3	Introduction to Strategic Analysis	56

#	Title	Page
2.3.4	Competitive Advantage in the Food Industry	58
2.3.5	CACA Theory in the Context of Palestine	59
2.4	The Impact of Innovation on the Competitive Strategy	61
2.4.1	The Impact of Product and Process Innovation on Competitive Advantage	62
2.4.2	Dynamic Capabilities	68
2.4.3	Transformational Capabilities	72
2.4.4	The Mediating Role of Internal Learning and Reconfiguration Capabilities	74
2.4.5	Product Innovation and Competitive Advantage through Dynamic Capabilities Approach	78
2.5	The Palestinian Food Processing Industry	84
2.5.1	Palestinian Food Processing Industries Sectors	87
2.5.2	Post-Classical Production Process in the Food Sector	91
2.6	Conceptual Model of the Study	93
2.7	Research Gap	96
2.8	Chapter Summary	97
Chapter Three	Methodology	99
3.1	Introduction	99
3.2	Research Design	99
3.3	Population and Sampling Design	101
3.4	Data Collection Methods	105
3.5	Research Procedures	107
3.6	Validity and Reliability	108
3.7	Data Analysis Methods	109
3.8	Chapter Summary	111
Chapter Four	Results	113
4.1	Introduction	113
4.2	Response Rate	113
4.3	Demographic Characteristics of Respondents	114
4.4	Data Screening and Preliminary Analysis	120
4.5	Multi-Collinearity Test	124
4.6	Evaluation of PLS-SEM Results	126
4.7	Structural Model Results (Inner Model)	134

#	Title	Page
4.8	Hypotheses Testing	140
4.9	Qualitative Findings (Interview Analysis)	153
4.10	Chapter Summary	157
Chapter Five	Discussion	160
5.1	Introduction	160
5.2	Summary of Findings	160
5.3	Discussion	164
5.4	Discussion of Qualitative Findings in Relation to Previous Studies	177
5.5	Conclusion	180
5.56	Recommendations	188
	References	192
	Appendices	222
	الملخص باللغة العربية	235

List of Tables

Table #	Title of Table	Page
Table 1.1	Relative Contribution of Economic Sectors to GDP in Palestine, 2024	3
Table 2.1	The Importance of Process Innovation	35
Table 2.2	Comparison between Product Innovation and Process Innovation	41
Table 2.3	Evolution of the Competitive Advantage Concept Across Economic Theories	46
Table 2.4	Dimensions of Competitive Advantage in the Food Sector	51
Table 2.5	Qualitative Measures of Competitive Advantage	57
Table 2.6	Quantitative Measures of Competitive Advantage	57
Table 2.7	Key Features of Resources Supporting Competitive Advantage	64
Table 2.8	Dynamic Capabilities Framework	69
Table 2.9	Internal Weaknesses and External Threats of Formal and Informal	87
Table 3.1	Total Population Distribution of Managers in Palestinian Food Processing Firms	101
Table 3.2	Distribution of the Sampling Frame by Managerial Levels in PFP Firms	102
Table 3.3	Sample Size Distribution	105
Table 4.1	Demographic characteristics of managers in Palestinian food processing industries	118
Table 4.2	Multi-collinearity Test (Inner model List)	124
Table 4.3	Collinearity Test by Item (Outer model list)	125
Table 4.4	Factor Loadings	129
Table 4.5	Results of the Measurement Model	131
Table 4.6	The Results of the Cross Loadings Test	132
Table 4.7	Correlation through Constructs and Discriminant Validity using Fornell and Larcker Approach	133
Table 4.8	HTMT Ratios	134
Table 4.9	R ² Values for Endogenous Latent Variables	135
Table 4.10	Effect Size (f ²)	136
Table 4.11	Predictive Relevance of the Model (Q ²)	139
Table 4.12	Result of the First Hypotheses Testing (Direct Effect)	142

Table #	Title of Table	Page
Table 4.13	Result of the Second Hypotheses Testing (Direct Effect)	143
Table 4.14	Result of the Third Hypotheses Testing (Direct Effect)	143
Table 4.15	Result of the Fourth Hypotheses Testing (Direct Effect)	144
Table 4.16	Result of the Fifth Hypotheses Testing (Direct Effect)	145
Table 4.17	Result of the Sixth Hypotheses Testing (Indirect Effect)	146
Table 4.18	Result of the Seventh Hypotheses Testing (Indirect Effect)	149
Table 4.19	The Result of the Hypotheses	152

List of Figures

Figure #	Title of Figure	Page
Figure 1.1	Geopolitical Unfair Classification in the West Bank	11
Figure 1.2	Thematic Scope	13
Figure 2.1	Innovation Cycle	21
Figure 2.2	Model of Innovation Stages	22
Figure 2.3	Innovation Types and Degrees	23
Figure 2.4	Core Dimensions and Perspectives of Innovation	25
Figure 2.5	Factors for Successful Product Innovation	27
Figure 2.6	Dimensions of Product Innovation	30
Figure 2.7	The Importance of Product Innovation	31
Figure 2.8	The Importance of Process Innovation	34
Figure 2.9	The Relationship between Product and Process Innovation	38
Figure 2.10	Factors Giving the Company Cost Reduction Advantage	54
Figure 2.11	Implementing Competitive Strategies	56
Figure 2.12	Putting “National Palestinian Products” on Shelves in Ramallah Supermarkets to Differentiate Local Products and Urge Boycotts of Israeli Ones	60
Figure 2.13	The Mediating Effect of Internal Learning Capabilities and Reconfiguration Capabilities	76
Figure 2.14	Factors of Success and Excellence in Palestinian Food Industries	90
Figure 2.15	The Layout of the Functions of AI in Several Food Sectors	91

Figure #	Title of Figure	Page
Figure 2.16	AI Technology in Food Industries	93
Figure 2.17	Conceptual Model of the Study	96
Figure 3.1	Sequential Explanatory	100
Figure 4.1	Gender of Respondents	114
Figure 4.2	Education Level of Respondents	115
Figure 4.3	Management Level	116
Figure 4.4	Years of Experience	116
Figure 4.5	Company Size	117
Figure 4.6	Company Age	117
Figure 4.7	Food Subsector Respondents	118
Figure 4.8	Region of Respondents	120
Figure 4.9	Study Model	127
Figure 4.10	The Measurement Model	130
Figure 4.11	Structural Model	141

List of Appendices

Appendix #	Title of Appendix	Page
APPENDIX A	INTRODUCTION LETTER	222
APPENDIX B	QUESTIONNAIRE	223
APPENDIX C	ARABIC INTRODUCTION LETTER	228
APPENDIX D	ARABIC QUESTIONNAIRE	229

List of Definitions of Abbreviations

AI: Artificial Intelligence

AVE: Average Variance Extracted

BDS: (Boycott, Divestment, and Sanctions)

CACA: Conflict-Affected Competitive Advantage

CR: Composite Reliability

GDP: Gross Domestic Product

GoF: Goodness of Fit

HACCP: Hazard Analysis Critical Control Point

ISIC: International Standard Industrial Classification

ISO: International Organization for Standardization

NLP: Natural Language Processing

PCBS: Palestinian Central Bureau of Statistics

PFIU: Palestinian Food Industries Union

PFP: Palestinian Food Processing

PFPI: Palestinian Food Processing Industries

PLS: Partial Least Squares

PLS-SEM: Partial Least Squares Structural Equation Modeling

RBV: Resource-Based View

SCP: Structure-Conduct-Performance

SEM: Structural Equation Model

SRMR: Standardized Root Mean Square Residual

VIF: Variance Inflation Factor

VRIN: (Value, Rarity, Imitability, Non-substitutability)

VRIO: (Valuable, Rare, Imitable, and Organized)

Chapter One: Introduction

1.1 Background of the Study

Innovation is a key driver of achieving a competitive advantage in today's dynamic global marketplace. For manufacturing industries, such as food processing, product and process innovations are increasingly important to meet customer expectations and preferences, as well as to respond to technological developments by improving operational efficiency (Adewumi et al., 2024). In developing countries, particularly in conflict zones such as Palestine, food processing companies face additional obstacles resulting from geopolitical and economic constraints that limit political stability, resource availability, and market access. Given these conditions, companies must adopt innovation-based strategies to ensure their sustainability and competitiveness (Alnasr et al., 2025).

The Palestinian economy, like those of other emerging nations, is plagued by structural inequalities that affect almost every industry. Research into the industrial sector aims to discover most of these inequalities, considering its importance as a productive sector in the modern economy. According to Alnasr et al. (2025), this information will be useful in determining the root reasons of the sector's overall output's lack of competitiveness and in developing the appropriate economic strategies to address these causes.

Product innovation, which includes new or improved products, and process innovation, which focuses on efficient and effective production and delivery methods, can

enhance a company's competitive advantage. However, innovation alone does not guarantee success; therefore, companies must possess and leverage their dynamic capabilities to learn from internal and external environments and transform their resources, capabilities, and competencies in line with their objectives (Distanont & Khongmalai, 2018).

The dynamic capabilities framework, particularly transformation capabilities, includes internal learning capabilities and reconfiguration capabilities. Internal learning capabilities enable companies to acquire and integrate existing and new knowledge, adapt to dynamic market changes, and foster a culture of improvement and learning. Reconfiguration capabilities, on the other hand, enable companies to restructure and reorganize their assets, capabilities, and competencies in response to internal and external challenges (Cavusgil & Deligonul, 2024).

While the role of innovation in corporate performance and competitive advantage has been widely studied in developed countries, there is a clear gap in understanding how these dynamics evolve in developing and conflict regions. Specifically, there is limited empirical evidence on how product and process innovations contribute to competitive advantage through dynamic capabilities within Palestinian Food Processing Industry (PFPI). The process of food processing increases the added value of primary and intermediate goods with the goal of producing a final product suitable for human consumption, or the goal is to produce an intermediate product that is used in the production of final products suitable for human consumption (Distanont & Khongmalai, 2018).

The success of local items in domestic and international marketplaces in comparison to comparable foreign products is another measure of competitiveness.

Relative pricing and production quality are the primary determinants of competitiveness, according to this notion. Though competitive in this limited sense, it does not imply that the studied industry has what it takes to be competitive going forward. So, competitiveness as a whole is a measure of an industry's potential to remain competitive in the long run (Farida & Setiawan, 2022).

On the Palestinian level in particular, statistics indicate that, as seen in Table (1.1) bellow, the Palestinian industrial sector contributes 15.8% of the gross domestic product (GDP), and the food industry contributes approximately 20% of the total industrial sector. Considering that this sector has a direct impact on the health and safety of Palestinians and consumers, the average Palestinian family spends approximately 42-45% of its income on food (PCBS, 2023).

Table 1.1 Relative contribution of economic sectors to GDP in Palestine - 2024 (at constant prices)

Sector	Contribution to GDP (%)
Services	65%
Industry (Total)	15.8%
Agriculture	6.7%
Construction	7.6%
Manufacturing	10.6%
Food Sector	20%

Moreover, the industrial sector, both extractive and processing, has not witnessed any significant growth since the beginning of the occupation. Its contribution to the GDP has remained low, ranging between 8 and 10%. Most of this sector's activities are linked

to the Israeli economy through subcontracting with Israeli companies, with most of the added value in the West Bank being generated for Israeli institutions, not for entrepreneurs (Shikaki, 2021).

Despite the extensive literature linking innovation to competitive advantage, existing research predominantly examines this relationship within stable and developed economic contexts, often assuming the availability of resources, institutional support, and predictable market conditions. Such assumptions limit the explanatory power of conventional innovation-performance models when applied to conflict-affected and resource-constrained environments.

In the context of the Palestinian Food Processing Industry, firms operate under persistent uncertainty, structural constraints, and limited technological advancement, raising fundamental questions about how competitive advantage is actually constructed and sustained. This suggests that innovation alone may be insufficient to explain performance outcomes without considering the organizational mechanisms through which innovation is translated into strategic value.

Therefore, this study addresses a critical conceptual and contextual gap by examining innovation as a dynamic, capability-dependent process rather than a direct input–output relationship. By integrating internal learning and reconfiguration capabilities within the analytical framework, the study advances the dynamic capabilities perspective by explaining how and under what conditions innovation contributes to competitive advantage in unstable and constrained settings. This approach offers a more theoretically grounded explanation of competitiveness and extends existing literature beyond traditional, resource-abundant contexts.

1.2 Problem Statement

Innovation is widely recognized as a critical driver of competitive advantage. Both product and process innovation have been associated with improved firm performance; however, innovation alone does not automatically translate into sustained competitive advantage. According to the Dynamic Capabilities perspective, firms must possess the ability to learn, adapt, and reconfigure resources in order to transform innovation efforts into strategic outcomes.

Contextual gap: The Palestinian Food Processing Industry (PFPI) operates within a conflict-affected and institutionally constrained environment characterized by geopolitical instability, movement restrictions, limited resource access, and economic dependency. Such conditions create structural vulnerabilities that challenge the effectiveness of traditional competitive strategies. While innovation may offer opportunities for resilience, firms operating under prolonged political and economic constraints may face unique limitations that are not adequately captured in mainstream competitiveness research.

Theoretical gap: Although prior studies have examined the relationship between innovation and competitive advantage, most have been conducted in stable and developed economies. Moreover, the mechanisms through which innovation translates into competitive advantage—particularly the mediating role of dynamic capabilities such as internal learning and resource reconfiguration—remain underexplored in conflict-affected contexts. Existing literature often assumes institutional stability and overlooks how environmental turbulence shapes capability development and strategic outcomes.

Consequently, there is insufficient empirical evidence explaining how product and process innovation contribute to competitive advantage within constrained and fragile economic systems such as PFPI. This study addresses this gap by examining whether and how internal learning and reconfiguration capabilities enable firms to convert innovation into sustainable competitive advantage under conditions of conflict and structural uncertainty.

1.3 Research Objectives

The main objective: To discuss the role of product and process innovation in achieving competitive advantage in Palestinian food processing industries through internal learning capabilities and reconfiguration capabilities.

The following are sub-objectives:

1. To investigate the impact of product innovation on competitive advantage in PFPI.
2. To evaluate the effect of process innovation on competitive advantage in PFPI.
3. To examine the combined influence of product and process innovations on the achievement of competitive advantage.
4. To analyze the mediating role of transformational capabilities in the relationship between innovation and competitive advantage.
5. To provide strategic recommendations for leveraging innovation to build sustainable competitive advantage in PFPI.

1.4 Research Questions

The main question: How do product and process innovation contribute to achieving competitive advantage in Palestinian food processing industries through internal learning and reconfiguration capabilities?

The following are sub questions:

1. How does product innovation impact competitive advantage in PFPI?
2. How does process innovation contribute in achieving competitive advantage in PFPI?
3. How do product and process innovations integrate with each other to influence the competitive advantage in PFPI?
4. How transformational capabilities play the mediating role in the relationship between innovation and competitive advantage in PFPI?
5. What strategic approaches can food processing firms adopt to leverage innovation and dynamic capabilities for sustainable competitive advantage?

1.5 Research Hypotheses

Given the foregoing, it is critical to develop well-defined research hypotheses to direct the investigation. Within the framework of Palestinian food manufacturing enterprises, these hypotheses seek to investigate the direct and indirect connections between innovation (both product and process), transformational capacities (including internal learning and reconfiguration), and competitive advantage. Here are the research hypotheses:

- **H1.** Product innovation has a significant positive effect on competitive advantage in the PFPI.
- **H2.** H1. Product innovation has a significant positive effect on competitive advantage in the PFPI.
- **H3.** The combined implementation of product and process innovations has a stronger positive effect on competitive advantage than either innovation alone in the PFPI.
- **H4.** Internal learning capabilities has a significant positive effect on competitive advantage in the PFPI.
- **H5.** Reconfiguration capabilities have a significant positive effect on competitive advantage in the PFPI.
- **H6.** Internal learning capabilities significantly mediate the relationship between innovation (product innovation, process innovation and complementarity relationship) and competitive advantage.
- **H7.** Reconfiguration capabilities significantly mediate the relationship between innovation (product innovation and process innovation and complementarity relationship) and competitive advantage.

1.6 Significance of the Study

1.6.1 Theoretical Significance

This study offers several important contributions to the theoretical understanding of innovation and competitive advantage, especially in developing and conflict-affected areas such as Palestine. First, while existing literatures discuss the impact of innovation on

competitive advantage, most studies investigate product and process innovation separately, or in developed countries. This research contributes by examining the combined and comparative effects of both product and process innovation within a unified model, enhancing for more accurate understanding of how different types of innovations interact to influence firms' performance and competitive advantage. Second, according to the dynamic capabilities' framework, this research investigates how internal learning capabilities and reconfiguration capabilities play a mediating role. This emphasizes that transformational capabilities are needed to translate innovation into sustainable competitive advantage. This integration of innovation theory with dynamic capabilities provides a more comprehensive view of competitive advantage and competitive strategy.

Third, this study fills a notable gap in empirical studies by applying these theories in the food processing industries in conflict-affected areas such as Palestine. Most dynamic capabilities and innovation theories have been tested in developed countries and high-income economies. This research tests these theories in developing countries, conflict-affected regions, thus enhancing the external validity and generalizability of existing strategic management theories.

Fourth, this research contributes to improving the innovation management literature through highlighting how internal learning capabilities and reconfiguration capabilities enhance innovation success, as well as fostering competitive advantage.

Finally, this research boosts empirical studies of innovation and competitive advantage in PFPI, which supports previous studies and paves the way for future studies. Especially there is a scarcity of studies in this sector, in addition to the rapid advancement in it.

1.6.2 Practical Significance

The practical significance of this research lies in offering evidence-based strategies for enhancing competitive advantage in PFPI. By explaining how product and process innovation contribute to achieve competitive advantage, the research provides actionable insights for businesses looking to enhance their competitiveness through improving product quality, reducing operational inefficiencies, and rapid responses to market changes.

Secondly, this research highlights the role of internal learning and reconfiguration capabilities, and emphasizes the importance of manufacturing agility and knowledge management. This is especially important in Palestine, where firms face limited resources, restricted access to the market, and disrupted supply chains. The results will help managers understand that innovation success is about the internal capacity to learn, adapt, and reconfigure resources effectively, not just technologies.

Third, for practitioners, this research offers a framework for building dynamic capabilities, including effective resource allocation, employee training, and support feedback mechanisms. It also supports strategic planning by showing the necessity of aligning innovation with strategic objectives and internal competencies to be effective.

Fourth, the study informs policymakers, development agencies, and industry bodies, particularly the Palestinian food industries union (PFIU), about key innovation and capability gaps in this sector. This also proposes support programs for innovation funding, technical training, and infrastructure development. As a result, this study contributes not

only to individual firm performance but also to enhancing sector competitiveness and economic development in Palestine.

Finally, this study helps food processing firms and industry bodies in building and exploiting transformational capabilities to achieve their objectives. This also empowers local products against Israeli and foreign products.

1.7 Scope of the Study

Within the context of the PFPI, the primary objective of this study is to investigate the ways in which food processing firms in Palestine, including small and medium-sized enterprises involved in the processing, packaging, and distribution of food products contribute to the achievement of a competitive advantage. With the dynamic capabilities paradigm as its foundation, this study especially analyzes the roles that internal learning capabilities and reconfiguration capabilities play in mediating the relationship between the two. The scope of the study is defined along four main dimensions: geographical, thematic, temporal, and methodological.

1.7. 1 Geographical Scope

Geographically, the study is confined to the West Bank region within Palestine (see Figure 1.1), which means the Gaza Strip is not selected. The selection is based on access, especially after the last Israeli aggression on Gaza, as fieldwork in the Gaza Strip remains

logistically and politically challenging. The West Bank comprises key industrial cities such as Hebron, Nablus, and Ramallah, where most food firms are concentrated.

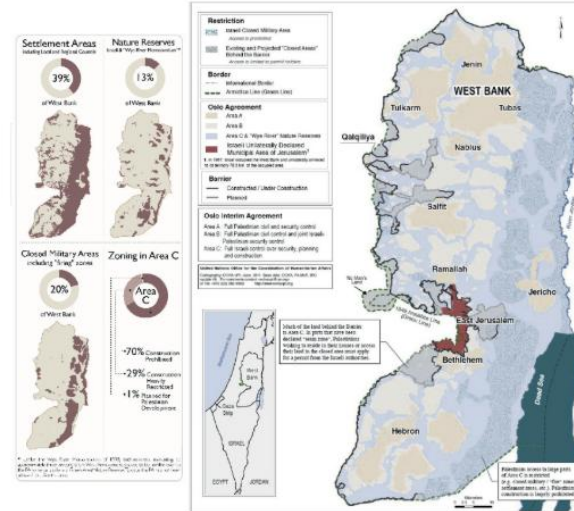


Figure 1.1 Geopolitical unfair classification in the West Bank, by Najjar, 2024

1.7. 2 Thematic Scope

Three main independent variables, product innovation, process innovation, and the complementarity relationship between them, and examines their impact on the dependent variable: competitive advantage. Also, it does not investigate other types of innovation, such as marketing and non-process-related organizational innovations. Additionally, competitive advantage is assessed in terms of its six dimensions based on Sulaiman (2021): product quality, cost, flexibility, delivery, customer satisfaction, and market share. Furthermore, it considers the mediating role of two key transformational capabilities: internal learning capabilities and reconfiguration capabilities as seen in Figure (1.2).

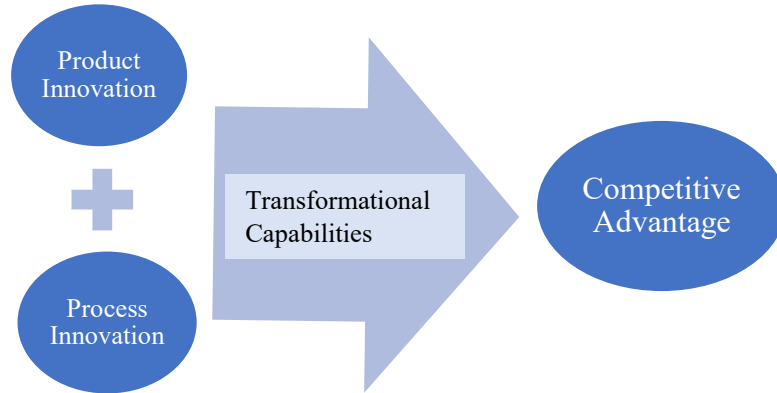


Figure 1.2 Thematic Scope, by researcher

1.7. 3. Temporal Scope

The study is based on data collected during the first half of 2025, with reference to firm performance metrics during 2023 and 2024. This time period is particularly significant because it captures the shifts in market behavior and consumer trends following the Israeli aggression on Gaza in late 2023, which influenced demand patterns, national loyalty to domestic products, and supply chain operations.

1.7. 4. Methodological Scope

The study adopts a mixed research methodology, using interviews and structured questionnaires distributed to decision-makers (managers and supervisors) in food processing firms. Simple random sampling was used and data is analyzed using statistical tools such as Smart-PLS to test correlation and mediation relationships between innovation and competitive advantage. Additionally, both primary data (interviews questionnaire

responses) and secondary data (reports, articles, and industry statistics) were used to ensure data triangulation and validity.

1.8 Potential Obstacles

While this research is carefully designed to generate valuable insights into innovation, competitive advantage, and transformational capabilities, several potential obstacles may be encountered during this study.

1. Limited access to firms and respondents: Gaining access to decision-makers is difficult due to operational priorities and organizational restrictions. Additionally, some firms resist information sharing.
2. Political and security constraints: Political instability and movement restrictions may delay data collection or affect firm operations.
3. Lack of accurate or readily available data: Some firms may be unwilling to disclose performance indicators, particularly those, related to competitive advantage.
4. Respondent bias or misunderstanding: Respondents may overrate innovation efforts or provide desirable answers.
5. Low Response Rate: Especially in small and medium enterprises, managers may be busy or uninterested in scientific research.
6. Time limitations: Limited time may restrict the sample size and geographical reach.

1.9 Conceptual Definitions

- **Product innovation** involves developing new products and improving existing ones. It can also include product specifications, materials used, usage methods, and other product and functional characteristics (OECD/Eurostat, 2018).
- **Process innovation** involves the implementation of new or improved production or delivery methods. It aims to improve efficiency or product quality by improving and changing production processes, techniques, equipment, and software (OECD/Eurostat, 2018).
- **Internal learning capabilities** refer to a firm's ability to acquire, share, interpret, integrate, and apply knowledge within the organization to enhance performance and adapt to changes (Mohaghegh et al., 2024).
- **Reconfiguration capabilities** refer to a firm's ability to restructure, reshape, renew, realign, and integrate internal learning resources, capabilities, and processes in response to dynamic market and environmental changes (Mohaghegh et al., 2024) and (Teece, 2007).
- **Competitive advantage** can be defined as using a firm's abilities, capabilities, and competences to outperform its competitors and gain superior value (Porter, 1985).
- **CACA Theory (Conflict-Affected Competitive Advantage):** This theory is developed by Najjar (2024) suggests that firms operating in conflict-affected regions must leverage unique context-based strategies, such as cultural alignment, ethical branding, and consumer nationalism, to create and sustain competitive advantage.

1.10 Structure of the Thesis

This research comprises of five chapters organized as follows:

Chapter One introduces the topic, outlines the research problem, objectives, hypotheses, scope, significance, definitions, and thesis structure.

Chapter Two presents a comprehensive literature review on innovation, competitive advantage, and dynamic capabilities, emphasizing prior studies in conflict and developing economies.

Chapter Three explains the research design, methodology, population, sample, data collection instruments, and statistical methods used.

Chapter Four reports the results of data analysis, including descriptive statistics, hypothesis testing, and structural model assessment.

Chapter Five discusses the findings, draws conclusions, and offers theoretical and practical recommendations. It also addresses research limitations and directions for future studies.

Chapter Two: Literature Review

2.1 Introduction

This chapter examines the literature on the effect of product and process innovation on competitive advantage in the food industry through transformational capabilities. The first section explains innovation, product innovation, process innovation, and the relationship between the product and process innovation. The second section clarifies competitive advantage based on different perspectives. The third discusses the relationship between innovation and competitive advantage through dynamic capabilities. The fourth section shows the PFPI and post-classical process in food processing industry; the fifth section shows the model and hypotheses of the research. A summary of the literature review is presented in the final part of this chapter.

2.2. Innovation

The commencement of research on innovation can be traced back to Schumpeter (1934), who discussed innovation indirectly during his studies, which concentrated on the economic cycle and development (Quintane et al., 2011) confirmed that Nelson and Winter (1982) discussed innovation as a key success factor in improving the economic situation, and then studied innovation in different sectors and categorized innovation into different types. To structure the discussion, the following section will address definitions of

innovation, stages of innovation, types of innovation, and innovation in the food manufacturing sector.

The concept of innovation is multifaceted, and previous studies and scholars have discussed it from several perspectives, including different themes in defining innovation, which can be summarized as follows: newness and creative potential, value creation and competitive advantage, process and outcome perspectives, multidisciplinary nature, and adoption and diffusion. According to Schumpeter (1934), the concept of innovation has a dual nature, including the process of innovation and its outcome. We find in his definition of innovation as the introduction of new products, processes, methods, or systems. Where “introduction” expresses the process of innovation, “product, process, method, or system” expresses the outcome of innovation. Schumpeter's concept of innovation focuses on newness in the process of innovation and outcome. Quintane et al. (2011) confirmed that Kanter (1984) and West and Farr (1990) agreed with Schumpeter on the point on newness in ideas, introduction, and application.

On the other hand, Van de Ven (1986) indicated the improvement point in the concept of innovation by using development and implementation in his definition. Damanpour (1991) presented innovation as outcome and detailed it as three categories: technical versus administrative, product versus process, and radical versus incremental innovation. Novelty is the main idea in the definition of innovation as an outcome; however, the degree of this novelty is not related to ideas. Where Baregheh et al. (2012a) confirmed that Marcus (1988); Ven, (1986); Daft (1978) defined innovation as an idea that target customers perceive it as new even though it may be existed in other markets or be adopted by the direct competitors in the same market.

Therefore, the following varied definitions of innovation establish a foundation that will enable a deeper understanding of its stages, particularly within the context of the food manufacturing sector.

2.2.1 Definitions of Innovation

Drucker (1985) agreed with Schumpeter (1949) innovation is exploiting firm's resources to initiate new things including new product, process, equipment, market, sources, suppliers, materials, and management. While Evan (1966) concentrated in his definition of innovation on process of developing new ideas, Tidd et al. (1997) concentrated on transforming opportunities to executable idea. Moreover, Oslo manual (1997) also mentioned that innovation can occur across various sector and it must have been implemented which distinguishing it from mere ideas. Then Oslo manual (2005) described innovation as new or significantly improved; however, this describe is ambiguous. Therefore, Oslo manual (2018) clarified this ambiguity by explaining the scope of innovation is to the market, the company, or the customer. Oslo manual (2018), also adopted comprehensive systems perspective which includes all aspects of the system, so researcher takes it into account. OECD/Eurostat (2018) defined an innovation as “a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)”.

Furthermore, Qubbaja, & Jaradat (2020) defined the concept of innovation as growth, sustainability and competitive superiority that are achieved by doing the something new or the same thing in different way, and this will ensure the loyalty and satisfaction of

existing customers and gain new clients. Kahn (2018) argued that some firms believe that innovation must be radical in nature and incremental innovation does not count. There is a problem with this belief because radical innovation is very challenging and risky and it may require special resources and capabilities. Moreover, incremental innovation allows small wins in pursuit of big wins. Innovation is defined in two ways: (1) introduction of something new, or (2) new method or new idea. Despite of the similarity, two definitions represent important differences. While the first definition represents innovation as an outcome; the second definition represents it as a process. Herein lies the importance of understanding the innovation as both outcome and process and if the firm considers one definition without the other, it will fall short in its pursuit. On the other hand, the firms which strictly concentrate on outcome, leading inefficiencies as duplicating the efforts. Innovation as an outcome concentrates on output which is connected with introducing new product or service.

2.2.1.1 Innovation Stages

Kahn (2018) summarized Innovation cycle as discover, develop, and deliver as seen in Figure (2.1). Al-Amery, & Al-Ghaliby (2004) found innovation passes three stages to be executable: idea generation, from idea to project, and project execution. they also clarified these stages as seen in Figure (2.2) and shown in below:

1. Idea generation: this phase is often initiated by perception new market or new opportunity Garcia and Calantone (2002). This stage is done by encouraging brainstorming, transferring ideas between individuals, and gaining these ideas from different sources; externally like customers and suppliers, or even internally like

employees. After brainstorming, company selects suitable new idea that are able to be implemented according to its capabilities.

2. From idea to project: in this stage innovators/companies are transforming ideas to projects according to type of idea, sector where the company works, its employees, and its capabilities; after that, company manages projects and puts actual plans.

3. Project execution: this stage is considered as implementation phase and requires many steps to implement project and launch the new product (project) in the market by producing pilot product to measure features of product, availability of raw materials, effectiveness of machines and employees, availability of needed technologies and to analyze the reactions of suppliers, customers and competitors.

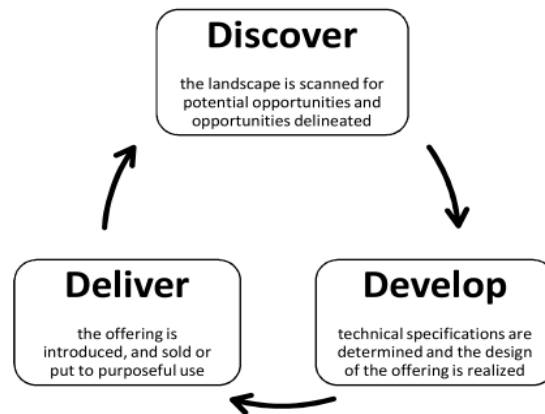


Figure 2.1 Innovation Cycle, by Kahn, 2018

Furthermore, OECD/Eurostat (2018) broke down innovation into four main stages 1) Idea generation 2) Research and Development (R&D) 3) Innovation implementation and 4) Commercialization and Diffusion. However, this research considers Al-Amery & Al-Ghaliby (2004) because of its simplicity and clarity. As research and development stage, the researcher clarifies it in mediating role of internal learning capability.

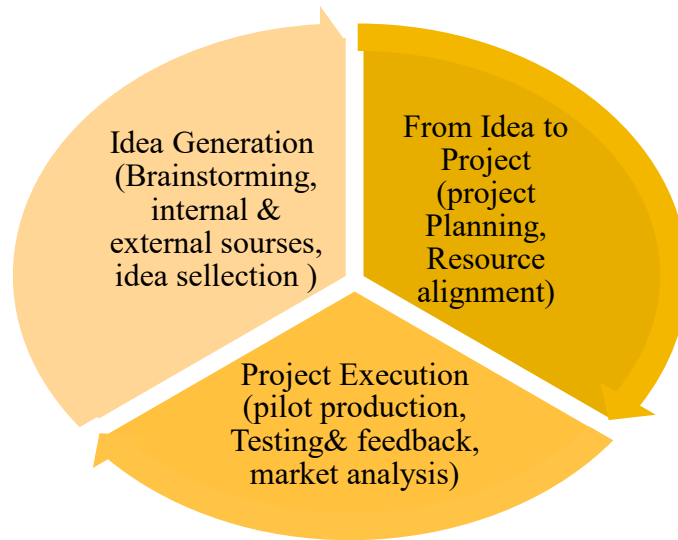


Figure 02.02 Model of Innovation Stages- Prepared by researcher based on (Al-Amery, & Al-Ghaliby, 2004)

2.2.1.2 Innovation Types and Degrees

The classification of innovation has been a topic of much debate in an effort to strengthen the basis for innovation research and practice. Many classifications of innovation have been proposed over the years considered two main approaches which are on basis of degree of innovation, and on basis of type of innovation (Baregheh et al., 2012a). The degree of innovation refers to newness and leads to classified innovation to radical and incremental (Bessant and Tidd, 2007). On the other hand, many researches have proposed different model of types of innovation. One of the earliest models Knight in 1967 which offered the following types of innovation: organizational structure, production process, people, and product/service. In 1970's and 1980's binary models had been proposed and in 2000's most researches have proposed number of integrative models. For example, Oke et al. (2007) discussed product innovation including radical and incremental, service, and process innovation including administrative, service and production.

Recently, OECD (2018) has discussed the following types of innovation: product, process, marketing, and organizational. Researches have interested in the relationship among different types of innovation. Several scholars discussed innovation and categorized it in to various types either based on degree of change or the target of innovation. Schumpeter classified innovation into radical innovation, and incremental innovation based on degree of change. On the other hand, Oslo Manual (2005) provided framework for understanding and measuring innovation based on innovation outputs (target of innovation) which includes four types of innovation: product innovation, process innovation, marketing innovation, and organizational innovation. Others like Freeman and Soete (1997) studied innovation by integrating both types of classifications. They also defined innovation as new product or process that had been used or improved and was submitted to the market for the first time. This study considers the both types of classifications as seen in Figure (2.3).

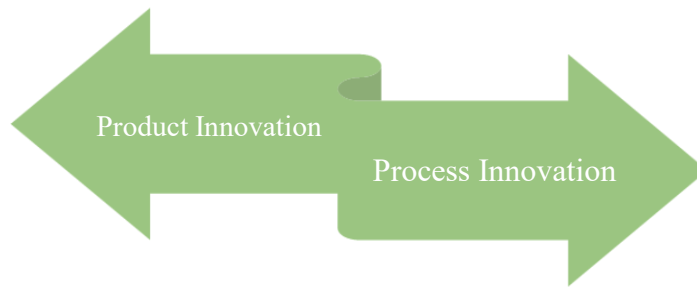


Figure 02.3 Innovation Types and Degrees-Prepared by the researcher

2.2.1.3 Innovation in Food Industry

Ju (2012) found that critical factors affecting innovation determined among of type of sector and type of innovation. Innovation strategies might change depending on the

industry and one of industries which concentrating on innovation has become significant is food industry (Naila et al., 2024). Researches on innovation in food industry began with Ruttan's (1977) study, which included technological change into the paradigm for agricultural growth. However, substantial research interest began to increase during the late 1990s' when Grunert et al. (1997) put out a framework for understanding innovation in the food industry. The framework describes three constructs; product-orientation, process-orientation, and market-orientation to explain innovation in food industry (Naila et al., 2024). Accordingly, companies in the food sector now find that innovation is a major source of competitive advantage (Grimsby & Kare, 2019).

Food industries activities include food manufacturing, warehousing, and distribution. The features of food industry are distinctive from other manufacturing industries (Ju, 2012). According to the PFIU, the companies in PFPI sector are small or medium but they occupy a large fraction of the market in spite of strong competition from Israeli and international companies. In recent years, the food processing industries sector is given the opportunities to improve the products and the process of production with growth in consumer interest in health, which make product and process innovation necessary in food industry. Therefore, the food industry is chosen as the specific context to explore the critical factors for innovation. Studies considered company's production, performance, and innovation as drivers of competitive advantage. Nasir et al. (2024) focused on innovation as one of factors that affect competitive advantage. While Agazu & Kero (2024) concluded that major studies from 2015 to 2023 found that innovation has a positive impact on firm competitive advantage.

Al-azzam et al. (2024) found that there are positive relationships between each type of innovation and competitive advantage especially product and process innovation which are widely used food industry literature due to their higher potential to be applied in food industry. However, paucity of research studied innovation in PFPI sector especially types of innovation and their impact on competitive advantage in PFPI sector (Baregheh et al., 2012a). Therefore, this research concentrates on product and process innovation in this sector. Baldwin, (1995) founded that the companies measured their success according to their growth, productivity, and profitability and Tohidi & Jabbari, 2012) confirmed the importance of innovation in the growth, survival, and success of organizations by adapting to customer and market needs. Porter (1985) competitive strategy framework suggested strategies can be used by firms to achieve sustainable competitive advantage which were: cost leadership, differentiation, and focus. Innovation plays an important role in both cost leadership and differentiation strategies.

See Figure (2.4) bellow, which illustrates to the key thematic perspectives defining the concept of innovation, summarize this section:

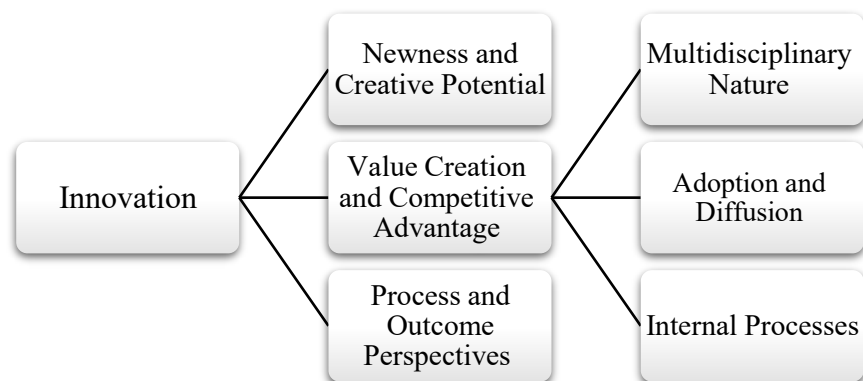


Figure 2.4 Core Dimensions and Perspectives of Innovation, by the researcher

2.2.2 Product innovation

Product innovation is a significant theme in business world and is known as any innovation that is used in firm to introduce new product to the market, according to Hidayat et al. (2024) or breakthrough market by new products (Setiobudi, 2021). OECD (2009) introduced product innovation as new or significantly improved product to enhance product performance or utility for consumers. Product innovation is also strategy firms used to adapt to dynamic environment to increase their competitive advantage, performance, and profitability (Setiobudi, 2021). Although higher level of product innovation increased firm's competitive advantage, most SMEs rarely innovate and only do when they have to (Hidayat et al., 2024).

Cooper (2017) defined three factors for successful product innovation: resources, knowledge, and experience. Product innovations that use internal organizational knowledge, skills, and capabilities are less cost and hazardous than product innovations that use external resources. Furthermore, using existing channel and serving existing customers is less risky than adopting new marketing strategy as seen in Figure (2.5). Kozludzhova (2023) indicated to "Domain knowledge" which presents company's knowledge of market and technologies supported product innovation to succeed. Finally, found experience- based product innovation is more predictable and efficient. Innovation classification is based on the nature of the phenomena it refers to, and which is considered in (OECD, 2018).

Factors for Successful Product Innovation		
Experience Accumulated learning and expertise that enhances predictability and efficiency in innovation.	Knowledge Internal organizational know-how, market understanding, and technological capabilities.	Resources Availability of financial, physical, and human assets required for innovation.

Figure 2.5 Factors for Successful Product Innovation-Prepared by the researcher based on Cooper (2017)

Park & Kwon (2018) Change in design that significant influenced on use or product characteristics is considered as product innovation. Dimensions of product innovation: (1) from perspective of customer, (2) from perspective of the firm, (3) product modification. Firms use product innovation to increase efficiency and attract new customers. Damanpour et al., (1989) and Exposito ' & Sanchis-Llopis, (2019) focused in their studies on four main types of innovation which had been mentioned by Oslo Manual (2005). However, Qubbaja et al. (2004) studied innovation and competitive advantage, they classified innovation, according to OECD (2018), into two main types: product innovation, and process innovation. They further categorized the concept of product innovation into three aspects: firstly, modifying product specifications and characteristics to meet needs and desires and to satisfy customers, which may include offering the product in the market in a manner distinct from other products; secondly, identifying new applications for the same product; and thirdly, radically innovating a new product that did not previously exist. The final aspect focused on product technical specifications.

Hidayat et al. (2024) mentioned product innovation indicators as Product expansion (line extensions), New products (me-too products), and completely new products (new-to-the-world products). Hamdani & Ramdani (2024) agreed with Hidayat et al. (2024) and classified product innovation into three categories: product expansion or line extensions which product familiar to the business and organization but unique to the market. on the other hand, impersonation products (me-too products) which means the product is unique the organization but familiar to the market. Finally, new products (new-too-the-world products) which can be considered as a radical product innovation because the products are new for the business, organization, and the market.

Additionally, Hatammimi and Thahara (2022) categorized product innovation into four distinct types. These types include: (1) New-to-the-Business Products, which are new to the company but may exist elsewhere; (2) Improvements to Existing Products, involving enhancement in performance or design; (3) New Product Lines, referring to products that enable the company to enter established markets for the first time; and (4) Additions to Existing Product Lines, where the company extends its current offerings with new variants.

However, Kahn (2018) was more detailed in his classification, by dividing product innovation into seven types:

1. Cost reduction: This refers to a long-term price adjustment that uses the cost leadership strategy to compete in the market by lowering production and product costs.

2. Product improvement: This is typically labeled as "new and improved" as it involves enhancing the original product and replacing it with the new version, while withdrawing all past versions of this product from the market.

3. Line extensions: This involves enhancing the original product by adding new features and benefits, resulting in a new offering with superior value and benefit compared to the original. Both product improvement and line extensions depend on product development strategy; however, the main different between them is that the original product in line extensions remains available and can be requested by customers.

4. New markets: This involves offering the original product in new markets with minimal improvement, which can be achieved through a market development strategy with minimal level of product development strategy.

5. New uses: This entails offering the original product in new markets without any improvement. This can be implemented through market development strategy.

6. New category entries: This involves launching new product to company but not to customer to follow the competitors and maintain the company's market share and firm typically uses defensive strategies to in this subtype of product innovation. In new category entries and new uses of product innovation, the company can also use a market penetration strategy to increase sales volume and company market share.

7. New-to-the-world products: This involves creating a new market that did not previously exist with new product, such as introducing a new drug to treat an incurable medical condition. Consequently, the company employs offensive strategies to become a leader in the market.

As a conclusion, the research considers Hatammimi and Thahara (2022) categorization because it is an empirical study that determined the impact of product innovation on competitive advantage in the Indonesian culinary sector and this research concentrates on food sector in Palestine -developing country-. Figure (2.6) below illustrates

the four dimensions of product innovation (New-to-the-Business Products, Improvements to Existing Products, New Product Lines, Additions to Existing Product Lines) as adopted in this study and is prepared by the researcher based on Hatammimi & Thahara (2022).

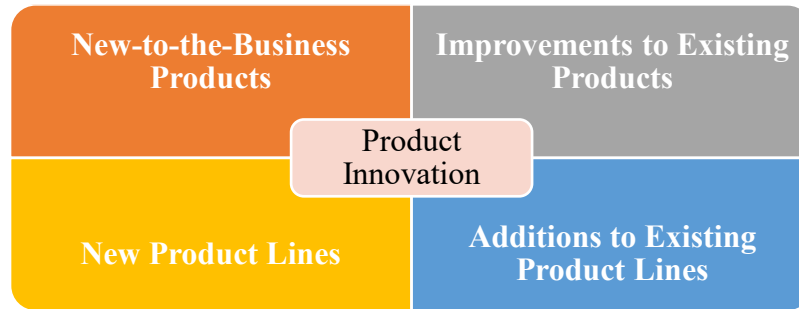


Figure 2.6 Dimensions of Product Innovation – Prepared by the researcher based on Hatammimi & Thahara (2022).

2.2.2.1 The Importance of Product Innovation

Adopting product innovation strategy in companies, introducing improved products with less costs and risks. Moreover, new development strategy increases firm's profit and sales volume. Sajid et al., (2015) organizations that explicit investments in new product development and product innovation are more likely to succeed and see gains in their overall performance. Additionally, the results showed that in a competitive environment, product innovation is more advantageous and productive for an organization's financial performance. The findings demonstrate how innovations improve organizational performance. While, Indriyani & Shan (2024) negotiated the importance of product innovation in creating competitive advantage through increasing product added value, company's economic success, and social success to consumers, Saraswati & Sudarmiatin

(2024) added and confirmed directly influences of product innovation on marketing performance, organization performance, and competitive advantage. Additionally, product innovation plays a significant role in driving companies' success through align their offerings with market demands and increase customer satisfaction (Geng et al., 2021). In addition to increasing the company image and position, and customer awareness and loyalty (Hanaysha, J. 2016). Figure (2.7) shows the importance of product innovation.

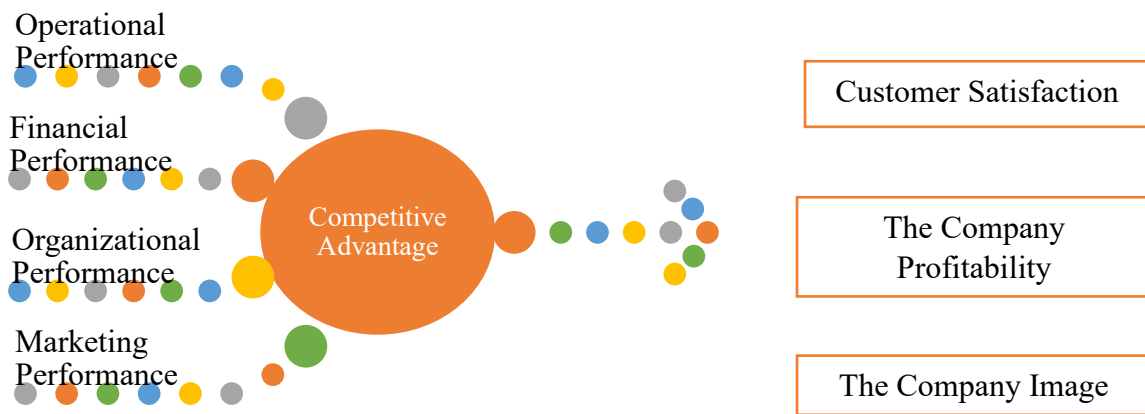


Figure 2.7 The Importance of Product Innovation, by the researcher

2.2.2.2 Product Innovation in Food Industry

This empirical article aimed to offer insights into the range of innovations in food sector SMEs based on Francis and Bessant's classification of innovations which classified innovation into four types: product, process, position, and paradigm. They used questionnaire-based survey (Baregheh et al., 2012a). As a conclusion, food sector SMEs offered for product innovation more than other types of innovation but there are indicators

of overlap and complementarities between different types of innovation. Kahn (2018) indicated that a new-to-the-world product is classified as a radical innovation type; on the other hand, all other types of product innovation are categorized as incremental innovation. Capitanio et al. (2009) defined product and process innovation according to the output _ product/service. They examined product innovation by addressing the question of what is produced. Subsequently, the changes in the product were classified as either major or minor, after which organizations categorized product innovation into radical innovation, implemented through product development strategy, and incremental innovation, achieved through a market development strategy.

Baregheh et al. (2012a) found that Food sector SMEs concentrated on incremental innovation more than radical innovation and engaged in both product and process innovation. Furthermore, Kahn (2018) posited that radical innovation introduces changes in the process of production, marketing, delivery, and product markets. This concept is also evident in Ramadhan, & Farida (2023), who affirmed that product innovation has a positive effect on market performance and competitive advantage. Therefore, product innovation is more used in food industry (Purba et al, 2018), and it also has a positive impact on sales volume (Na & Kang, 2019). Product innovation is implemented based on market parameters. Success this type of innovation is measured by market acceptance and achieving firm goals (Göransson, et al., 1997). Ju (2012) in this sense, the variety of products contributes to the significant role of the product innovation in food processing industries. However, internal and external environmental changes in food industry cause major challenges which are summarized as key elements by Fryer and Versteeg (2008) as

food safety, health and well-being, high quality, convenience, price, environment, sustainability.

2.2.3 Process innovation

2.2.3.1 Process Innovation Definition

In this section, the concept of process innovation will be addressed by starting with definitions, then exploring its significance, and finally presenting examples of process innovation in the food manufacturing sector.

Karabulut (2015) mentioned OECD (2005) process innovation consists of production, operational processes, and management. For example, adopting new technologies, buying new machineries, training firm's employees and reorganizing firm's processes. Process innovation either decreases the cost of production or delivery. In addition, product innovation requires process innovation. Qubbaja & Jaradat (2020) and Al-Amery & Al-Ghaliby (2004) defined process innovation as modifications in production techniques in order to reduce cost and improve technical performance, resulting in improved outputs and decreased cost per unit.

In contrast, OECD (2018) provided a more comprehensive definition of process innovation, encompassing innovation in production, distribution, infrastructure, logistic, organizational, marketing and process development. Maier (2018) agreed with OECD (2018) in defining process innovation and further noted its influence on efficiency, flexibility, and productivity. Boonklum (2023) determined that process innovation focuses on production methods and procedures, addressing how a product is produced; furthermore, researchers categorized it into technological changes innovation and

organizational changes innovation. Practically, some results of innovation don't appear on the final products or services and consumers sometimes don't feel them. specially in process innovation which includes technical sides and operational processes (Purba et al., 2018).

2.2.3.2 The importance of Process Innovation

Subsequently, Qubbaja & Jaradat (2020) stated as seen in Figure (2.8) that process innovation aims to enhance technical and economic production processes, and when combined with product innovation, it leads to improved organizational performance. According to (Qubbaja & Jaradat, 2020; Al-Amery & Al-Ghaliby, 2004; OECD, 2018 & Maier, 2018), the significance of process innovation lies in achieving efficiency by improving production processes, such as increasing production speed and reducing defects and production costs. Furthermore, Dorin (2018) summarized the importance of process innovation as reducing operational costs, increasing speed and quality of production, gaining competitive edge in the industry, enabling organizations to respond and effectively adapt to market changes and customer demands, in addition to supporting product innovation.

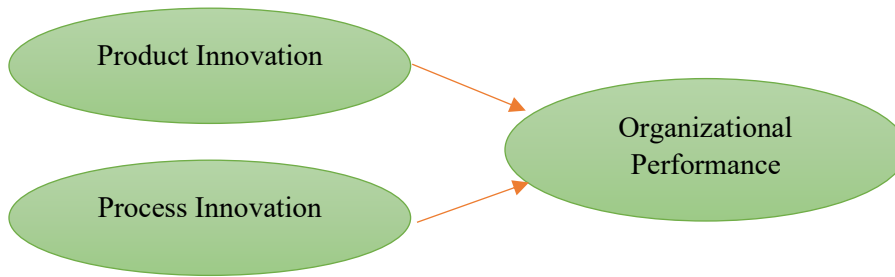


Figure 2.8 The Importance of Process Innovation – Prepared by the researcher based on Qubbaja & Jaradat (2020).

Similarly, Kahn, (2018) confirmed that process innovation is connected with achieving efficiency as faster processing, greater productivity, or lower cost. Process innovation includes production system, product delivery, and organizational process. Process innovation is crucial for organizations for sustainable innovation, competitive advantage, and improved organizational performance (Widya-Hasuti et al., 2018 & Asikhia et al., 2019). The following Table (2.1) summarizes the importance of process innovation based on previous articles.

Table 2.1 The Importance of Process Innovation, by the researcher

Articles	Importance of Process Innovation
(Qubbaja & Jaradat, 2020; Al-Amery & Al-Ghaliby, 2004; OECD, 2018 & Maier, 2018)	1. Improving Production Processes 2. Increasing Production Speed 3. Reducing Defects and Production Costs
Dorin (2018)	1. Reducing Operational Costs 2. Increasing Speed and Quality of Production 3. Gaining Competitive Edge in the Industry 4. Enabling the Organizations to Respond and Effectively Adapt to Market Changes and Customer Demands 5. Supporting Product Innovation

2.2.3.3 Process Innovation in Food Industry

Naila et al. (2024) proposed a framework to describe process innovation in food industries, which comprised one or a combination of two approaches: investing in new equipment or processes, and improving existing equipment or processes. Moreover, Mugo & Namada (2020) observed that the impact of process innovation on competitive advantage can be examined by focusing on cost management, process enhancement, and market adaptation. Finally, Mugo & Namada (2020) investigated process innovation based on three aspects: service delivery, cost optimization, and organizational structure. Their findings indicated that process innovation increases profitability and assists companies in achieving competitive advantage. Previous studies on innovation in SMEs, like Baregheh et al. (2012a), didn't give clear picture of the types of innovation adopted by SMEs due to differing typologies of types of innovation. For example, packaging linked with product innovation and plays a significant role in food sector as product can't be offered without packaging. in the same hand, it linked with process innovation and play significant role in food sector as company's competitive advantage may be achieved by adopting new packaging techniques or technologies. Oke et al. (2007) revealed that SMEs more engaged with product innovation that process and service innovation. On the other hand, Laforet and Tann (2006) revealed that within the manufacturing sector confirmed that SMEs more engaged to process innovation than product innovation. However, these studies focus solely on two types of innovation and don't give the general overview of innovation types in SMEs. With regards to food processing industries sector, although there are researches on innovation in the food sector and innovation in manufacturing sector in Palestine, more

research is required on types of innovation in food processing industries sector and strategies to be adopted to achieve competitive advantage.

Brewin et al. (2009) identify an interrelationship between product and process innovation. This interdependencies among innovation types, which may require adaptation of another type of innovation or lead to implement another type. Chang-Muñoz et al. (2020) answers the question what to manage first: product or process in developing countries? Product innovation precedes process innovation, in spite of company's focusing on process innovation more than product innovation. Product innovation correlated with introduction of a new product or significantly improved. These improvements are included in technical characteristics, components, materials, ease of use, or other functional characteristics (Chang-Muñoz et al., 2022). Regarding process innovation, the improvements are related to production forms, determination of methods and procedures, and functional structures that support production through investing in research and development and adoption of changes in which equipment and technologies that support the development of organization production (Bortola et al., 2024).

While product innovation is a business endeavors to refine existing products and produce new one, process innovation is the degree of organization improvement to its production techniques and procedures to produce high quality products (Kahn, 2018). Conditions supporting effective product innovation are different from those stimulating process innovation. Process innovation emphasizes efficiency with particular interest in saving cost; on the other hand, product innovation emphasizes effectiveness with purpose of new offering not efficiency, because new product need investment in firm resources and capabilities which may require new procedures and cause changing in production process.

Therefore, firms that overly focused on process innovation may restrict opportunities of product innovation. Capitanio et al., (2010) added that most product innovations in food industry are incremental rather than radical because of consumer inertia; which means cautious consumer behavior and resistance to novel food items.

2.2.4 The Relationship between Product and Process Innovation

Most prior studies on innovation focused on individual types of innovation; however, firms adopting integrated innovation strategies as seen in Figure (2.9) tend to achieve higher productivity and greater adaptability in dynamic environments (Tavassoli & Karlsson, 2016; Fonseca, 2014). In the food industry, it is therefore essential to examine both product and process innovations and their interrelationship (Baregheh et al., 2012b).

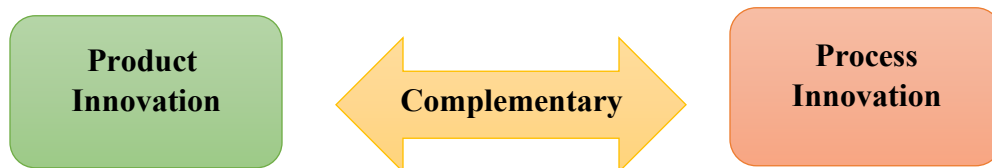


Figure 2.9 The Relationship between Product and Process Innovation, by the researcher

Empirical studies suggest three potential relationships between product and process innovation: no relationship, substitution, or complementarity (Guisado-González et al., 2017). Evidence predominantly supports complementarity, where the strengths of one innovation type compensate for the weaknesses of the other, enhancing overall performance and competitive advantage (Agazu & Kero, 2024; Ennen & Richter, 2010).

Complementarity facilitates more effective problem-solving and strategic resource utilization, creating synergistic effects that surpass the benefits of individual innovations.

While many studies adopt a pro-technology perspective (Ballota et al., 2013), sustainable innovation also requires organizational and managerial adjustments (Schumpeter, as cited in Ballota et al., 2013). Moreover, the likelihood of adopting both product and process innovations depends on firm performance and the industry life cycle, with high-performing firms more likely to integrate innovations than low-performing firms (Damanpour & Gopalakrishnan, 2001). In the food processing sector, firms often prioritize product innovation during early development stages, whereas process innovation becomes critical for enabling the effectiveness of product innovations over time (Utterback, 1978; Doran, 2012; Grunert et al., 1997). Firms that integrate both forms of innovation consistently outperform those implementing them separately.

Complementarity studies follow two main approaches: complementarities-in-performance, which assess the impact of implementing product and process innovations together on firm performance, and complementarities-in-use, which examine how innovations interact in practice within organizational processes (Utterback, 1975; Ballota et al., 2013; Hullova et al., 2016). Hullova et al. (2016) found that complementarities-in-use can manifest in different patterns (sequential, amensalism, pooled) depending on industry, firm, and project context, while Ballot et al. (2015) found that complementarities-in-performance highlight efficient innovation strategies, such as technological strategies (product–process) or structure-oriented strategies (organization–product).

Thus, although many empirical studies model complementarity via interaction terms, the theoretical literature on complementarity (e.g., Resource-Based View, Milgrom & Roberts) supports treating complementarity as an independent strategic factor, particularly when it is conceptualized and measured as a distinct organizational practice or capability. Accordingly, in this research, complementarity (both in-use and in-performance) is treated as an independent variable rather than a mere interaction effect, as it represents a strategic organizational approach to integrating product and process innovations. This conceptualization allows its direct impact on dynamic capabilities and, subsequently, on competitive advantage to be analyzed, reflecting the strategic role of integrated innovation practices in enhancing firm performance.

Integrating product and process innovation creates a cyclical innovation effect: product innovation drives improvements in production processes, and process innovation supports the development of higher-quality products. This synergy is particularly crucial for resource-constrained firms in developing countries, as it enhances effectiveness, profitability, and long-term competitiveness (Hullova et al., 2016). Ultimately, the complementarity between product and process innovation promotes superior product quality and contributes to sustainable and global competitive advantage in the food industry. Indeed, the following Table reveal the comparison between the product and process innovation (see Table 2.2 below).

Table 2.2 Comparison between Product Innovation and Process Innovation, by the researcher

Dimension	Product Innovation	Process Innovation	Relationship
Focus	New or improved product/service.	Improvement of production/delivery methods.	Complementary.
Strategic Impact	Enhances market competitiveness directly.	Improves internal efficiency and cost-effectiveness.	Synergistic.
Dependency	Often requires new processes for production.	Can exist independently but enhances product quality.	Interdependent.
Risk Level	Higher market and R&D risk.	Lower operational and implementation risk.	Balanced approach improves overall resilience.
Timing	May precede process innovation in early stages.	Often follows product innovation to improve delivery.	Sequential.

2.2.5 The Role of Automation and Artificial Intelligence in Food Production

Unprecedented levels of productivity have been achieved through the application of automation in food production, which has radically altered manufacturing processes. With automated systems, there is no need to take breaks or switch shifts; they run continuously, keeping production steady with little downtime. Thanks to this streamlined process, producers can easily meet tight deadlines and respond quickly to changes in the

market. Because automated systems can keep equipment running at optimal performance with little downtime, the effect on productivity is especially noticeable in high-speed, high-volume processes. Because of this dependability, food producers can successfully adjust to fluctuating market demands and meet short deadlines (Song et al., 2025)

Automation has significantly improved food safety, which is a top priority in the sector. Automated methods significantly lessen the chances of contamination by minimizing human interaction with food goods. Robust quality control measures are provided by modern technology that incorporate digitalization and traceability capabilities. These procedures continuously monitor the conditions of the packing process and swiftly identify any possible concerns (Palakurti, 2022). Song et al. (2025) stated that Automated bag and box machines are examples of specialized equipment that carry out precise tasks, which improve efficiency and decrease contamination concerns. It would be difficult to attain consistent cleanliness requirements with human processing, but these solutions make it easy.

It worth noting that businesses in the Palestinian Authority have the same challenges and constraints as their counterparts in other developing nations, which raises the stakes for employees and makes the future of the industry uncertain. In addition, the Israeli occupation places additional restrictions on any investment by businesses (Dweekat & Arman, 2011). Salama et al. (2024) confirmed that Palestinian processing firms suffer from insufficient planning that leads to a lack of synergy between infrastructure and structural design. As a consequence, their manufacturing systems are not as effective or efficient as they could be. Also, because production capacity and manufacturing technologies didn't match up with supply and demand, numerous Palestinian

manufacturing firms sprung up without proper investment planning and studies. So, it's important to plan out how to build an integrated manufacturing system that works for the Palestinians and is specific to their needs.

In modern times, artificial intelligence has become an integral part of industrial biotechnology development and research. A lot of biotech companies use AI software. One area where artificial intelligence has only just begun to be investigated is the food business. By bolstering food safety, microbial metabolic engineering, food enzymes, and microbiology in general, AI improves food biotechnology. All parts of the food ingredient production process, as well as food processing, quality control, and safety are areas where artificial intelligence techniques are used in the food business (Arachchige et al., 2022).

Several areas of manufacturing processes are enhanced by implementing AI technology, including computer vision, machine learning, and natural language processing (NLP). In order to increase productivity, enhance quality, and decrease downtime, AI can sift through mountains of data collected by sensors, machinery, and assembly lines. Artificial intelligence (AI) is able to do things like automatically adapt to processes in real time, predict problems, and propose improvements by analyzing data patterns (Palakurti, 2022)

Additionally, AI has the potential to provide the manufacturing sector with far-reaching benefits. One of these is a marked improvement in productivity, thanks to the AI-driven automation that streamlines processes, eliminates human error, and speeds up production by handling mundane but necessary jobs. Additional factors that lead to substantial savings include automation, predictive analytics, and enhanced quality control. A more efficient and economical production environment is achieved through the use of

AI, which decreases labor and maintenance costs, optimizes energy use, and decreases waste (Abu Rayhan, 2023).

Furthermore, AI helps with better decision-making by letting managers rely on data when making choices. By simulating production scenarios and testing outcomes before full adoption, digital twins help firms decrease risks and enhance decision-making processes. Quick and effective innovation is made possible by AI through fast prototyping, generative design, and digital twin simulation. To keep up with the ever-changing industrial scene, businesses are turning to AI to help them reduce time to market and support more innovative product designs (Lugo-Morin, 2024)

2.3 Competitive Advantage

Competitive advantage is a crucial concept in management which is considered as significant strategic element which provides the essential opportunity for the organization to achieve continuous profitability and sustainability compared to competitors. Therefore, there are many perspectives defined the concept of competitive advantage. Competitive advantage Mason (1939) introduced the Structure-Conduct-Performance (SCP) paradigm, which influenced the understanding of competitive advantage in industrial organizations. This approach emphasized that firm's external factors significantly influenced on firm's ability to achieve competitive advantage. Bain (1959) introduced "Industrial Organization" book, which was extended to (SCP) paradigm. This framework supposed that the structure of industry influences firm performance which intern affects market performance. Furthermore, he highlighted how firms can achieve and sustain competitive advantages through strategic management of market structures.

Porter (1980) & Porter (1985) identified the concept of competitive advantage as firm's ability to perform activities more effectively or at a lower cost than its competitors and he also introduced the term of competitive advantage as fundamental for firms to achieve superior performance within their industry. He also categorized competitive advantage to two main types: cost leadership and differentiation. Furthermore, he mentioned three generic strategies which can be used by firms to exploit their strengths, resources, and capabilities to achieve their competitive advantage as: cost leadership, differentiation, and focus. Penrose (1959) emphasized the relationship between firm's resources, capabilities and abilities to achieve competitive advantage through effective resource management, leveraging firm-specific knowledge, and engaging in strategic experimentation. Wernerfelt (1984) found the role of firm's internal resources in achieving its sustainable competitive advantage and he introduced A Resource-Based View (RBV) approach. This perspective shifted the focus from external factors and market position to internal resources and factors.

Barney (1991) identified the key factors that determine whether firm's resources can lead to sustainable competitive advantage and he depended on resource-based view framework. These attributes are summarized in VRIN framework (Value, Rarity, Imitability, Non-substitutability) which are used as guideline to assess firm's resources and capabilities in achieving sustainable competitive advantage. Barney (1995) improved VRIN framework and introduced VRIO framework which included four attributes: valuable, rare, imitable, and organized. While VRIN framework doesn't consider how well the firm can utilize its resources, VRIO framework incorporates the organizational capability to leverage resources for competitive advantage. Makadok (2001) offers a

thorough perspective on competitive advantage, combining internal resources with external market dynamics and promoting a holistic approach to strategic management. This perspective encourages firms to leverage their unique strengths while also adapting to the complexities of their operating environments. This perspective supports firms to leverage their internal strengths while adapting to external opportunities and threats.

To sum up the above-mentioned perspectives of competitive advantage, the following Table (2.3) is considered as an evolution of the competitive advantage concept across economic theories:

Table 2.3 Evolution of the Competitive Advantage Concept Across Economic Theories, by researcher

Scholar / Theory	Core Focus	Contribution to Competitive Advantage
Mason (1939)	Market Structure–Conduct–Performance (SCP)	Emphasized external industry structure in shaping firm performance
Bain (1959)	Industrial economics	Connected industry structure with firm-level outcomes and competitiveness
Porter (1980, 1985)	Three generic strategies: cost leadership, differentiation, and focus	Provided an integrated definition of competitive advantage via value chain analysis
Penrose (1959)	Resources and firm growth	Highlighted internal firm resources as a base for competitive performance
Wernerfelt (1984)	Resource-Based View (RBV)	Stressed the importance of valuable, rare, and inimitable resources
Barney (1991, 1995)	VRIN/VRIO framework	Introduced criteria for sustainable competitive advantage
Makadok (2001)	Integrated view	Combined external and internal perspectives for strategic analysis

Najjar (2024)	Geoeconomics & Geopolitics in Conflict Areas (CACA framework)	Demonstrated how geopolitical and geoeconomic constraints shape competitive advantage in conflict-affected economies, highlighting adaptive and context-driven strategies in Palestine
---------------	---	--

Hajjaj (2015) classified the concept of competitive advantage into main three perspectives, he also confirmed that Michael Porter concentrated in his definition of competitive advantage in offering superior value to customer by adopting differentiation strategy, or cost leadership strategy. Pitts and Lei (1999) emphasized on firm's internal environment and found that effective exploiting to internal resources and capabilities creates firm's competitive advantage. Finally, Hajjaj (2015) indicated that Harsch confirmed the competitive advantage gives the firm superior value against its competitors and increases its market share. As a result, competitive advantage was defined as firm's ability to make optimal use of its resources to apply superior value to its customers compared to its competitors and increase its market share.

Most studies classified the main types of competitive advantage to lower cost advantage, and differentiation advantage. According to the importance of competitive advantage the Hajjaj (2015) reviewed several definitions of competitive advantage to clarify this concept from several aspects. Hilaly (2009) defined competitive advantage as an organization superior ability to exploit external opportunities or mitigate threats. Competitive advantage stems from an organization's ability to leverage its material and human resources. This may be related to quality, technology, the ability to reduce costs, marketing efficiency, innovation and development, the availability of financial resources,

a distinctive management approach, or the possession of qualified human resources (Hilaly, 2009).

Competitive advantage arises from the company's discovery of new ideas or methods that are more effective than those used by competitors, and it is able to implement this discovery in the field (Khuwaildat al., 2021). On the other hand, Porter (1980) defined competitive advantage in three concepts:

- The first concept: Competitive advantage is achieved through specific processes that increase company growth and sustainability in the industry. This concept is represented by the five forces model, which are: threats of new entrants, threats of substitutes, bargaining power of buyers, bargaining power of suppliers, and rivalry among existing competitors.
- The second concept: The competitive strategies are adopted by the company, which consider source of competitive advantage and markets which business competences. These strategies are represented by cost leadership strategy, differentiation strategy, and focus strategy.
- The third concept: analyzing the value chain based on organization activities.

Sulaiman (2021) studied the dimensions of competitive advantage: quality, cost, flexibility, delivery, customer satisfaction, and market share. To achieve product quality in food processing industries sector, the companies should:

- 1) Commitment to local and international specifications and standards required for manufactured products to achieve high quality.
- 2) Continuously review and update standard specifications.

3) The product must be suitable for use and meet the customer's desires and requirements.

Furthermore, the cost in food processing industries sector can be defined as the cost that includes all costs associated with production processes, including the cost of materials, human resources, and other additional costs to convert raw materials into final products. It is essential to achieve a balance between product quality and cost through quality management, which determines the level of products offered to customers and manufacturing costs. The goal of any company is to generate profits and maintain a competitive advantage in challenging and competitive markets. It is essential to produce products based on the principle of balancing quality and cost to ensure a highly competitive advantage.

To clarify the relationship between quality, cost, and competitive advantage, it is necessary to address the Japanese concept of Kaizen, which refers to the continuous and progressive efforts undertaken by a company to achieve customer satisfaction. These improvements are achieved by increasing product quality and reducing production costs by combining or eliminating some production activities, thereby gaining customer satisfaction. As we can see, product quality, cost, and customer care positively influence customer satisfaction and loyalty and so on the market share.

Flexibility becomes more important as the external environment becomes more restrictive. These stages require market research to determine customer needs and requirements, and require continuous improvement in production. Sulaiman (2021) determined aspects of flexibility in company's resources, organizational structure, leadership, technology, and culture. Competitive advantage stems from the optimal

exploitation of available resources. This means that the availability of the necessary resources for the company's activities is a basic source of competitive advantage. However, the availability of resources is not sufficient to ensure the survival and continuity of the organization. Rather, it requires the optimal exploitation of those resources.

Therefore, the sources of competitive advantage can be identified in some elements like: quality, technology, knowledge, human resources, financial resources. Qubbaja & Jaradat (2020) added that quality of product or service relates to customer expectations and satisfactions. Studies have confirmed that technology is a significant factor in changing a company's competitive capabilities because it includes the application of all practical theories and acquired experiences to develop operations and processes. Furthermore, successful organizations focus on collecting information from various sources (internal and external), analyzing and interpreting it to guide and enrich the production process, improve company performance, increase productivity and profitability, and differentiate themselves from competitors. Knowledge management is considered as intangible capital; however, tangible capital includes human resources and financial resources. Human resources are the real sources to build and enhance the company competitive advantage because of achieving the differentiation in company performance does not only depend on the availability of material, technological and financial resources, but also on the ability of individuals to maximize the benefit from those resources. Therefore, we find that individuals are the organizational element capable of absorbing new ideas and concepts and facing the challenges are imposed by competitive conditions. In the same time, financial resources are critical for expanding and deepening company's activities through effective investments to achieve financial and competitive objectives.

Obtaining sources of competitive advantage depends on the various resources a company has Sulaiman (2021). There are many important sources that a company relies on to achieve its distinction. The more these resources, the more distinguished the company becomes and the more difficult it becomes for competing companies to imitate it. Conversely, the fewer sources of competitive advantage, the less distinguished the company becomes and the easier it becomes for competitors to imitate the company's products. Therefore, companies can achieve a competitive advantage by relying on their ability to exploit their internal resources and capabilities, such as: quality, cost, innovation, competencies, customer care, tangible and intangible resources, technology, and knowledge. These resources support achieving a competitive advantage if the company is able to exploit them effectively.

Given the above-mentioned information, the following Table (2.4) describe the dimensions of competitive advantage in the food sector based on Sulaiman (2021) classification:

Table 2.4 Dimensions of Competitive Advantage in the Food Sector- Prepared by the researcher based on Sulaiman (2021).

Dimension	Description
Quality	Adherence to standards, customer satisfaction, product differentiation
Cost	Operational efficiency with cost reduction while maintaining product quality
Flexibility	Ability to adapt rapidly to market changes through organization and technology
Delivery	Timely and reliable product delivery
Customer Satisfaction	Degree of consumer engagement and loyalty

2.3.1 Competitive Strategies

Competitive advantage contributes in building company's competitive position and gives it superiority against its competitors either through the company's low costs or through the distinction of its products from its competitors (Qubbaja & Jaradat, 2020; Hajjaj, 2015 & Hilaly, 2009).

Lower cost advantage: it means the company designs, manufactures, and introduces lower cost product compared to competitors to increase its profit. Cost reduction is one of the components of building competitive advantage, hence reducing production costs leads decreasing product price to the extent that it exceeds the capacity of competitors. To adopt cost leadership strategy, the company should know the factors controlling costs and monitor them, as good management of these factors gives the company cost reduction advantage. Accordingly, these factors are shown in Figure (2.10) and summarized as follows:

- Volume Monitoring: The company can reduce its costs by expanding its product collection, company's markets or marketing activities, or through new process of production. However, the size that controls costs varies from one activity to another and from one region to another.
- Learning Monitoring: It is the result of continuous efforts are being made by consumer and company. Link Monitoring: The company's ability to understand and exploit the links between value producing activities improves the company's position in the cost area and enhances its competitiveness.

- Attachment Monitoring: It means assembling important value-producing activities in the purpose of exploiting common capabilities or transferring expertise in managing a value-producing activity to strategic units that practice similar activities.

- Procedures Monitoring: Sometimes companies resort to changing or eliminating procedures they implemented on an ad hoc basis, which would otherwise be costly. Changing or eliminating these procedures contributes to achieving a competitive advantage.

- Monitoring the repositioning the activities: This repositioning relates to production activities and procedures, customers, and suppliers. It influences wage and salary level, raw material effectivity, and easiness access to suppliers.

- Monitoring the calendar: Leader companies in some sectors continuously benefit from cost leadership strategy because of their positions, hiring high experience employees, and dealing with experienced suppliers.

Company's costs don't decrease completely, but they require consistent and diligent work. A company's ability to reduce costs varies, even if they maintain similar production volume and follow the same strategy. Motivation, training, and company culture are also factors that contribute to cost reduction. Therefore, some leading companies develop programs and plans that help them monitor the costs of value-generating activities, study their evolution over time, compare them with competitors, and then make appropriate decisions.

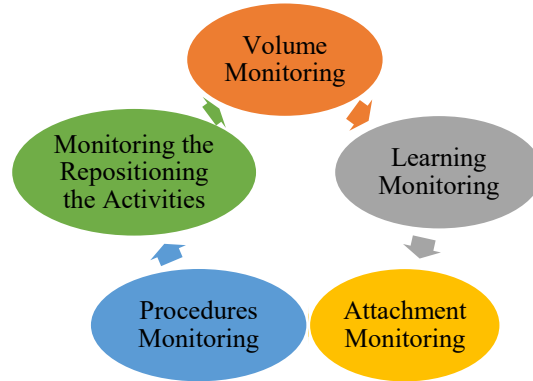


Figure 2.10 Factors give the company Cost Reduction Advantage – Prepared by the researcher based on Hajjaj (2015) and Hilaly (2009).

Kılıç (2022) states the company makes its efforts to differentiate its product elements such as product design, technology that is used, after-sales services, and distribution channels. Company uses differentiation strategy to attract customers who have special interest in some product features. The company adopts differentiation strategy to achieve customer loyalty by emphasizing the features that differentiates it against its competitors. Implementation of this strategy depends on effectiveness of building strong corporate image, marketing activities, promotion efforts, and quality management.

Due to company's position of successful companies, they adopt differentiation strategy to expand their loyal customer portfolio, increase their profitability by applying their products in higher prices. Businesses who think they cannot be existed in high competition environment prefer focus strategy either focus cost leadership or focus differentiation. Focus strategy targets specific group of people or niche market to meet customer needs who have service problems or meet demands for specific products or specific people (Kılıç, 2022).

2.3.2 Theoretical Approaches to Building Sustainable Competitive Advantage and Methods of Measuring it

There are different approaches and perspectives in view of sustainable competitive advantage. Some focuses of the input of competitive advantage like company's resources, capabilities, and competences Qubbaja & Jaradat (2020), Hajjaj (2015), and Hilaly (2009). On the other hand, others concentrated on the output of competitive advantage. Introduction to General Strategies. Porter (1980) confirmed that company's general strategy is related to the company and sector which increases company's ability to increase the profitability. As seen in Figure (2.11) Porter's competitive strategies are cost leadership strategy, differentiation, and focus to achieve competitive advantage. Porter also indicated to company's ability to successfully adopt a cost leadership strategy through continuous capital investment, a unique availability of capital, labor supervision, engineering skills in the field of operations, and an incentive system based on achieving quantitative goals. On the other hand, implementing differentiation strategy requires marketing capabilities, strong research and development competencies, company's good reputation in quality field, adopting technology, good salary and benefits to recruit qualified human resources and innovative competencies, and adopting qualitative incentives rather than quantitative ones. Finally, focus strategy requires mixed practices from previous two strategies directed to achieve specific goal.

Competitive Strategies		
Cost Leadership Strategy	Differentiation Strategy	Focus Strategy
Continuous capital investment Labor supervision Operation skills Incentive system	Marketing Capabilities R&D Good Reputation Technology Qualified HR	Mixed practices from previous two strategies

Figure 2.11 Implementing Competitive strategies - Prepared by the researcher based on Porter (1980).

2.3.3 Introduction to Strategic Analysis

This perspective concentrates on studying internal and external environments. Analyzing internal environment includes determining company's internal strengths like resources, capabilities, and competencies that can be effectively exploited to achieve competitive advantage and it also includes determining internal weaknesses that may affect achieving competitive advantage. On the other hand, external environment includes external opportunities that enable company to choose and implement suitable strategy to achieve best performance in competitive environment. And according to continuous changing in external environment, the company should determine external threats that may affect its competitive position.

Companies measure their competitive advantage based on qualitative and quantitative measurements. Qualitative measurements depend on measuring the degree of

customer satisfaction with the company's products compared to competitors' products. The qualitative measures of competitive advantage can be seen in the following Table (2.5):

Table 2.5 Qualitative Measures of Competitive Advantage, by the researcher

Indicator	Explanation / Usage
Expected Quality	Customer perception before product use
Perceived Quality	Customer satisfaction after product use
Measured Quality	Degree of compliance with industry/product standards

On the other hand, quantitative measurement is primarily related to the financial performance of the organization in the market, so it is the most widely adopted metric by the organizations. The quantitative measures of competitive advantage can be seen in Table (2.6). As a conclusion, the high percentages of these ratios compared to competitors provide an important indicator of company's competitiveness.

Table 2.6 Quantitative Measures of Competitive Advantage, by the researcher.

Indicator	Explanation / Usage
Relative Product Quality	Product's performance compared to competitors
Ratio of New Products to Total Sales	Innovation contribution to commercial success
Market Share	Company's portion of total market revenue
Profitability Indicators	Firm performance compared to industry benchmarks

2.3.4 Competitive Advantage in the Food Industry

Competitive advantage is a business ability of producing products more effectively than its rivals. Competitive advantage usually leads to profitability which maintaining and expanding the company's market share. Productivity, efficiency, effectivity, product variety, value added, profitability, market share, and customer satisfaction are a few interconnected firm's factors that determine and measure firm's competitive advantage (Bortola et al., 2024). Ramadhan & Farida (2023) defined Competitive advantage as the added value that the companies can create for their customers. Product competitive advantage indicators combine artistic value with customer tastes, competitive prices, rarely found, not easily imitated (Mardiyono & Sugiyarti, 2024).

Actually, innovation in the food industry is a rather complex process and can include involving different parts throughout the food system, from the development of new ingredients to the formulation of new food products, from the improvement of methods of food preservation to new ways of packaging (Earle, 1997). From basic research to market penetration with product innovation to gain competitive advantage over other firms (Hollenstein, 1996). In this context, there are two different perspectives can be used to analyze the factors determined innovation pattern at firm level. First, innovation can be studied as a process of changing and improving. In this sense, the innovative process is directly influenced by the way of R&D is carried out, the "technological" characteristics of the innovations, and by the level of expenditure. Secondly, innovation can be analyzed as the firm's capability to satisfy customer needs and preferences by exploiting its own resources, skills and capacities.

2.3.5 CACA Theory: In the Context of Palestine

Najjar (2024) stated in his article on Geoeconomics, Geopolitics, and the Competitive Advantage in Conflict Areas (CACA): A Focus on Palestine that, the theory of competitive advantage has been the subject of a large body of literature, but not much is known about how it works in circumstances of conflict. The invention and theorization of the idea of CACA significantly contributes to bridging this critical gap. Whether at the national, regional, or local level, unconventional factors significantly impact competitive advantage in conflict zones like Palestine. Social and economic tendencies of an ethical and national character have emerged as a result of the complicated circumstances brought about by the Israeli occupation, and they have increased the demand for Palestinian items made in the area. The idea of "competitive advantage in conflict zones" (CACA) provides the basis for this kind of social behavior, which is marked by resistance and innovation.

As a result of economic boycott initiatives, many Palestinians choose not to buy Israeli products but rather support local ones; this trend can be explained by a combination of national pride and moral obligations. People see this boycott as a nonviolent way to fight back against the occupation and show solidarity as a nation facing social, economic, and political problems. The larger BDS (Boycott, Divestment, and Sanctions) movement includes this boycott as one of its components; the goals of this campaign are to put pressure on Israel to withdraw its occupation, protect Palestinian rights inside the borders of 1948, and acknowledge the right of refugees to return. One aspect of the boycott is not buying anything from Israel or the settlements that have set up shop in the occupied territory.

Najjar (2024) added:

"By boycotting Israeli products and goods, Palestinians have innovatively created a new competitive advantage in conflict areas (CACA) for their local market and national products. This was initiated and shaped by strong patriotic feelings and a collective Palestinian consciousness to strengthen and privilege the local Palestinian market and products." (P. 18)

Two separate economic theories arise within the framework of the Israeli-Palestinian conflict. The first model depicts Israel's tech-driven economy, which is characterized by an entrepreneurial ecosystem, a trained labor force, and advanced technology sectors including cybersecurity, biotechnology, and telecommunications. In contrast, the second model depicts the realities of the occupied Palestinian economy, which includes significant unemployment, mobility restrictions, and dependence on foreign aid, as well as unrealized economic potential.

One example of CACA is the use of identifying labels on Palestinian store products. This helps customers recognize which products are national and encourages them to support local manufacture while discouraging Israeli products (as seen in Figure 2.12). While the Palestinian economy does have certain advantages, such as a highly trained labor force and a prime geographical position, it is severely limited in its ability to take advantage of its natural resources, particularly its land and water, because of the Israeli occupation. Agricultural and industrial development are hampered, and the occupation's control over water sources and infrastructure impacts the daily life of Palestinians.



Figure 2.12 Putting "national Palestinian products" on Palestinian supermarket shelves in Ramallah, differentiating local Palestinian products, and urging boycotts of Israeli ones (Najjar, 2024)

2.4 The Impact of Innovation on the Competitive Strategy

Achieving competitive advantage require relying the company on its resources that contribute in building and creating the company value and differentiation. Due to rapid changing and developing the dynamic environment in addition to change customer needs and preferences, the resources and dimensions of competitive advantage changed. The companies had depended on decreasing cost as a core dimension of competitive advantage, other companies looked for other methods and dimensions to differentiate themselves and increase their market shares through supplying high quality products. The impact of innovation can be illustrated as:

1) The impact of innovation on the cost: product innovation may be incremental or radical and this raises the cost of production and product price. Innovation allows

companies in monopoly market to decrease the cost even it is temporarily. However, companies in other market structures have many competitors who monitor the company and respond to its activities. The responds are presented in imitation or product innovation which temporarily increases the company profit because of following the competitors to its competitive advantage. At this time, the company creates and builds new competitive advantage through innovation.

2) The impact of innovation in enhancing differentiation strategy: the researchers studied the impact of innovation on differentiation strategy through

a) Innovation enables the companies in developing new products with high quality and achieving superior profits compared with the cost of resources. And this because of adopting new product development strategy that differentiates the company against its rivals.

b) Product and process innovation include adding new features or improving the existing to existed product or process through adding new element to the product or new development to the process.

Accordingly, the innovation is connected to new product, design, level of quality, accessibility, and fitness to the purpose of the company.

2.4.1 The Impact of Product and Process Innovation on Competitive Advantage

Managers should adapt to dynamic external environment; therefore, they should use innovation to create and achieve competitive advantage (Distanont & Khongmalai, 2020). Drucker (1994) stated that innovation is a significant tool firms use in exploiting their resources and creating their competitive advantage. Product and process innovation

has become one of the most essential forces for improving the competitive advantage. Product and process innovation work hand in hand and are seen as critical success factor in food processing industry (Ma & McSweeney, 2008). Bortola et al. (2024) studied the impact of product and process innovation practices on competitiveness in manufacturing enterprises. This study considered product and process innovation as independent variable, competitive advantage as mediator, and competitiveness as a dependent variable. It is a quantitative research approach used questionnaire to collect data from simple random sample and Structural equation modeling with AMOS v23 to analyze collected data. The result showed that both product and process innovation had significant impact on competitiveness. Moreover, both product and process innovation had indirect effect on competitiveness through competitive advantage. In addition to strong relationship between both product and process innovation and competitive advantage.

Innovation is a significant success element of growth and competitiveness in manufacturing firms. Creating new marketable products and improving the existing are the crucial strategic advantage for organization's survival and competitiveness to outperform its rivals. To improve innovation practices in companies, the management must encourage (internal learning capabilities) knowledge management and R&D. To effectively adaptation of product and process innovation approach, the organization should effectively expand and integrate its resources, capabilities, and competencies to gain unique competitive advantage. Barney (1991) used RBV to explain how companies used their vital internal resources and capabilities to create sustained competitive advantage. This approach supposed that resources are heterogeneously distributed across firms and that differences are stable over time. In this regard, RBV describes firm's resources based on

value, rareness, imitability, and substitutability. As a result, the company must gather and organize its resources that are valuable, rare, non-imitable and non-substitutable to achieve the competitive advantage.

Lynch determined seven fundamental features the company should include on its resources to achieve sustainable competitive advantage: valuable, rare, inimitable, non-substitutable, durable, appropriable, and strategic fit. These features are explained in the following Table (2.7):

Table 2.7 Key Features of Resources Supporting Competitive Advantage, by the researcher

Feature	Description
Valuable	The resources through which a company can build a sustainable competitive advantage, such as the company's reputation in the market.
Rare/ Inimitable	Internal capabilities that create value and a competitive advantage and are difficult to imitate.
Non- substitutable	The difficulty of replacing the organization's products with an alternative product.
Durable	The continued availability of long-term valuable resources that remain their value over time without rapid depreciation.
Appropriable	Distributing the results of the competitive advantage and allocating them to all stakeholders and rights in the organization with ensuring that value is not lost to external parties.
Strategic Fit	Resources should align with the company's strategic goals and market positioning to contribute in building effective competitive advantage and achieving long-term objectives.

However, Lynch believes that this perspective requires more clarity because it includes a number of weaknesses, such as the lack of a guiding logic that includes changing resource factors over time.

Rianawati` et al. (2024) discussed competitive advantage through resource-based view theory. They also found that innovation strategy positively affected firm's competitive advantage. Grant (2016) found that in most cases company's resources and capabilities are not productive in their own therefore they must work together to initiate organizational capabilities then competitive advantage. Newbert (2007) categorized the theoretical approaches that were used by empirical studies of RBV as four approaches: resource heterogeneity, organizing approach, conceptual-level, and dynamic capabilities. Chandler & Hanks, (1994) and Wang & Ang, (2004) measured the impact of organizational capabilities on competitive advantage based on cost leadership, quality, and innovation. The selection of these three factors is selected from previous studies by Chandler and Hanks (1994) and Wang and Ang (2004). Hussain et al. (2024) studied the impact of dynamic capabilities on achieving competitive advantage by dividing dynamic capabilities to three dimensions; resource rearrangement capability, acquisition capability, and sensing capability and the relationship was strong correlational.

Moreover, in other studies experts identified the aspects of dynamic capabilities as: resource rearrangement, resource acquisition, and resource sensing (Bleady & Ibrahim, 2018). Dynamic reality makes it difficult for companies to achieve and maintain their competitive advantage specially with shortage of raw material and strategic resources. therefore, dynamic capabilities help companies to analyze and understand the market, and sense and seize the opportunities. Product innovation is a strategic element of a company's

overall strategy. It also aims to adapt to changes, build a unique competitive advantage, and provide value to the market and the organization. Product innovation requires focusing on company's strength and internal and external interaction, and building collaborations. It involves the participation of representatives from different functional departments (Kozludzhova, 2023).

Moreover, product innovation requires knowledge and creativity and driven by customer satisfaction. Hamdani & Ramdani (2024) discussed the effect of product innovation on competitive advantage in Beverage Business. It is causal research used survey and analyzed the data by Smart-PLS tool. The result showed the positive and significant effect of product innovation on competitive advantage. Saraswati & Sudarmiatin (2024) aimed to determine the relationship between product innovation and competitive advantage with firm performance. They adopted multidisciplinary approach, used simple random sampling, and used partial least squares method (PLS) to analyze the data. The result showed that both product innovation and competitive advantage have direct and positive effect on company performance. Finally, new products have a direct impact on business performance through competitive advantage. They considered product innovation as a series of applications of developed science and technology in one product. Product innovation includes improving existing product combinations and discovering new products. In addition to that, it can be interpreted as improving the quality of product.

Innovation usually starts with a need. Then companies try to find solution which fulfill the need and answer the questions and meet the customer satisfaction. Dorin (2018) shows implications of product and process innovation. The results that these types of innovation have an impact on quality, efficiency, competitiveness, and the company's

sustainability. Even if competition is driving factor of firm growth, some empirical studies in development countries have confirmed that some firm performance indicators had negative relationship with competitiveness (Kefyalew, 2023). For this, adopting product and process innovation to improve products quality would lead firms in food processing industries sector to face and stand the threat of competition. (Bortola et al., 2024) showed that many empirical studies disclosed a very significant effect of product and process innovation of firms on performance and competitiveness.

Furthermore, Samuel (2023) and Dessie et al. (2022) found that product, process, marketing and organizational innovation were positively related to firm performance. Su (2023) also stated that product innovation direct influences firm's performance. Belete (2018) noticed that product, process and market innovations give the Small and Medium Enterprises a competitive advantage in the market. Alinda et al. (2024) found strong correlation between process innovation and sustainability practices in Uganda. Specifically, Canh et al. (2019) concludes that product and process innovation are beneficial to firm performance in terms of market share. Thus, Palestinian businesses must build their innovative capacities in order to seize market opportunities and remain competitive in both local and international markets. Ibidunni et al. (2014) found how adopting product innovation as a strategy enhances survival of food SMEs. The research has adopted product innovation and dynamic capabilities innovative theory. It has considered product life cycle through the model. They also found that changing in taste, preferences, and consumers necessitating drives firms to product innovation; moreover, they find that product innovation has positive impact on sales volume and firm survival.

They confirmed that product innovation includes conceptualization, commercialization, development, design, and validation of new product (Rainey, 2005).

However, Chandy and Tellis (1998), Gronhang and Kaufinan (1998), and Rajee (2005) described product innovation as source of competitive advantage which increases profitability and sustainability even at difficult times. at this time, companies face problem in sustainability if the companies don't improve their products and produce new products. Therefore, companies should understand the market, their customers, and their competitors. The result of Ramadhan & Farida (2023) study agreed that product innovation has a positive relationship with competitive advantage. Most studies discussed process innovation based on systematic review or RBV; however, when we combined theses researches with dynamic capabilities, we can discuss the impact of process innovation on competitive advantage through dynamic capabilities. As a conclusion, dynamic capabilities support innovation process and they are continuously adapting firm's resources which are crucial for sustaining competitive advantage through process innovation.

2.4.2 Dynamic Capabilities

Teece (2007) defines dynamic capabilities as “the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments”. This approach focused on existing firm operations and processes by emphasizing firm capacity to create, expand, and adjust firm's resources in response to environmental changes. As a result, dynamic capabilities consist of three activities (See Table 2.8): sensing, seizing, and transforming (reconfiguring), according to Cruz-Sanchez et al. (2020) & Fabrizio et al. (2022).

Table 2.8 Dynamic Capabilities Framework – Prepared by the researcher based on Cruz-Sanchez et al. (2020) & Fabrizio et al. (2022).

Capability	Definition
Sensing	Identifying opportunities and threats in the environment.
Seizing	Mobilizing resources to capture value from opportunities.
Reconfiguring	Transforming internal structures and assets to support long-term competitiveness.

- **Sensing:**

The ability to identify an external threats and opportunities in business environment. It can be also considered as parts of SWOT analysis. Seizing: the capacity to gather firm resources to exploit the opportunities. Transforming or reconfiguration: the ability to modify firm resources, capabilities, assets, and structure to maintain competitive advantage. Sensing includes market researches, identifying emerging technologies and procedures, determining customer tastes and preferences, and competitive threats. Therefore, effective sensing is fundamental for innovation. Seizing includes exploiting the firm's resources, making suitable and timely decisions, improving existing product, and creating new products to exploit these opportunities. Such as restructuring of internal processes to align with new directions.

- **Transforming or reconfiguring:**

It includes realigning the firm's resources, processes, and organizational structure, in addition to changing business model, changing firm's culture, and integrating new technologies to support new strategies.

Investment in research is usually significant complement to sensing stage Teece (2007). Therefore, internal learning capabilities is considered as mediator factor in this research. Entrepreneurs should have access to existing and new knowledge and information to detect the opportunities. Sensing also expands to include understanding the market and customer needs. When opportunities are identifies for the first time, entrepreneurs must

figure out the target market, their strategies, and how to achieve their strategies. In addition to assessing suppliers, customers and competitors' responses. This is significant for every entrepreneur to identify the first stage of innovation -idea generation- because competitors may assess the same opportunities in different way and adopt different strategies.

- **Seizing:**

Teece (2007) stated "after sensing, these opportunities must be addressed through new products, processes, or services". It also recognizes technological and market revolutions. Exploiting opportunities involves maintaining and improving the company's resources and competencies, and when the opportunity is ripe, investing in product features, design, technologies, and other company's competencies to achieve market acceptance. Accordingly, entrepreneurs must identify their strategies, business model, and suitable time based on increasing return advantages, and utilizing from existing products and services. In reality, sensing and seizing can't be separated; therefore, company's functions and activities must be integrated to treat market respond. Moreover, entrepreneur should change the firm internal culture to facilitate the investment, and the market vision to accept the new product through improve R&D, knowledge management, and the company technologies. In addition to committing financial resources and directing marketing strategies. Generally, enterprises tend to incremental innovation than radical because of management restricts like organizational structure and leadership style that may be boundaries against innovation and sensing and seizing the opportunities.

Successful sensing external opportunities and effective seizing internal resources and competencies can lead to enterprise growth and profitability which lead to increase and boost enterprise-level resources, assets, and capabilities. To maintain sustained profitable growth, reconfiguring the firm's resources and organizational structure is required.

Reconfiguration is needed for agile manufacturing. In other words, successful will produce some level of routine, which is necessary for operational efficiency, in addition to guarantee firm's sustainability. However, dynamic environment may require changing the routine which is costly. Furthermore, changing the routine will lead to increase the anxiety within the organization, unless the culture is shaped to accept it. If the innovation is radical, the organizational structure shall be reengineered- destroy the existing one and build new one-; on the other hand, when the innovation is incremental, the entrepreneur shall restructure the organizational structure. Finally, the organization should focus on research activities to exploit technological and organizational assets, in addition to adopt decentralization and transformational leadership to complement existing with new.

It worth noting that strategic human resource management would be incomplete without investing in staff training and development programs; these programs can help organizations achieve their objectives and make better decisions in an uncertain market (Storey & Wright, 2023). The idea of capacity building is intimately associated with Human Resources Development, training, and education. This long-held idea has evolved in recent years to encompass efforts at the national and institutional levels (Susano et al., 2023). Also, capacity building was described as the process of empowering individuals and communities to create, manage, and sustain locally relevant institutional and operational infrastructures and processes through the acquisition of necessary knowledge, skills, and attitudes (Khatijatushalihah, 2017).

Furthermore, at the company level, we should work to update and strengthen our current institutions so that they can better implement policies, organizational structures, and methods of management and revenue control. At the societal level, we aim to build

capacity so that public administrators can receive feedback from the public and be held more accountable and responsive (Joudeh, 2024).

2.4.3 Transformational Capabilities

In innovation and competitive advantage literature, dynamic capabilities are usually referred to when discussing the relationship between innovation and competitive advantage. For example, Pundziene et al. (2022) confirmed that dynamic capabilities significantly influenced open innovation which led to enhancing the firm performance in competitive environment. They also found that open innovation partially mediates the relationship between dynamic capabilities and the competitive advantage, which supporting the importance of integrating process of innovation with dynamic capabilities.

Sijabat et al., (2021) and Purwanto (2024) confirmed that both dynamic capabilities and innovation capability are significant drivers of competitive advantage. Sijabat et al. (2021) also discussed how stabilizing and pioneering strategies positively affected the firm competitiveness. Fainshmidt et al., (2019) used a configurational approach to confirm the effectiveness of dynamic capabilities in achieving competitive advantage and showed that that depends on strategic fit with the environment. In dynamic environments, dynamic capabilities support both cost leadership and differentiation strategies. Lee & Yoo (2019) is considered as an empirical study and confirmed that open innovation leads to competitive advantage through product innovation, with dynamic capabilities. It considered sensing, seizing, and transforming capabilities are prerequisites for successful innovation and sustained advantage. With focusing on agility as a dynamic capability supported the positive impact of agility on firm's operational performance (Blome et al., 2013).

Similarly, Eckstein et al. (2015) confirmed that agility is a potential source of competitive advantage which improves both firm's cost performance and operational performance.

In Mohaghegh et al. (2024) argued that dynamic capabilities should be used to build other capabilities. This related to and agreed with literature confirming that dynamic capabilities are not directly hooked up to firm performance and competitive advantage. Therefore, indirect relationship can be noticed through modifying firm's resources. Adopting an operations management perspective on dynamic capabilities, Bititci et al. (2011) confirmed that dynamic capabilities are indirect source of competitive advantage and they can be considered as strategic routines to change the company's resources and adapt to dynamic environment. Accordingly, Mohaghegh et al. (2024) proposed transformational capabilities as intermediate step (mediator) between agile manufacturing and business performance. Therefore, the researcher proposes that transformational capabilities play mediating role in the relationship between innovation and competitive advantage and in their impacts in innovation stages to build sustained competitive advantage. Mohaghegh et al. (2024) also considered transformational capabilities as firm's capacity to modify operational practices to maintain competitiveness. They also focused on internal learning capabilities and reconfiguration capabilities to modify firm's resources and processes.

This study agreed with Zott (2003) which found that dynamic capabilities indirectly influenced the company performance through modifying company's resource base. Overall, the researcher supposes that achieving competitive advantage through innovation needed development in internal learning capabilities and reconfiguration capabilities as transformational capabilities. These transformational capabilities are the actual

mechanisms through which innovation contributes to achieve competitive advantage. As we can find, indirect relationships usually study using mediation analysis; therefore, the researcher discusses mediating roles of internal learning and reconfiguration capabilities on the relationship between innovation and sustained competitive advantage.

2.4.4 The Mediating Role of Internal Learning and Reconfiguration Capabilities.

Learning capability is the process of gaining, absorption, and exploitation of knowledge from internal and external sources such as employees, suppliers, customers, and competitors (Huo et al., 2021). Learning as a capability is a multidimensional construct includes knowledge modifying and processing for change and improvement. Based on this, understanding organizational learning refer to two dimensions; the knowledge; what is learned, and how. Organizations that support their internal learning capabilities are more likely to innovate (Jerez-Gómez et al., 2005). Most existing studies focused on external learning and organizational learning which contributes to innovation capability, enhancing the firm performance, and achieving the competitive advantage (Salim & Sulaiman, 2011).

Similarly, empirical studies showed that external learning can be achieved by customer and supplier partnership and these positively influence the firm's agility, flexibility, and competitive advantage (Tse et al., 2016). Despite literature theoretically emphasizing the importance of internal learning for innovation, the firm agility, and competitive advantage such as internal knowledge sharing , in addition to knowledge management databases (Mohaghegh et al., 2024), and knowledge gathering and acquisition from internal sources (Jin-Hai et al., 2003), empirical studies are needed to analyze the relationship between internal learning and product and process innovations.

In this study, the researcher focuses on internal learning as a less-investigated dimension of learning capability and considers it as mediator variable in the relationship between innovation within its two types: product and process innovation and achieving the firm competitive advantage. As stated earlier, ultimate goals of innovation are to adapt to dynamic changes and meet customer needs, requirements, and preferences. Therefore, innovation enhances the company sensitivity toward the market to identify market needs and consumer preferences (Mardiyono & Sugiyarti, 2024; Ibidunni et al., 2014; Sulaiman, K., 2021; Qubbaja & Jaradat, 2020; Ju, 2012, Cruz-Sanchez et al., 2020, & Fabrizio et al., 2022).

When market needs are identified and the opportunities are sensing, the company assimilates and articulates them among organizational units (knowledge absorption) then the company can seize its internal learning assets to capture the valuable knowledge and expertise of employees for rapid adapts to market dynamic changes. As a result of Huo et al. (2021) and Mohaghegh et al. (2024) studies, integrating internal learning capabilities into process of innovation is needed not only for meeting customer needs but also because of its connection with competitive advantage dimensions such as cost, quality, and delivery.

Yusuf et al. (1999) proposed the concept of knowledge-driven enterprise and confirmed the success of companies depends on its ability to transform collective knowledge existed in its internal function into solutions. Gathering and absorption new information, and adaptation to environmental changes are the core of innovation. Internal learning enhances knowledge base, flexibility, and employees skills to generate and implement new ideas. Jerez-Gómez et al. (2005) and Fu, (2022) summarized the

mechanisms linking internal learning to innovation as learning from successes and failures, and knowledge sharing. They encourage the firm risk-taking, continuous improvement, using information and communication technologies to support an effective internal knowledge sharing. These are essential for innovation, and enable employees to locate and recollect distributed knowledge leading to implement new ideas and innovation. Furthermore, the firm ongoing learning culture supports incremental innovation by allowing organization to achieve small and continuous improvement that led to achieve significant competitive advantage over time. Overall, the impact of innovation on firm's competitive advantage can be explained by firm's ability to develop its internal learning capability. As a result, researcher considers internal learning as mediator in the relationship between innovation and different dimensions of sustainable competitive advantage (as seen in Figure 2.13) for a conceptual illustration of the mediating role of internal learning and reconfiguration capabilities in the relationship between innovation and sustainable competitive advantage).

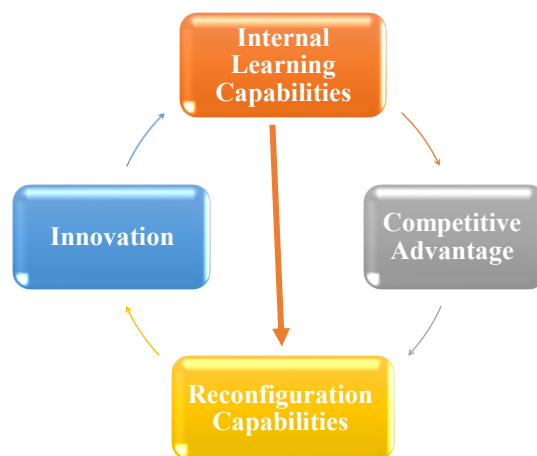


Figure 2.13 The Mediating Effect of Internal Learning Capabilities and Reconfiguration Capabilities, by the researcher.

Literature disclosed that innovation is helpful for addressing both short-term and long-term market changes. For example, rapid respond and adaptaion to sudden market changes, creating immediate value which achieve quick win, turning barriers and challenges into opportunities, and differentiating from competitors are methods of how innovation addresses short-term market challenges. On the other hand, innovation addresses long-term market challenges by adapting to market evolution, solving complex challenges, enhancing operational efficiency achieving sustainable competitive advantage, and supporting continuous improvement culture. Firms in their attempts to adapt to market opportunities are required to reconfigure their practices and capabilities (Eckstein et al., 2015). Inadequate attention to reconfiguration capabilities reflects on sensing only short-term changes such as demand fluctuation and supply disruptions. However, successfully respond to long-term changes are required to achieve sustainability through reconfiguration capability (Mohaghegh et al., 2024).

Innovation emphasizes skills, knowledge, capabilities and technologies to be exploited and respond to market changes through reconfiguration capabilities. Sensing customer requirements and seizing the firm's resources and capabilities provides the firm the opportunities to modify existing routines in efficient and effective way and integrates sustainability practices. For example, the importance of reconfiguration capabilities are the firm ability to adopt new practices and change old routines which lead to improve sustainable competitive advantage. Actually, Mohaghegh et al. (2024) encouraged the need of reconfiguration capabilities to successfully implement innovation through increasing product quality, and integrating some operational activities to achieve the competitive advantage. Overall, the role of innovation in achieving sustainable competitive advantage

can be implemented by by firm's ability to develop its reconfiguration capabilities. Moreover, reconfiguration capabilities play mediator roles in improving the innovation after delivering customer feedback. As a result, researcher considers reconfiguration capability as mediator in the relationship between innovation and sustainable competitive advantage.

2.4.5 Product Innovation and Competitive Advantage through Dynamic Capabilities Approach

Oboreh & Samuel (2023) examined product innovation and competitive advantage through dynamic capabilities theory. The researcher examined the contribution of sensing capability, seizing capability, and transformation capability to the achievement of competitive advantage. The data were analyzed using multiple regression method. The result indicated to significant positive relationship that sensing capability, seizing capability and transforming capability had with competitive advantage. Product innovation that integrated into organizational structure, processes, goods and services is a significant component of competitive advantage according to Gunday, et al. (2011).

Product innovation is one of critical tools of growth strategies using market penetration strategy to provide company a competitive edge and raise its actual market share. Product innovation is one of crucial component of competitive strategy in many industrial businesses (Mesquita et al., 2007). In order to prevent competitors from duplicating the company's key competitive advantages, the company should focus on developing essential technologies to its sector. According to Nimfa, et al, (2021), companies must offer the same product as their competitors at lower price. For product

differentiation, it happens when the company introduces a product that consumers want through adding value to its products that sets it apart from its competitors or by providing unique product or service that other competitors don't provide. Therefore, changes to the product development process, new distribution channels, and price adjustments may result in the development of a competitive advantage.

Furthermore, as product innovation depends on an organization's ability to organize, reorganize, and restructure its resources, it may be justified in the same way as the dynamic capability approach. Teece (2007) noted that dynamic capability is split in to three categories: perceiving (sensing), grabbing (seizing), and transforming. To find potential for product innovation, a company needs to aware the opportunities and have the ability to sense. Otherwise, the company will face threats to its survival. On the other hand, seizing capability term refers to company's capacity to capture the possibilities, choose suitable business model for developing new product, and resource creation and allocation to exploit required resources and develop new product. In order to adjust to environmental changes, the company must modify its competitiveness-generating resources. Transforming capability term refers to company's capacity to combine, recreate, and in some affairs dispose of existing resources for product production (Cepeda & Vera, 2007).

Based on the aforementioned, the study looked at how product innovation influences competitive advantage in PFPI sector. More specifically, it examined how internal learning and reconfiguration capabilities contribute to gaining a product innovation and achieving competitive advantage. Regardless of whether a firm is the market leader, a follower, a challenger, or a niche-grabber, it must discover and implement a suitable marketing plan that will best position it against its competitors. The main factors affecting

product innovation are market factors and customer needs. To create innovative product, food processing industries sector must adjust to changing in consumer demand, tastes, and preferences.

This can include significant advancements in functional qualities like technical requirements, materials, software integration, or user friendliness (OECD Oslo Manual, 2015). To succeed in innovation, one must understand the process, aware its benefits, and manage both. However, managing innovation against competitors, and continually changing markets and technologies presents a significant challenge. Innovation requires managing generated ideas to adapt to the environment in which it takes place in a noticeable and concrete way. In order to increase the effectiveness of companies' offerings, they sometimes need to modify product portfolios, create new products, improve existing products, or remove some items. Selecting suitable type of product innovation should increase sales since the company will be able to attract customer from all segments of the market and prevent them from switching to other competitors. When none of competitors adopt company's strategy, it is considered to have maintained its competitive advantage. If companies are given the ability to seize the opportunities and resist threats from external environment, uniqueness can be source of competitive advantage (Aziz & Samad, 2016).

Developing new product is one strategy for uniqueness from competitors. Competitors can't copy company's competitive advantage when they unaware its competencies and fundamental advantages; therefore, strengthen competitive advantage should be the priority of the company. It decreases the possibility of copying firm competitive advantage and gives the firm sustainable competitive advantage. Company's ability of delivering the same results as competitors at lower cost (cost advantage) or

providing superior benefits that exceed those of competitors products makes the presence of competitive advantage imaginable (differentiation advantage). Cost leadership strategy requires organizing production, increasing use, and decreasing production cost. On the other hand, differentiation strategy requires developing high quality performance, having access to high quality resources, and having qualified and competent human resources.

Teece, D et al., (1997) defined dynamic capabilities as "the firm's capability to, build, integrate, and recognize both the internal and external competences to attend to fast changing surroundings" in their 1997 paper "Dynamic Capabilities and Strategic Management". A competitive advantage in dynamic environment is based on principle of dynamic capacity. While understanding operational capabilities is related to current state of operation, understanding dynamic capabilities are related to firm capacity to expand its resources and modify its operation in effective way. This key premise is that the organization should exploit its strengths to build immediate competitive advantage that can be expanded to sustainable competitive advantage in the future. According to dynamic capabilities theory, managers in successful companies must design plans for adapting to serve change while upholding minimal capability criteria to secure their company's competitive survival. For the company to face and solve new problems, it needs three dynamic capabilities. One of them is employee ability to develop new skills quickly and develop new strategic assets.

Teece, Pisano, and Shuen (1997) suggested exploiting organization technology capability and customer feedback to integrate the new strategic assets into organizational processes. Another one of dynamic capabilities is transforming and reusing old assets. According to Teece (2014), creating "organizational agility" indicates to effective

application of dynamic capabilities steps. This theory is relevant to this study since it described how the organization can build new capabilities and improve the existing, seize opportunities, and avoid and face challenges and reorganizing its tangible and intangible assets. An empirical study was done by (Nimfa, et al, 2021), on the effect of innovation on competitive advantage and product quality in SMEs. Partial least squares structural equation modeling was used to examine survey information from Nigerian manufacturing sector. The results supported those from previous studies which found that consumer preferences don't direct influence product quality in spite of considering technology adaptation mediates the relationship between consumer preferences and product quality. Product quality is significantly affected by company strategy, and technology adaptation mediates this relationship.

Agaba et al. (2018) studied the impact of product innovation and pricing on competitive advantage in Uganda. The data was analyzed through a multiple regression technique. The result showed that product innovation and prices have significant impact on competitive advantage. Therefore, the companies should pay attention to innovation and price factors to enhance their competitive advantage. Lee and Yoo (2019) examined the relationship between open innovation enterprises, competitive advantage, and organizational competencies in Korean manufacturers. PLS, or the partial least squares method, has been applied to data analysis. The results confirmed the significant relationship between them. according to capacity for change, capacity for perception and judgment is prrequired. Take advantage of possibilities and opportunities can influence innovation and competitiveness. As a conclusion competitive advantage and organization's capacity are related for innovation.

Kuncoro & Suriani (2018) studied the connection between product innovation and competitive advantage and they also considered product innovation as driving force. structural equation model (SEM) and partial least squares was used for data analysis. The finding confirmed that product innovation and market trends have significant positive effect on sustainable competitive advantage. Adeolu and Femi (2020) studied product innovation and its impact on sustainable competitive advantage in manufacturing sector. descriptive statistics and correlation were used as data analysis methods. The study found that Ibadan's manufacturing companies used product innovation as tactic to achieve a competitive advantage. In addition to emphasized on importance of product innovation in maintaining firm's competitive advantage. Muthoni (2017) used descriptive research design to study impact of innovation on competitive advantage in fast-moving consumer products. He considered a stratified random sample to collect the data. Data analysis methods included both descriptive and inferential statistics. The results showed positive significant influence of product innovation and process innovation on competitive advantage.

Accordingly, most empirical studies considered dynamic capabilities as moderator variable to understand whether companies that have dynamic capabilities are able to achieve competitive advantage more than others. However, this research aims to identify strategies companies use to adopt product and process innovation and achieve the competitive advantage through dynamic capabilities (internal learning capabilities, and reconfiguration capabilities).

2.5 The Palestinian Food Processing Industries

A considerable body of research has examined the structure and performance of the Palestinian Food Processing Industry (PFPI), distinguishing primarily between formal and informal subsectors. These studies provide a comprehensive understanding of the sector's structural characteristics, environmental constraints, strategic challenges, and competitiveness dynamics.

One of the earliest comprehensive analyses following the establishment of the Palestinian National Authority was conducted by Abu Zaroor (2006), who focused on the informal food processing sector. His study was motivated by the substantial number of unregistered and under-researched informal enterprises. Using the third revision of the International Standard Industrial Classification (ISIC), he categorized food processing activities into 11 main sectors and 17 subsectors. The findings revealed that most informal establishments were small-sized enterprises. When ranked by number of factories, bakeries, grain mill product manufacturers, macaroni producers, dairy factories, and meat processing units occupied leading positions. In terms of employment, bakeries ranked first, followed by dairy processing and meat preservation industries.

Abu Zaroor (2006) further conducted an in-depth analysis of both the external and internal environments of the sector. Externally, the political environment was characterized by Israeli control over Palestinian territories, restrictive economic measures, movement limitations, and dependence on Israeli raw materials. Economically, the sector operated within a weak and highly dependent economy, marked by high unemployment, limited purchasing power, and population growth, which collectively pressured firms to pursue partnerships and acquisitions. The legal and regulatory

framework was described as underdeveloped, with the absence of a comprehensive food law and overlapping institutional responsibilities negatively affecting product quality and competitiveness. Socially and culturally, the predominance of small and family-owned enterprises reflected the conservative and cohesive structure of Palestinian society.

Internally, several structural weaknesses were identified. Registration and licensing processes were inconsistent, with many firms lacking formal licenses. Management practices were largely informal, with limited emphasis on strategic financial planning. Tax compliance varied, and most firms relied heavily on self-financing or informal borrowing due to insufficient institutional support. Employment conditions were characterized by low educational attainment, limited vocational training, and weak professional experience. Marketing practices were also underdeveloped; although product taste was considered a competitive strength, issues such as contamination risks, limited technological utilization, inadequate packaging, and weak promotional strategies constrained market performance.

Building upon environmental analysis, Mokhtar (2021) introduced a more structured strategic framework to enhance managerial decision-making within the sector. The study argued that effective strategic formulation requires the integration of complementary analytical tools rather than their isolated application. Specifically, Mokhtar proposed combining PEST analysis with the opportunities and threats components of SWOT analysis to provide a systematic assessment of the external environment. Simultaneously, the McKinsey 7S model should be integrated with the strengths and weaknesses dimensions of SWOT analysis to enable a comprehensive evaluation of the internal organizational environment. This integrative approach allows

managers to obtain a holistic understanding of both internal capabilities and external pressures, thereby supporting the development of sustainable competitive strategies.

In contrast to studies focusing on the informal sector, later research shifted attention toward the formal PFPI. Bitawi (2019) analyzed the formal sector using the fourth revision of ISIC and examined structural changes between 2005 and 2019. Her study emphasized enhancing competitiveness and expanding the market share of national products. It assessed legislative frameworks, government strategies, and policy interventions aimed at supporting the sector, concluding with policy recommendations designed to strengthen competitive performance.

Similarly, Mustafa (2005) identified variations in competitiveness across subsectors. While oil, dairy products, and prepared animal feed industries competed primarily on cost efficiency, meat processing industries relied more heavily on quality differentiation. He recommended improving product quality, investing in research and development, adopting advanced technologies, strengthening marketing strategies, enhancing workforce skills, and reducing production costs. At the policy level, he emphasized the importance of government investment in training centers, laboratories, infrastructure, and agricultural development, as well as diversifying raw material sources beyond Israeli suppliers.

Overall, the literature demonstrates significant similarities in the challenges faced by both formal and informal food processing enterprises. These challenges can be broadly categorized into internal weaknesses—such as managerial inefficiencies, limited technological capabilities, weak financial structures, and human capital deficiencies—and external threats, including political instability, regulatory fragmentation, and economic

dependency. Collectively, these studies provide a structured and explanatory understanding of the PFPI sector and highlight the need for integrated strategic, institutional, and capability-based reforms to enhance its competitive position. Mustafa (2005) summarized them as internal weaknesses and external threats as show in the following Table (2.9):

Table 2.9 Internal Weaknesses and External Threats of Formal and Informal – Prepared by the researcher based on Mustafa, (2005).

Internal weaknesses	External threats
1. Problems related to raw materials.	1. Weak laws, policies, and legislation that are supporting food industry in Palestine.
2. Problems related to machines and equipment.	2. Threats related to security closure.
3. Inadequacy of factory locations.	3. Israel controls border crossings.
4. Poor infrastructures.	4. High taxes and customs fees.
5. Sometimes, weak financial situation.	5. Investment environment in Palestine is not stable.
6. Weak marketing.	6. Lack of unions that are supporting this sector.
7. Weak planning and organizing.	7. Shortage in fund.
8. Shortage in technical experts.	8. Import and export procedures that are expensive and take long time
9. Lack of consumer confidence in the local product.	9. Using more than one currency and the expenses of exchange

2.5.1 Palestinian Food Processing Industries Sectors

The competitiveness of the PFPI has been examined in several empirical studies, which collectively reveal structural and strategic constraints limiting the sector's ability

to achieve sustainable competitive advantage. Nasser (2005), using SWOT analysis, identified critical competitiveness determinants, including production and raw material quality, employee skills, technological development, compliance with international standards, production costs, and supportive governmental policies. These findings were supported by Pal Trade (2005), Hantash (2012), Alrai (2004), Quffa and Migdad (2007), AL-Aghber (2007), and Bitawi (2019), who identified persistent barriers such as limited investment in research and development, dependence on foreign and Israeli raw materials, weak production and marketing mechanisms, and insufficient application of health and quality standards.

From a competitive advantage perspective, these challenges reflect weaknesses in valuable and inimitable resources and insufficient strategic alignment between internal capabilities and external market demands. For instance, dependency on imported inputs constrains cost flexibility and increases vulnerability to supply disruptions, while weak quality systems undermine differentiation potential. Empirical evidence by Sulaiman (2021) confirmed a positive relationship between implementing quality standards and competitive advantage in the food processing sector, emphasizing that adherence to Palestinian and international food safety standards enhances firms' credibility, market positioning, and long-term performance.

Strategically, PFPI firms may pursue cost leadership through increased production volume, operational efficiency (e.g., lean manufacturing and automation), supply chain integration, and effective cost control. Simultaneously, differentiation strategies may be achieved through total quality management, continuous product innovation, customer-oriented practices, packaging innovation, and marketing innovation. However, in a

volatile and resource-constrained environment such as Palestine, sustaining these strategies requires more than static resource optimization; it requires dynamic capabilities that enable firms to adapt and reconfigure their resource base.

From the dynamic capabilities perspective, competitiveness depends on the firm's ability to sense opportunities, seize them through innovation, and reconfigure internal and external resources accordingly. In this regard, Alrai (2004) linked sectoral development to improvements in complementary industries such as packaging and regulatory supervision, highlighting the importance of systemic capability enhancement. Hantash (2012) and AL-Aghber (2007) further emphasized the importance of institutional and governmental support in enabling sectoral transformation, while recognizing the presence of skilled experts and high-quality traditional products—particularly in Nablus—as underutilized strategic assets that can be leveraged through capability reconfiguration.

Moreover, Boonklum (2023) synthesized key success factors in food processing industries as seen in Figure (2.14), categorizing them into resources (human, physical, financial) and capabilities (marketing, managerial, and relationship-building). This framework aligns closely with the dynamic capabilities approach, which distinguishes between resource possession and the ability to deploy and renew those resources effectively. Similarly, Afaneh (2018) emphasized the importance of human capital (education, skills, and experience), financial strength, and commitment to international standards such as ISO and HACCP in achieving sectoral competitiveness.

Within this context, product innovation plays a pivotal role. Investment in new or improved products stimulates organizational learning by requiring firms to acquire new knowledge, enhance employee skills, and adopt new technologies. This process

strengthens internal learning capability, which enables firms to absorb, integrate, and utilize knowledge effectively. Enhanced learning capability, in turn, supports reconfiguration capability, allowing firms to restructure supply chains, redesign production processes, adopt new quality systems, and realign strategic priorities in response to environmental constraints. Through this sequential mechanism, product innovation contributes indirectly to competitive advantage by fostering internal learning and resource reconfiguration.

Accordingly, the PFPI sector's sustainable competitive advantage depends not only on direct innovation efforts, but also on the development of dynamic capabilities that mediate and amplify the impact of innovation. This theoretical reasoning provides the foundation for examining the relationships between product innovation, internal learning capability, reconfiguration capability, and competitive advantage in the present research.



Figure 2.14 Factors of Success and Excellence in Palestinian Food Industries – Prepared by the researcher based on

Boonklum (2023).

2.5.2 Post Classical Process of Production in Food Processing Industries

The PFPI as a leading global sector, significantly contributes to economic growth, employment, and international trade (Moubarac et al., 2014). Rapid technological advances—including biotechnology, precision agriculture, intelligent packaging, AI, and blockchain—have transformed production processes, supply chains, and consumer engagement, necessitating organizational adaptation (Galanakis, 2024; Alam et al., 2025). These innovations enhance productivity, reduce waste, improve food safety, and meet rising consumer demand for healthier and sustainable products (Taneja et al., 2023). as seen in Figure (2.15) Taneja et al. (2023) clarified layout of the functions of AI in several food sectors.

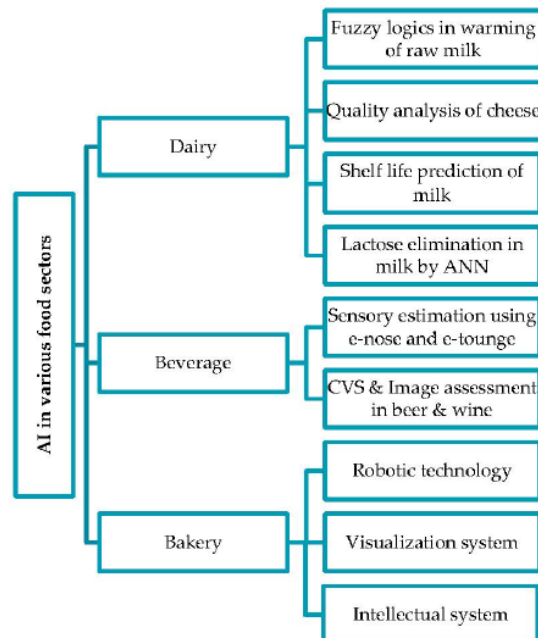


Figure 2.15 The Layout of the Functions of AI in Several Food Sectors, by Taneja et al. (2023).

Adapting to these dynamic trends is critical for achieving competitive advantage, as firms that integrate innovative technologies and sustainable practices can differentiate themselves, improve operational efficiency, and increase customer loyalty (Nagy et al., 2018; Sharma et al., 2020). Compliance with stricter food safety and regulatory standards further reinforces market credibility, supporting long-term profitability and strategic positioning (Vanderroost et al., 2014).

The realization of competitive advantage, however, is mediated by internal learning capabilities and reconfiguration capabilities. Internal learning capabilities enable firms to acquire, assimilate, and apply knowledge from technological innovations, market trends, and regulatory changes, fostering continuous improvement and adaptability (Thomas et al., 2011). Reconfiguration capabilities allow organizations to restructure resources, processes, and strategies in response to environmental shifts, ensuring the effective deployment of innovations and sustainable practices (Parmigiani et al., 2011; Alam et al., 2025) and as seen in Figure (2.16) Technological advancements drive efficiency and product quality through developing or improving food processing, packaging, distribution. For example, AI-driven process automation, machine learning-based quality control, and nanotechnology-enabled smart packaging require firms to learn, integrate, and reconfigure internal operations to maximize efficiency, product quality, and consumer satisfaction (Sharma et al., 2021; Raghu, Parkunan, & Kumar, 2020; Singh et al., 2020).

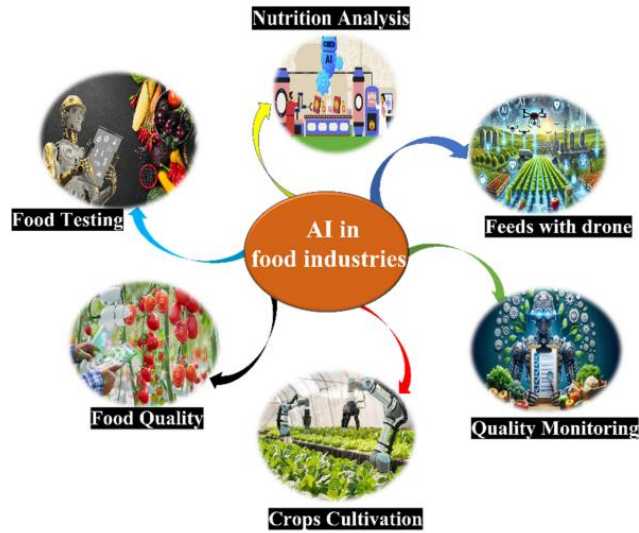


Figure 2.16 AI Technology in Food Industries, by Alam et al. (2025).

By leveraging internal learning and reconfiguration capabilities, PFP firms can transform technological and market opportunities into strategic assets, achieving superior performance and sustaining competitive advantage in a rapidly evolving industry. This highlights the critical interplay between innovation, internal learning capabilities, reconfiguration capabilities, and market outcomes in driving long-term success.

2.6 Conceptual Model of the study:

The conceptual model of this study as seen in Figure (2.17) provides the theoretical framework for examining the connections between independent and dependent variables through mediators in PFPI. Based on the dynamic capabilities framework, the model supposes that both product and process innovation separately and

combined positively influence on competitive advantage, either directly or indirectly through mediating role of internal learning capabilities and reconfiguration capabilities.

1. Independent Variables (IV)

- Product Innovation (IV1): including
 - New-to-the-Business Products
 - Improvements to Existing Products
 - New Product Lines
 - Additions to Existing Product Lines

- Process Innovation (IV2): including
 - Technological Process Improvement
 - Organizational Process Re-design

- Complementarity Relationship (IV3)

2. Mediating Variables (MV):

Internal learning Capability = MV1

It symbolizes a business's capacity to absorb information and improve internal employee skills, boosting its capacity to successfully execute innovations.

Reconfiguration Capability = MV2

It alludes to organization's capacity to adapt its processes and resources to meet the demands of new innovations, maintain performance, and take advantage of market opportunities.

3. Dependent Variables (DV):

Competitive Advantage = DV1

The dependent variable in this study is competitive advantage. Product quality, cost, flexibility, delivery, customer satisfaction, and market share, representing the dimensions of organizational performance. These variables are influenced by the firm's competitive strategies-namely, cost leadership and differentiation- which constitute the independent variables; therefore, this research considered them as dimensions of competitive advantage.

2.6.1 The Explanation of Relationships in The Model:

When companies implement product and process innovation (IV1–IV2), their impact on competitive advantage is not entirely direct (DV1), but is enhanced through transformational capabilities (MV1, MV2). These capabilities enable the company to adapt to market demands, utilize resources effectively, and transform innovation into tangible strategic outcomes.

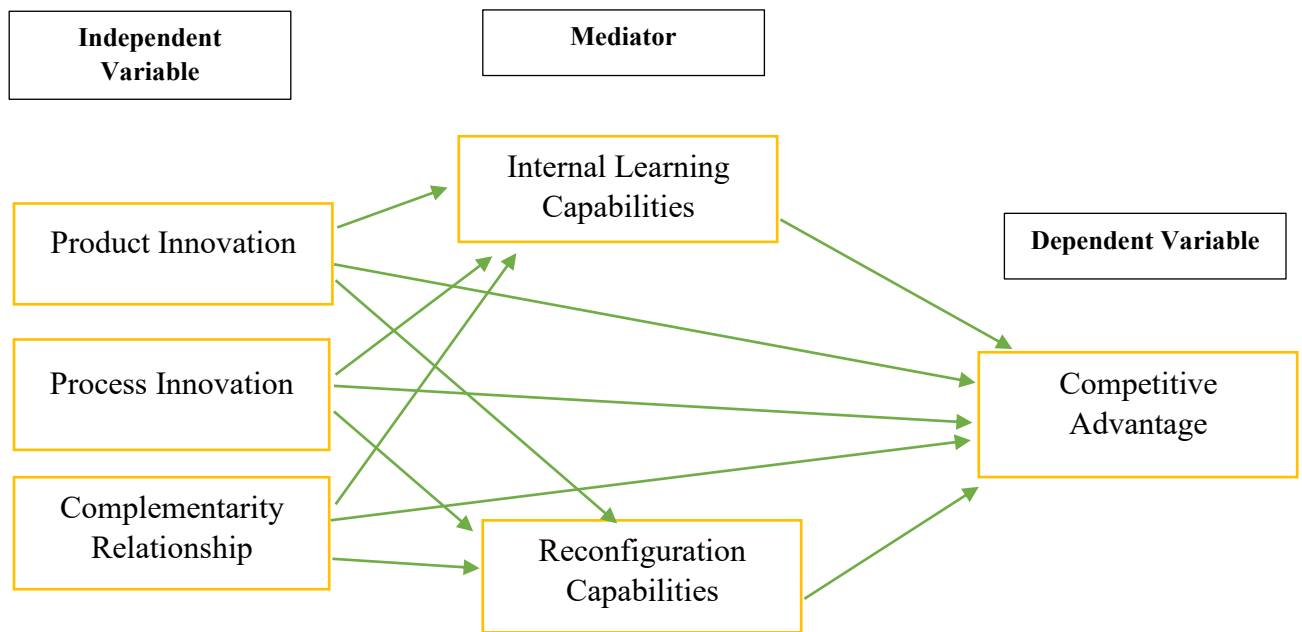


Figure 2.17 Conceptual Model of the study, by the researcher

2.7 Research Gap

Most research on innovation, competitive advantage, and dynamic capabilities has focused on developed economies, leaving conflict-affected and developing regions, such as Palestine, underexplored. In the PFPI, empirical studies are limited, particularly regarding the combined impact of product and process innovation on competitive advantage. Furthermore, prior research often overlooks the mediating role of transformational capabilities, such as internal learning and reconfiguration, in converting innovation into competitive advantage.

The PFPI operates under unique constraints—geopolitical instability, limited resources, reliance on imports, weak infrastructure, and regulatory restrictions—that are

rarely incorporated into existing frameworks. This study addresses these gaps by examining how product and process innovation, individually and jointly, influence competitive advantage through transformational capabilities within this specific context. By doing so, it extends the theoretical integration of innovation and dynamic capabilities to conflict-affected economies and provides actionable insights for Palestinian firms and policymakers.

2.8 Chapter Summary

This chapter covered literature review of the research questions and showed the impact of product and process innovation on competitive advantage through internal learning capabilities and reconfiguration capabilities. As we conclude from this chapter that product and process innovation are both crucial for firm's competitiveness and sustainability. Moreover, competitive advantage is an essential element that companies used to achieve the competitive edge through adopting suitable competitive strategy that fits the firm, and the market. scholars showed the positive impact between each type of innovation and the competitive advantage. They also showed different perspectives studied the relationship between innovation and competitive advantage. the researcher adapted dynamic capability approach. most previous studies considered moderating role of dynamic capabilities to achieve competitive advantage especially in the relationship with product innovation. However, the researcher adopted the mediating role of dynamic capabilities that influenced the process of innovation and enhanced achieving the competitive advantage in addition to enhancing the sustainability of innovation and competitive advantage. Finally, food processing industries sector is crucial to economic

growth. In spite of the importance of PFPI sector in Palestinian economic growth, this sector faces many challenges and barriers that may be solved by innovation specially after technological advancement and trends.

Chapter Three: Methodology

3.1 Introduction

Chapter three examined the research methodology that was adopted for the purpose of the study that seeks to fulfill the objectives of the study in an effective way through Smart-PLS and interviews. The first section provided the research design followed by the target population and the sampling design that was adopted to identify the sample elements from the target population. After that, data collection methods, research procedures, data analysis methods that will be used.

3.2 Research Design

Research design is defined as the “blueprint for the collection, measurement, and analysis of data, based on the research questions of the study” (Sekaran & Bougie, 2013, p. 95). Similarly, Cooper and Schindler (2014) describe it as the structural framework that organizes relationships among study variables and guides the generation of empirical evidence. Depending on the research purpose and the nature of the data required, different mixed-method design structures may be employed.

Given the multidimensional nature of this study—examining product innovation, process innovation, internal learning capabilities, reconfiguration capabilities, and competitive advantage within the PFPI—a mixed-methods approach was adopted. This approach enables the integration of quantitative analysis to test hypothesized

relationships with qualitative inquiry to contextualize and interpret innovation practices within their organizational setting.

Specifically, the study employed an explanatory sequential mixed-method design within a correlational framework and a cross-sectional time horizon. The research is correlational as it examines the direction and strength of relationships among innovation practices, dynamic capabilities, and competitive advantage (Taherdoost, 2022). It is explanatory in that it seeks to clarify how and why these relationships occur, moving beyond statistical association to uncover underlying mechanisms (Saunders et al., 2012). Data were collected at a single point in time from firms operating in PFP sector. The quantitative phase utilized structured questionnaires to generate numerical evidence on the relationships among variables, followed by qualitative interviews to interpret and explain the statistical findings, particularly regarding the mediating roles of internal learning and reconfiguration capabilities.

By combining correlational and explanatory reasoning within a cross-sectional mixed-method framework, the study offers both statistical rigor and contextual depth. The procedural structure of this sequential explanatory design is presented in Figure (3.1).

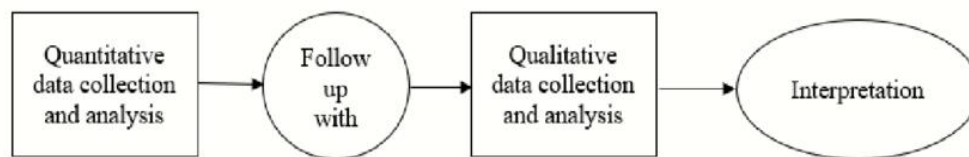


Figure 3.1 Sequential Explanatory Design, by Padagas and Hajan (2020).

3.3. Population and Sampling Design

3.3.1 Population

According to Sekaran and Bougie (2013), “population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate and from which they can make inferences based on the sample statistics” (p. 240). The target population in this research was managers in Palestinian food processing firms registered in PFIU who has useful information required for this research questions.

The population of PFP firms are 435 managers as seen in Table (3.1). Therefore, with this kind of population it is impractical to do a census survey especially with limited time but rather a sample is used.

Table 3.1: Total Population Distribution of Managers in Palestinian Food Processing Firms

Sub-sector	Number of Firms	Number of Managers	Percentage (%)
Production & preserving of meat products	5	61	14%
Preserving of fruit & vegetables	14	87	20%
Manufacture of vegetable & animal oil	3	23	5%
Manufacture of dairy products	11	81	18%
Manufacture of grain mill products	3	5	1%
Manufacture of bakery products	3	3	1%
Manufacture of chocolate & sugar product	4	16	4%
Manufacture of macaroni, & similar products	12	30	7%
Manufacture of other food products	10	58	13%
Manufacture of prepared animal feeds	1	20	5%
Manufacture of soft drinks & mineral water	6	51	12%
Total	72	435	100 %

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

The number of elements in the overall population from which the researcher selects to represent managers opinions of Palestinian food processing firms (Sekaran and Bougie, 2013). Furthermore, Cooper and Schindler (2014) mentioned that sample frame has to be a complete list to be accurate and lest elements having equal chances of selection.

Examining the whole population is expensive, time-consuming, enormous amounts of data is needed; therefore, selecting a sample frame is required to represent the complete population and give accurate results (Sekaran and Bougie, 2013). With PFP firms are distributed in several subsector and in different cities, many firms in different subsectors and cities contributed to the sample and the personnel records was the sampling frame. The sample units were the different subsectors of PFPI with the managers being the elements. Therefore, the units for which the survey's results are intended to be generalized were established by the target population. In this study, the sampling frame consisted of all the top, middle, and first level management staff working at PFP firms as seen in Table (3.2). Gill and Johnson (2010) mentioned that there are systematic differences between the population and sample frame, which we have to closely monitor in order to have an accurate representation of the target population.

Table 3.2: Distribution of the Sampling Frame by Managerial Levels in PFP Firms

Managerial Level	Description	Approximate Number	Percentage (%)
Top Management	General managers, directors, and executive decision-makers	92	21%
Middle Management	Department heads, supervisors of units	233	54%

First-level Management	Supervisors and team leaders overseeing daily operations	110	25%
Total		435	100%

3.3.2.2 Sampling Techniques

Sampling technique is the process selecting many possibilities allows researchers to reduce the amount of data that must be collected by considering a sample instead of the whole population due to limited resources (Sekaran and Bougie, 2013). PFP firms are all headed by department managers that comprised the population and sampling frame at the same time. To get better understanding of PFPI probability simple random sampling was done. In PFPI sector, the populations are of a heterogeneous nature but homogeneity between the sectors did exist; therefore, this sample tends to be stratified especially with clear classification of food processing industries that stated in the fourth edition of (ISIC). However, the main purpose of this study is determining the role of innovation in Palestinian food processing sector generally without concentrating on its effect on each subsector; therefore, the researcher adopted simple random sampling, in addition to the electronic survey that is used due to the limitations of time and resources. When distributing an electronic questionnaire in Palestine, it is often difficult to ensure balanced representation of each segment of society, as required by a stratified random sample. This is due to several reasons, including that the use of an electronic questionnaire means that participation is only available to those with access to the internet and smart devices. This creates disparities among individuals and makes the representation of all strata (such as male/female, or bachelor's/master's degree) a practical challenge. Moreover, the stratified sample cannot be controlled through selection criteria, as the electronic distribution of the questionnaire

makes it difficult to control the selection until the sample meets the requirements of a stratified sample (Cochran, 1977). Sekaran and Bougie (2013) mentioned that selected samples should represent the population, probability sampling was used to identify, select, and study the sample.

3.3.2.3 Sample Size

Gill and Johnson (2010) stated that when we determine sample size, we should take into account factors like population, sampling error, and non-response bias to reduce sampling mistakes or biases. According to Sekaran and Bougie (2013), sample size is the subgroup of population when the researcher intends to generalize the results on the population; therefore, it is important to determine and control sample to ensure the conclusions the researcher reached from collected data. According to Sekaran and Bougie (2013), errors will always happen and perfect in survey is impossible but we need to reduce the level of error in data collection which is commonly known as the margin of errors. Researchers mostly work with a plus or minus 5% of level of error; therefore, the researcher adopted in this study 95% level of confidence to generate outcomes among different variables that are different, and it expanded the range of potential data, and created more accurate image for analysis. PFP firms are distributed in different Palestinian governorates in the West Bank. The sample size in this study was influenced by extent of precision, objectives of the study, level of confidence, time and financial constraints, and amount of the variability of managers in PFP firms (Sekaran & Bougie, 2013). Sample should be represented to the population and usually it is a percentage of population. Researcher selected 204 managers from different target companies as following.

Table 3.3 Sample Size distribution

Sub-sector of Palestinian Food Processing Industries	Population (Managers)	Sample Size	Percentage (%)
Production & preserving of meat products	61	29	14%
Preserving of fruit & vegetables	87	41	20%
Manufacture of vegetable & animal oil	23	11	5%
Manufacture of dairy products	81	38	19%
Manufacture of grain mill products	5	3	1.5%
Manufacture of bakery products	3	3	1.5%
Manufacture of chocolate & sugar product	16	8	4%
Manufacture of macaroni, & similar products	30	14	7%
Manufacture of other food products	58	23	11%
Manufacture of prepared animal feeds	20	10	5%
Manufacture of soft drinks & mineral water	51	24	12%
Total	435	204	100%

3.4 Data Collection Methods

Researcher used primary and secondary data methods. Secondary data by several books and articles that had been read and summarized in previous chapter. As stated by Sekaran and Bougie (2013), Primary data was collected online by the researcher on the areas of interest using structured questionnaires that were distributed and collected online; moreover, the researcher followed up with companies by phone to have the opportunity to explain research topic, decrease nonresponse rate, and motivate respondents to provide honest answers. The research results are presented through the use of charts, tables and graphs. Respondents were required to tick appropriate classification data and rate their level of agreement with each statement using 39 questions using the five-points Likert scale

rated using 1-strongly disagree to 5- strongly agree. Seven questions were constructed to measure product innovation, eight questions to measure process innovation, five questions to measure the complementarity relationship between product and process innovation, four questions to measure internal learning capabilities, and four questions to measure reconfiguration capabilities. And to measure competitive advantage an eleven-item scale was developed (Sulaiman, 2021). Respondents' answers were collected, classified, scaled, and coded to facilitate measurement of seriousness of respondents' feedback set side by side to other alternative answers (Sekaran and Bougie, 2013).

Due to the nature of this research, it was significant to collect data from respondents who had better understand of the firm strategic plans and management to minimize the margin of error thus managers in PFP firms were the main informants along providing required data and dealing with competitive advantage issues (Sekaran and Bougie, 2013). The researcher assured of the confidentiality of respondent feedback, and she promised PFIU to give them a copy as incentive for their facilitations as stated by (Sekaran and Bougie, 2013).

It was significant to code responses due to speed up data entry, test it well, and enable the comparison of data with others (Sekaran and Bougie, 2013). Questionnaires were preferable for standardized questions so that they were not misinterpreted and were also suitable for this explanatory research which enabled the researcher to examine and explain the relationship between the product and process innovation, internal learning and reconfiguration capabilities, and competitive advantage that the researcher was trying to study (Sekaran and Bougie, 2013; and Saunders et al., 2012). The questionnaire had enough questions to collect the relevant information required to achieve the purpose of this study.

The questions were arranged on issue-based structured pattern aligned with the sub-elements of the specified research questions and to ensure completeness the questionnaire were dispatched through online as google form (Cooper and Schindler, 2014).

3.5 Research Procedures

The researcher performed several procedures during research. At first, researcher needed to better understand the food processing industries sector, so she conducted an interview with PFIU to understand the role product and process innovation in this sector. Based on the research objectives in chapter one, research questions were constructed to formulate the questionnaire. Before this questionnaire could be used to collect the required data from the field, arbitration of questionnaire was done by eight academic professors from Birzeit University, Arab-American University, and Palestinian Technical University (Kadoorie) to make sure that there were no issues with wording and the respondents understood the questions, then the questionnaires were edited to revise issues such as either adding or taking out some questions, and any other inadequacies based on reactions and feedback (Sekaran and Bougie, 2013). The researcher took an agreement from the university and a preamble introduction letter consisting of the purpose of the study was addressed to the respondents and companies to gain their permission for the researcher to carry out the study. The researcher ensured respondents privacy and the confidentiality of the information that they provided. A high and timely response rate was crucial to the study, and this was achieved by implementing strategies like: 1) carefully constructing each question, 2) clear design and layout of questionnaire form, 3) clearly declaring the purpose of the study, and 4) using short questions and straightforward language that all respondents

could understand (Noel, 2016). After that, the research adopted qualitative research method by organizing semi-structured interviews with some PFP firms and the data was collected by telephone to enrich the overall research findings; moreover, semi-structured interviews create a space for participants and allow to researcher to follow-up questions to clarify topics and ideas through interviews (Karatsareas, 2022). Finally, the researcher analyzed qualitative data and integrated its results with quantitative data analysis results.

3.6 Validity and Reliability

The study thoroughly tested the reliability and validity of each construct to guarantee that the measurement model was strong. To ensure that the measuring items accurately and consistently reflect their intended constructs and are not influenced by bias, structural equation modeling relies on reliability and validity testing (Hair et al., 2019).

Reliability

Refers to Kerlinger and Lee (2000), the reliability is the consistency and stability of the measurement instrument. To ensure reliability, a pilot test was conducted with a small group of respondents from the target population. Based on their feedback, necessary adjustments were made to improve the clarity and comprehensibility of the items. Internal consistency reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), with thresholds of 0.70 or above considered acceptable. Furthermore, Convergent Validity was ensured by examining the Average Variance Extracted (AVE), with values above 0.50 considered satisfactory. Discriminant Validity was also taken into account to confirm that each construct was empirically distinct from the others.

Validity:

Refers to Kerlinger and Lee (2000), the validity is the degree to which the instrument measures what it is intended to measure. In this study, content validity was established through an extensive review of the literature and by adapting measurement items from well-established prior studies in the fields of innovation, organizational learning, and competitive advantage. The questionnaire items were further reviewed by academic experts and practitioners in the Palestinian food processing industry to verify their clarity, relevance, and appropriateness for the local context. Construct validity was addressed through the use of multiple indicators for each latent variable, allowing for a robust measurement of the theoretical concepts.

3.7 Data Analysis Methods

After completing the data collection from the target sample, it was entered, refined, and converted into a format suitable for computer analysis. The study relied on quantitative analysis, as it is most appropriate for the nature of the research based on examining the relationships between innovation (product, process, and complementary relationships) and competitive advantage, while also examining the mediating effect of both internal learning capabilities and reconfiguration capabilities.

First: Descriptive Data Analysis.

A descriptive analysis of the data was conducted using basic statistical methods such as frequencies, percentages, arithmetic means, and standard deviations to describe the demographic characteristics of the participants (age, management level, years of experience, number of employees in the company, etc.). This analysis helped form a

comprehensive picture of the sample studied and the extent to which it represents the original population.

Second: Measurement Model Assessment.

The study relied on Smart PLS (version 4) to test the measurement model by examining:

Reliability: using Cronbach's alpha and composite reliability (CR).

Convergent validity: using the truncated mean variance (AVE) and factor weights.

Discriminant validity: using the Fornell-Larcker criterion and the HTMT ratio.

Third: Structural Model Assessment.

After confirming the validity of the measurement, the structural model was tested to examine the hypotheses using:

Path coefficients analysis (β).

Explanatory power (R^2).

Predictive power (Q^2).

f^2 values to estimate the effect size.

Fourth: Hypothesis testing using bootstrapping.

The bootstrap technique (with 5,000 samples) was applied to estimate statistical values and extract t-values and p-values for each path in the model. The following levels of statistical significance were adopted:

1% ($t > 2.58$).

5% ($t > 1.96$).

10% ($t > 1.65$).

Fifth: Mediation Analysis.

The mediating role of internal learning capabilities and restructuring capabilities was analyzed using the Product Indicator Approach integrated into Smart PLS. This approach creates interaction variables between the independent and mediating variables, and then tests their effect on the dependent variable (competitive advantage).

Based on the above, relying on descriptive analysis, measurement tests, and structural model analysis using Smart PLS will enable the researcher to accurately verify the quality of the data and measurements, test the hypotheses developed in this chapter and arrive at the detailed results that will be presented later in Chapter Four.

3.8 Chapter Summary

This chapter adopted an explanatory correlational research design within a quantitative framework to examine the impact of product and process innovations on competitive advantage, with particular attention to the mediating roles of internal learning capabilities and reconfiguration capabilities. The independent variables included product innovation, process innovation, and their complementarity, while competitive advantage was defined as the dependent variable. Internal learning and reconfiguration capabilities were incorporated as mediators to capture their influence on the relationship between innovation and competitive advantage.

The target population comprised managers from all companies registered under the PFPI. A simple random sampling technique was employed to ensure representativeness of the study population. Data were collected through structured questionnaires and analyzed using both descriptive and inferential statistical techniques. Descriptive analysis was conducted through frequencies, percentages, means, and standard deviations to profile the

demographic characteristics of respondents. Inferential analysis, including correlation, regression, and structural equation modeling using Smart PLS, was applied to test the hypothesized relationships and the mediating effects.

Overall, the methodological approach outlined in this chapter ensured the rigor and validity of the research process, thereby laying a solid foundation for the empirical analysis and results presented in the following chapter.

To minimize potential bias, the study adopted several methodological and procedural controls. First, validated measurement scales derived from established literature on innovation and competitive advantage were used to ensure construct validity. Second, the questionnaire items were subjected to expert review and pilot testing to enhance clarity and reduce ambiguity. Third, anonymity and confidentiality were assured to respondents to minimize social desirability bias.

The generalizability of the findings is supported by the sampling strategy and the characteristics of the study population. The sample was drawn from Palestinian food processing industries, representing firms of different sizes and operational capacities. The use of structured quantitative measures enhances external validity within the targeted sector.

However, generalization is context-bound. Since the study focuses on a specific industrial sector operating within a conflict-affected economy, the findings are most appropriately generalized to similar sectors within comparable economic and geopolitical contexts. Therefore, while statistical generalizability is achieved within the Palestinian food processing industry, broader generalization should consider contextual similarities.

Chapter Four: Results

4.1 Introduction

This chapter outlines the findings of the study, covering demographic statistics, reliability and validity assessments, hypothesis testing results. The analysis based on data collected from (204) participants, including the managers in PFPI. This chapter is organized into several sections. The first section presents the response rate and demographic profile of the respondents. The second section addresses data screening, preliminary analysis, and key characteristics of the sample. The third section discusses the reliability and validity tests, along with the measurement model assessment. Lastly, the final section presents the outcomes of the hypothesis tests, including determination coefficients, effect size, and predictive relevance.

4.2 Response Rate

The study data were gathered from the managers in PFPI. To facilitate data collection, an official letter from the University was obtained, introducing the researcher and outlining the study's objectives. This letter was used to encourage respondents' participation.

The questionnaires were distributed online, and various follow-up strategies were employed to enhance the response rate, such as reminder emails, and phone calls based on respondents' job titles. The researcher opted for a self-administered approach to ensure data collection. Ultimately, (215) surveys were completed and returned out. (204) surveys

analyzed, due to sample size which was calculated using Robert Mason equation to define the sample size. However, the response rate for the study itself was (100%).

4.3 Demographic Distribution of the Respondents

Understanding the demographic characteristics of respondents is crucial for contextualizing the findings of this study, which focuses on product and process innovation and competitive advantage in the PFPI.

The demographic analysis of managers in the PFPI reveals several notable patterns. As seen in Figure (4.1) in terms of gender distribution, the vast majority of managers are male, accounting for 80% of the sample, while females represent only 20%, indicating a significant gender gap in managerial positions within this sector.

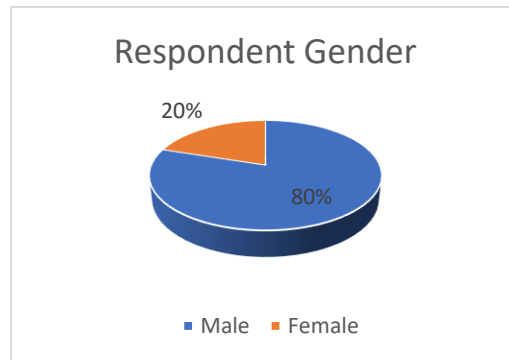


Figure 4.1 Gender of Respondents

Regarding educational attainment, as seen in Figure (4.2) the results show that 81% of the managers hold a Bachelor's degree, while 19% have a Master's degree or higher.

This suggests that a bachelor's qualification is the dominant educational requirement for management roles in this industry.

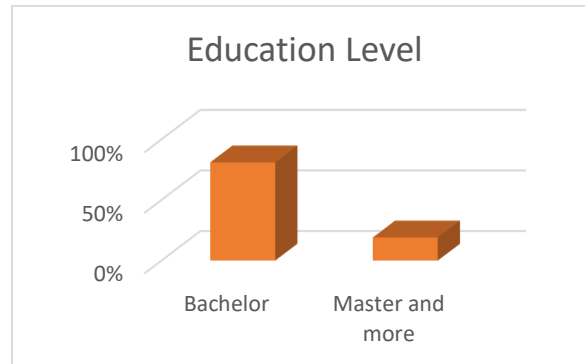


Figure 4.2 Education Level of Respondents

As seen in Figure (4.3) the distribution across management levels shows that middle management holds the largest share at 50%, followed by top management at 36%, and first-line management at 13%. This indicates that a significant proportion of the sample is involved in the strategic and operational oversight of their organizations.

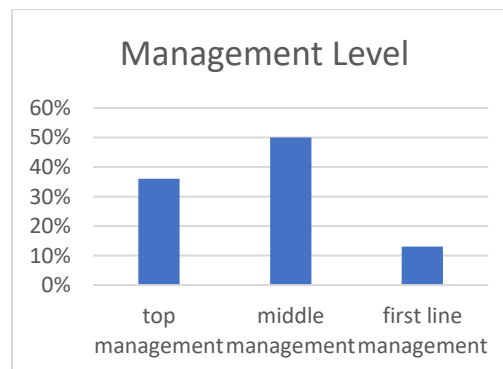


Figure 4.3 Management Level

When considering years of experience, the largest proportion of managers, 41%, have between 10 to less than 15 years of experience, followed by 26% who have 15 years or more. As seen in Figure (4.4) managers with less than 10 years of experience constitute approximately 32% of the sample, reflecting a workforce with considerable managerial experience overall.

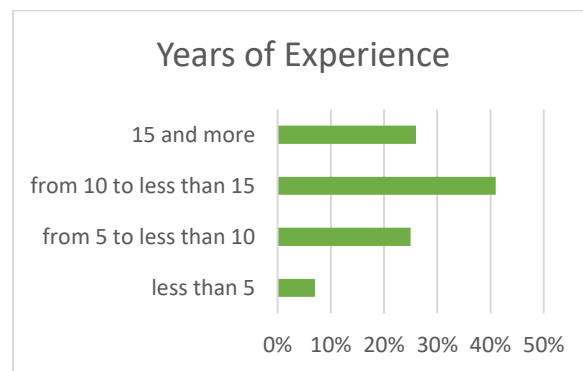


Figure 4.4 Years of Experience

In terms of company size as seen in Figure (4.5), the industry is heavily dominated by large companies, which account for 87% of the sample, while small and medium enterprises (SMEs) represent 4% and 9%, respectively. This highlights that the PFP sector is largely driven by big enterprises.

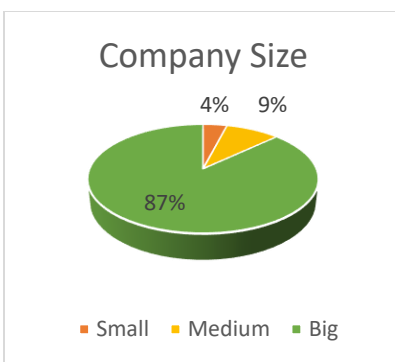


Figure 4.5 Company Size

Looking at the establishment year of the companies as seen in Figure (4.6), the majority (81%) have been established for 15 years or more, indicating the presence of well-established and possibly market-stable businesses within the sector.

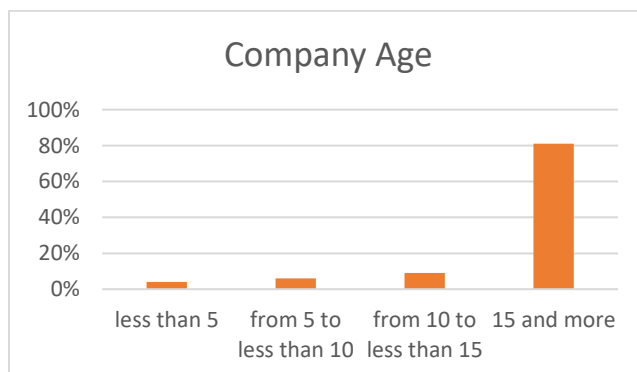


Figure 4.6 Company Age

From a subsector perspective, as seen in Figure (4.7) the distribution shows notable concentration in areas such as preserving fruits and vegetables (20%), dairy products (19%), meat processing (14%), soft drinks and mineral water (12%). Smaller representations are seen in sectors like prepared animal feeds (5%), grain mill products

(1%), bakery products (1%), which points to potential specialization or limited scale in these areas.

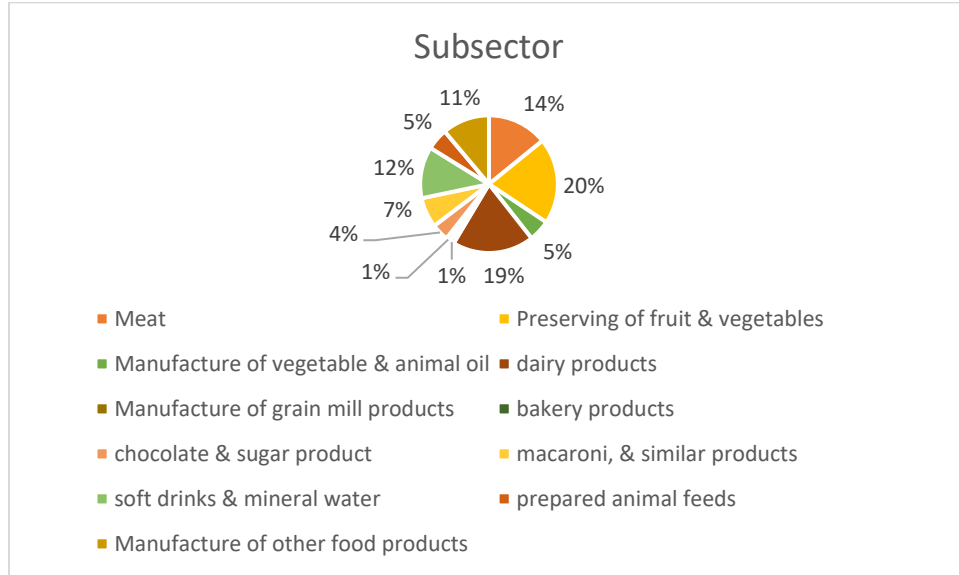


Figure 4.7 Food Subsector Respondents

The following Table (4.1) shows demographic characteristics of managers in PFPI.

Table 4.1: Demographic characteristics of managers in Palestinian food processing industries (n=204)

Variable	Level	Count (N)	N %
Gender	Male	164	80%
	Female	40	20%
Education level	Bachelor	166	81%
	Master and more	38	19%
Management Level	top management	74	36%
	middle management	103	50%
	first line management	27	13%
Years of experience	less than 5	15	7%
	from 5 to less than 10	51	25%
	from 10 to less than 15	84	41%
	15 and more	54	26%
Company Size	Small	8	4%

	Medium	18	9%
	Big	178	87%
Establishment year	less than 5	8	4%
	from 5 to less than 10	12	6%
	from 10 to less than 15	18	9%
	15 and more	166	81%
Subsector	Meat	29	14%
	Preserving of fruit & vegetables	41	20%
	Manufacture of vegetable & animal oil	11	5%
	dairy products	38	19%
	Manufacture of grain mill products	3	1%
	bakery products	3	1%
	chocolate & sugar product	8	4%
	macaroni, & similar products	14	7%
	soft drinks & mineral water	24	12%
	prepared animal feeds	10	5%
Region	Manufacture of other food products	23	11%
	Jerusalem	20	10%
	Bethlehem	2	1%
	Hebron	36	18%
	Ramallah and Al-Bireh	43	21%
	Nablus	28	14%
	Tulkarm	38	18%
	Tubas	3	1%
	Jenin	9	4%
	Jericho	25	12%

At the end Geographically, as seen in Figure (4.8) Ramallah and Al-Bireh region represents with 21% of managers, followed closely by Hebron (18%) and Tulkarm (18%). Nablus (14%), Jericho (12%) also have significant shares, whereas Bethlehem (1%), Tubas (1%), and Jenin (4%) have relatively lower representations.

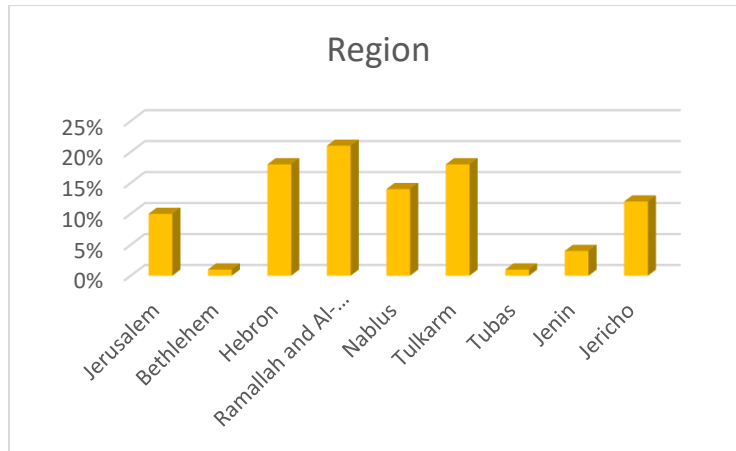


Figure 4.8 Region of Respondents

4.4 Data Screening and Preliminary Analysis

Data screening was an essential step to ensure the accuracy and reliability of the analysis process. It plays a critical role in determining the appropriate analytical techniques and test procedures, as data distribution significantly influences these decisions (Byrne, 2010). Although this study utilized PLS to assess model quality, covering both the measurement and structural models, and to conduct hypothesis testing, which does not rely on specific data distribution assumptions, data screening was still conducted to better understand the characteristics of the dataset. The screening process involved identifying and addressing missing data, detecting outliers, assessing normality, examining linear relationships, and testing for multicollinearity.

4.4.1 Why PLS-SEM

PLS-SEM (Partial Least Squares Structural Equation Modeling) is widely recognized as a crucial analytical method in marketing and business research. However, its applications extend beyond these fields to natural sciences. When the primary objective of a study is hypothesis testing, PLS-SEM serves as an appropriate approach. Alternatively, if the goal is hypothesis confirmation, covariance-based SEM (CB-SEM) is also a viable option (Hair et al., 2011).

According to Vinzi et al. (2010), PLS-SEM is a statistical and path- modeling technique designed for analyzing complex multivariate relationships between observable and latent variables. It has become an essential tool for exploring correlational relationships involving latent constructs (Hair et al., 2011). Additionally, PLS-SEM provides accurate and reliable confirmatory factor analysis results (Asyraf & Afthanorhan, 2013). Over the years, PLS-SEM has been extensively utilized across various academic disciplines, including business studies (Hair et al., 2014), management information systems (Marcoulides et al., 2009; Chin et al., 2003), marketing (Hair et al., 2012), and family business research (Sarstedt et al., 2014; Becker et al., 2012). One of the key advantages of PLS-SEM is its robustness in handling non-normal data, offering greater flexibility in terms of distributional assumptions (Henseler et al., 2009). This technique allows for the analysis of relationships between latent variables and their associated indicators (outer model), as well as the relationships among latent variables themselves (inner model) (Hair et al., 2012; Henseler et al., 2009). PLS-SEM offers several advantages, making it particularly useful when dealing with small sample sizes, non-normal data, and predictive modeling (Sarstedt et al., 2014). Despite being less sensitive to sample size and data distribution issues, it still

requires a sufficiently large sample to ensure reliable results (Marcoulides & Saunders, 2009). Similar to CB-SEM, PLS-SEM effectively addresses the issue of statistical power when analyzing complex datasets (Reinartz et al., 2009). (Haenlein and Kaplan, 2004) suggest that PLS-SEM is particularly well-suited for models with numerous exogenous latent variables influencing a smaller number of endogenous variables. Moreover, it is an ideal method for analyzing mediation and moderation effects, outperforming traditional regression and covariance-based approaches. Given these advantages, PLS-SEM was chosen for this study to assess structural equation models, making it a valuable tool in marketing, strategic management, and other social science fields.

Unlike other covariance-based methods, PLS-SEM imposes no restrictions on the interaction terms used in moderation analysis, making it an effective technique for evaluating moderation effects (Chin et al., 2003; Vinzi et al., 2010). Additionally, it facilitates the modeling of complex relationships, such as mediation and intricate effect chains (Lowry & Gaskin, 2014). For this study, the inner and outer models were analyzed using Smart PLS 3 (Ringle et al., 2015).

4.4.2 Treatment of Missing Data

In quantitative research, missing data is one of the most challenging issues researchers faces, as it can significantly impact the accuracy and reliability of results (Cavana et al., 2001). This challenge is particularly critical in PLS-SEM, which requires a complete dataset to function effectively. In this study, no returned questionnaires contained missing values.

4.4.3 Removing Outliers

Outliers are data points that significantly deviate from the rest of the dataset and can potentially distort the results of a study (Byrne, 2010). Various techniques can be used to detect outliers, with one commonly applied method being the Mahalanobis distance, which measures the distance of each observation from the predicted values of the model (Hair et al., 2010). The Mahalanobis distance is considered one of the most effective approaches because it accounts for correlations among variables and assigns equal weight to all data points, making it a reliable criterion for identifying outliers (Hair et al., 2010).

In this study, the threshold for identifying outliers was determined using Chi-square statistics, with a chosen cutoff value of 48.28, corresponding to 28 assessment items related to independent and moderate items at a significance level of 0.01. To facilitate the calculation of Mahalanobis distance, a new variable named "Random" was generated in SPSS, representing all variables in the dataset (Hair et al., 2010). Linear regression was then conducted, using the newly created "Random" variable as the dependent variable and all measurement items, excluding demographic characteristics, as independent variables.

The analysis produced a Mahalanobis distance output labeled as "MAH 1," which was compared to the Chi-square threshold value. The results showed that the highest value of MAH 1 equals (35.89698) fell below the cutoff of (48.28). Consequently, the final dataset used for analysis in this study consisted of (204) valid samples.

4.5 Multi-Collinearity Test

Assessing multi-collinearity among independent and moderate variables is a crucial step before testing the proposed model. Hair et al. (2010) define the variance inflation factor (VIF) is the inverse of tolerance. The accepted cut-off value for VIF is 3.3. Ideally, a VIF value close to 1.00 indicates minimal or no multi-collinearity. High multi-collinearity inflates the standard error of regression coefficients, reducing the reliability of their statistical significance. Table (4.2) implies all (VIF) cut-off values are between (1.461-1.992) which is less than 3 and accepted. According to Hair et al. (2010), a VIF value below 3 suggests that multicollinearity is not a major concern in regression or PLS-SEM models, ensuring the reliability of the estimated coefficients.

Table 4.2: Multi-collinearity Test (Inner model List)

Construct	VIF
Product Innovation -> Competitive advantage	1.57
Product Innovation -> Internal Learning Capabilities	1.474
Product Innovation -> Reconfiguration Capabilities	1.472
Process Innovation -> Competitive advantage	1.992
Process Innovation -> Internal Learning Capabilities	1.602
Process Innovation -> Reconfiguration Capabilities	1.602
Complementarity relationship -> Competitive advantage	1.723
Complementarity relationship -> Internal Learning Capabilities	1.466
Complementarity relationship -> Reconfiguration Capabilities	1.461
Internal Learning Capabilities -> Competitive advantage	1.867
Reconfiguration Capabilities -> Competitive advantage	1.981

Moreover, to address, multi-collinearity was assessed in this study through the correlation matrix. Table (4.5) presents the correlation matrix. A correlation matrix is a useful tool for evaluating the relationships between independent variables. According to

Pallant (2016), multi-collinearity is indicated when correlations between independent variables equal or exceed 0.90.

Table 4.3: Collinearity Test by item (outer model list)

Items	VIF
ProdIn1	1.211
ProdIn2	1.244
ProdIn3	1.174
ProdIn4	1.249
4.19 ProdIn5	1.206
ProdIn6	1.145
ProdIn7	1.158
ProcIn1	1.31
ProcIn2	1.199
ProcIn3	1.465
ProcIn4	1.385
ProcIn5	1.267
ProcIn6	1.266
ProcIn7	1.309
ProcIn8	1.64
Complement1	1.081
Complement2	1.08
Complement3	1.444
Complement4	1.131
Complement5	1.294
ILC1	1.192
ILC2	1.347
ILC3	1.156
ILC4	1.163
REC1	1.455
REC2	1.516
REC3	1.481
REC4	1.464
CA1	1.234
CA2	1.33
CA3	1.517
CA4	1.379
CA5	1.547
CA6	1.558

CA7	1.254
CA8	1.554
CA9	1.258
CA10	1.074
CA11	1.487

The results presented in Table (4.3) indicate that all Variance Inflation Factor (VIF) values for the tested items are well below the commonly accepted threshold of 3.3. The highest recorded VIF value is 1.64, which falls within the safe and acceptable range. This confirms that multicollinearity is not a concern in this model, and the independent variables do not exhibit problematic intercorrelations that could distort the regression estimates.

4.6 Evaluation of PLS-SEM Results

This section presents the results of the factor analysis and evaluates the reliability and validity of the measured constructs. After ensuring the constructs' reliability and validity, the structural model was analyzed to examine the relationships between the latent variables.

Following the data verification and screening discussed earlier, both the outer (measurement) and inner (structural) models were evaluated (Vinzi et al., 2010). The analysis utilized PLS-SEM, which is well-suited for assessing the measurement and structural components of the model. Specifically, PLS-SEM was applied to evaluate the study's mediating effects, including both direct and indirect relationships.

Smart PLS 4, as noted by Hair et al. (2011), was used for its effectiveness in identifying correlational relationships within theoretical models. Prior to performing the PLS-SEM analysis, it is essential to ensure that the model's configuration is clear and

properly understood. This is particularly important as the methods for testing reflective measurement models differ significantly from those used for formative measurement models (Lowry & Gaskin, 2014). The study encompasses three exogenous latent variables, including three independent variables, Product innovation (ProdIn), Process innovation (ProcIn), Complementarity relationships (Complement), and two mediation variables: Internal learning capabilities (ILC), Reconfiguration capabilities (Rec). These variables are interconnected within the framework of the study. The dependent variable, Competitive advantage (CA), serves as the endogenous construct. The proposed research model includes 39 reflective measurement items (manifest variables or indicators) distributed across 6 latent variables. Based on the study's hypotheses, the model outlines (17) relationships (11 direct and 6 indirect) between these variables. It consists of three independent variables, one dependent variable, and two mediation variables, as illustrated in Figure (4.9).

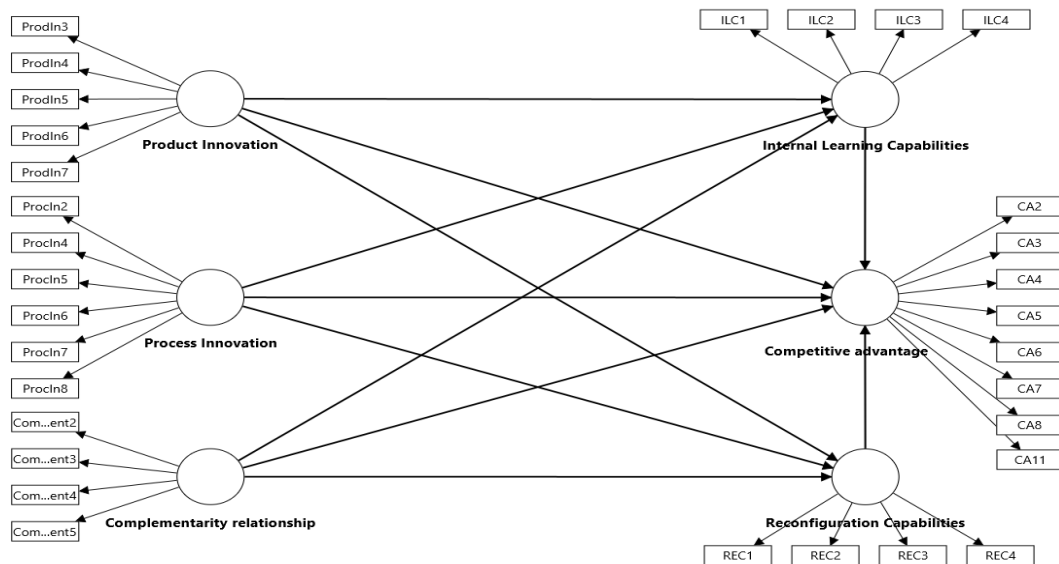


Figure (4.9) Study model

4.6.1 The Measurement Model

Validity and reliability serve as key criteria for evaluating the measurement model. Reliability refers to the consistency with which a measuring instrument assesses a given concept, while validity determines how effectively an instrument measures the intended construct (Sekaran, 2003). This study follows the guidelines outlined by Hair et al. (2011) and Gotz et al. (2010) in assessing reflective measurement items. It examines all aspects of validity, including convergent and discriminant validity, and ultimately conducts a reliability analysis in the final stage.

4.6.2 Construct Validity

4.6.2.1 Convergent Validity

This section presents an analysis of convergent validity, which refers to the degree of agreement among items that measure a single concept (Ramayah et al., 2011). Convergent validity is determined by the consistency of responses obtained through multiple methods of assessing a specific construct. It is typically evaluated using factor loadings, composite reliability (CR), and average variance extracted (AVE) (Hair et al., 2010). To ensure validity, factor loadings should exceed the recommended threshold of 0.50 (Hair et al., 2011; Valérie, 2012).

As illustrated in Table (4.4) The correlation coefficient (factor loadings) serves as an informal guideline frequently used by researcher, requiring a value above 0.50. This threshold indicates that the shared variance between the construct and its measurement is greater than the variance due to error. Consequently, the construct explains half or more of

the variation in the observed variable. If the correlation falls below 0.50, the results should be interpreted with caution, as a low correlation may stem from a poorly designed item, leading to low reliability. Such an item may indicate weak content validity or an inaccurate contextual transformation. Depending on Table (4.4) and Figure (4.10) we delete the following items: (ProdIn1, ProdIn2, ProcIn1, ProcIn3, Complement1, CA1, CA9, CA10).

Table 4.4: Factor Loadings

Item	Product Innovation	Process Innovation	Complementarity relationship	Internal Learning Capabilities	Reconfiguration Capabilities	Competitive Advantage
ProdIn1	0.47					
ProdIn2	0.437					
ProdIn3	0.597					
ProdIn4	0.589					
ProdIn5	0.591					
ProdIn6	0.645					
ProdIn7	0.624					
ProcIn1		0.425				
ProcIn2		0.521				
ProcIn3		0.431				
ProcIn4		0.632				
ProcIn5		0.605				
ProcIn6		0.609				
ProcIn7		0.63				
ProcIn8		0.774				
Complement1			0.384			
Complement2			0.508			
Complement3			0.774			
Complement4			0.522			
Complement5			0.785			
ILC1				0.639		
ILC2				0.705		
ILC3				0.625		
ILC4				0.742		
REC1					0.722	
REC2					0.751	
REC3					0.753	
REC4					0.749	

CA1						0.438
CA2						0.576
CA3						0.67
CA4						0.591
CA5						0.67
CA6						0.718
CA7						0.532
CA8						0.732
CA9						0.462
CA10						0.199
CA11						0.67

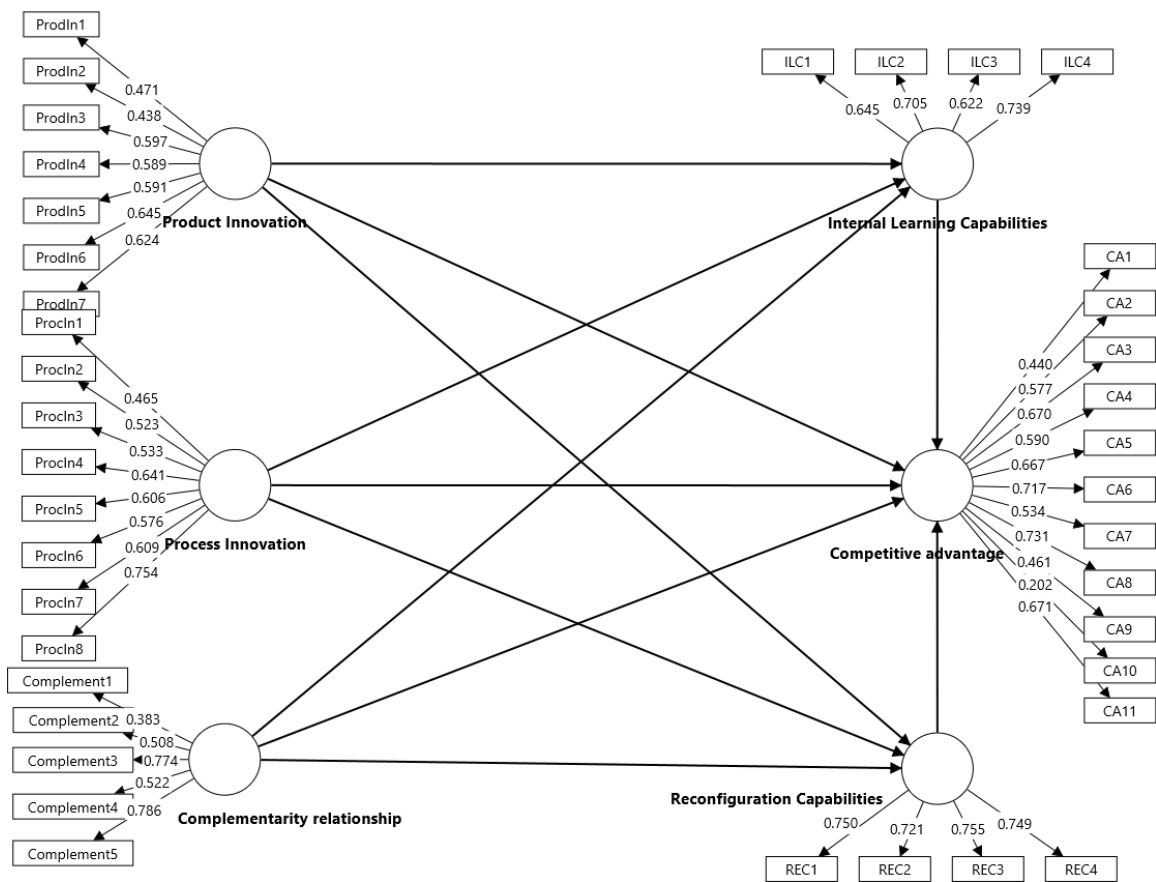


Figure 4.10: The Measurement Model

Furthermore, to assess the proportion of variance explained by the indicators relative to measurement error, the average variance extracted (AVE) is used. A value

greater than 0.50 is required to confirm construct validity (Valérie, 2012). In this study, AVE values ranged from 0.525 to 0.584, meeting the acceptable threshold for all model constructs.

Additionally, composite reliability measures the extent to which the construct's indicators represent the underlying latent variable. A CR value above 0.70 is considered acceptable (Hair et al., 2011). As shown in Table (4.5), the composite reliability values in this study located between 0.718 to 0.797, indicating acceptable convergent validity.

Therefore, the entire set of latent variables satisfied the required threshold, confirming that the constructs met the convergent validity criteria.

Table 4.5: Results of the measurement model

Construct	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Product Innovation	0.723	0.759	0.525
Process Innovation	0.736	0.805	0.549
Complementarity relationship	0.721	0.754	0.584
Internal Learning Capabilities	0.718	0.773	0.557
Reconfiguration Capabilities	0.731	0.832	0.553
Competitive advantage	0.797	0.857	0.546

4.6.2.2 Discriminant Validity

Discriminant validity assesses the extent to which measurement items distinguish between different constructs, ensuring that each item captures a unique concept rather than overlapping with others. According to Hair et al. (2011), discriminant validity is established when the indicator loadings of each latent construct exceed their cross-loadings which is accepted as seen in Table (4.6), and when the construct's average variance extracted (AVE) surpasses the maximum squared correlation with other latent constructs, as per the Fornell and Larcker (1981) criterion which is accepted as seen in Table (4.7).

Table 4.6: The results of the Cross Loadings test

Construct	Product Innovation	Process Innovation	Complementarity relationship	Internal Learning Capabilities	Reconfiguration Capabilities	Competitive advantage
ProdIn3	0.614	0.282	0.233	0.335	0.252	0.317
ProdIn4	0.616	0.289	0.12	0.196	0.113	0.45
ProdIn5	0.591	0.326	0.178	0.224	0.152	0.299
ProdIn6	0.645	0.335	0.407	0.369	0.302	0.324
ProdIn7	0.642	0.391	0.402	0.389	0.332	0.284
ProcIn2	0.255	0.521	0.29	0.282	0.285	0.357
ProcIn4	0.268	0.633	0.303	0.325	0.315	0.328
ProcIn5	0.327	0.601	0.355	0.359	0.324	0.313
ProcIn6	0.335	0.638	0.236	0.335	0.397	0.419
ProcIn7	0.368	0.645	0.378	0.317	0.481	0.42
ProcIn8	0.385	0.781	0.421	0.498	0.487	0.463
Complement2	0.153	0.323	0.506	0.263	0.249	0.207
Complement3	0.324	0.344	0.786	0.313	0.38	0.286
Complement4	0.244	0.337	0.51	0.264	0.212	0.165
Complement5	0.339	0.398	0.806	0.485	0.547	0.313
ILC1	0.341	0.361	0.304	0.638	0.289	0.288
ILC2	0.274	0.246	0.363	0.709	0.328	0.278
ILC3	0.254	0.35	0.256	0.624	0.342	0.412
ILC4	0.384	0.489	0.439	0.741	0.542	0.503

REC1	0.225	0.432	0.388	0.455	0.723	0.407
REC2	0.256	0.438	0.453	0.428	0.75	0.363
REC3	0.262	0.459	0.426	0.457	0.755	0.424
REC4	0.295	0.475	0.372	0.389	0.747	0.43
CA11	0.356	0.369	0.301	0.331	0.348	0.585
CA2	0.309	0.404	0.179	0.392	0.384	0.684
CA3	0.399	0.319	0.168	0.294	0.148	0.601
CA4	0.336	0.45	0.277	0.376	0.309	0.692
CA5	0.39	0.517	0.35	0.444	0.529	0.718
CA6	0.239	0.203	0.17	0.338	0.314	0.541
CA7	0.455	0.501	0.216	0.393	0.395	0.724
CA8	0.37	0.335	0.275	0.436	0.379	0.684

In this study, discriminant validity was evaluated using the Fornell and Larcker (1981) approach. The square root of the AVE was calculated for each latent construct and compared against the correlation matrix, as presented in Table (4.7) discriminant validity is confirmed when the diagonal values (representing the square root of AVE) are greater than the off-diagonal values in the corresponding rows and columns.

Table 4.7: Correlation through constructs and discriminant validity using Fornell and Larcker approach

Construct	Competitive advantage	Complementarity relationship	Internal Learning Capabilities	Process Innovation	Product Innovation	Reconfiguration Capabilities
Competitive advantage	0.657					
Complementarity relationship	0.376	0.668				
Internal Learning Capabilities	0.566	0.523	0.68			
Process Innovation	0.604	0.521	0.555	0.641		
Product Innovation	0.532	0.457	0.505	0.525	0.622	
Reconfiguration Capabilities	0.548	0.562	0.576	0.607	0.387	0.744

Additionally, Henseler et al. (2015) proposed using the Heterotrait-Monotrait ratio (HTMT) to validate discriminant validity. In this study, all HTMT ratios in Table (4.8) were below the strict criterion of 0.90.

Table 4.8: HTMT ratios

Construct	Competitive advantage	Complementarity relationship	Internal Learning Capabilities	Process Innovation	Product Innovation
Competitive advantage					
Complementarity relationship	0.524				
Internal Learning Capabilities	0.766	0.816			
Process Innovation	0.771	0.818	0.797		
Product Innovation	0.757	0.708	0.781	0.788	
Reconfiguration Capabilities	0.692	0.801	0.819	0.829	0.553

The findings revealed no significant correlations among the variables, where all correlation values fell well below the 0.90 threshold. This confirms that there were no strong correlations among the variables, ensuring discriminant validity for the model.

4.7 Structural Model Results (Inner Model)

After analyzing the measurement model, the structural model (inner model) was assessed using PLS analysis. This evaluation followed the criteria outlined by Chin (2010, p. 656), Hair et al. (2011, p. 145).

The assessment considered key indicators, including R^2 values, effect size (f^2), model predictive significance (Q^2), and goodness of fit (GoF).

Additionally, the study's hypotheses were tested using path coefficient analysis, significance levels, and bootstrapping techniques.

The following steps, the consequence of the two-stage process, is to evaluate the structural model depicted in Figure (4.11) or the inner model.

4.7.1 R-Square (R^2)

Hair et al. (2011) highlighted key criteria for evaluating structural models using PLS-SEM, stating that: The primary assessment of a PLS-SEM model relies on the coefficients of determination (R^2 values). The interpretation of R^2 value depending on the research discipline, R^2 value of 0.75, 0.50, and 0.25 for endogenous latent variables are classified as substantial, moderate, and weak, respectively. As a result, the R^2 value serves as a measure of the structural model's strength, representing the proportion of variance in the endogenous variable explained by exogenous variables. Based on the data presented in Figure (4.11) and Table (4.9), the findings are outlined as follows:

Table 4.9: R^2 values for endogenous latent variables

Constructs (Dependent Variable)	<i>R-square</i>
Internal Learning Capabilities	0.418
Reconfiguration Capabilities	0.452
Competitive advantage	0.501

The results presented in Table (4.9) show the R^2 values for the endogenous latent variables in the model. The R^2 value for Internal Learning Capabilities is 0.418, indicating that approximately 41.8% of the variance in internal learning capabilities can be explained by the independent variables included in the model. Similarly, Reconfiguration Capabilities have an R^2 value of 0.452, which means that about 45.2% of the variability in reconfiguration capabilities is accounted for by the predictors. As for Competitive advantage, the R^2 value is 0.501, suggesting that 50.1% of the variance in competitive advantage is explained by the independent variables. These results indicate a moderate to strong explanatory power of the model, especially for competitive advantage, which shows the highest level of explanation among the three dependent variables.

4.7.2 Effect Size (f^2)

Using f^2 analysis has many advantages and is complementary to R^2 to estimate the effect sizes of individual latent variables' effects on the dependent variables (Chin, 2010).

Table 4.10: Effect Size (f^2)

Construct	Competitive advantage	Reconfiguration Capabilities	Internal Learning Capabilities
Product Innovation	0.074	0.08	0.061
Process Innovation	0.08	0.209	0.095
Complementarity relationship	0.028	0.14	0.081
Internal Learning Capabilities	0.054	-	-
Reconfiguration Capabilities	0.051	-	-

The Table presents the effect size (f^2) for each independent variable in predicting the dependent variable Competitive advantage. According to Cohen (1988), f^2 values can be interpreted as follows:

- Small effect: $f^2 \approx 0.02$
- Medium effect: $f^2 \approx 0.15$
- Large effect: $f^2 \approx 0.35$

Table (4.10) presents the effect sizes (f^2) for the relationships between the independent constructs and the endogenous latent variables in the model. The results show that Product Innovation has a small effect on Competitive advantage ($f^2 = 0.074$), Reconfiguration Capabilities ($f^2 = 0.08$), and Internal Learning Capabilities ($f^2 = 0.061$). Process Innovation shows a small to moderate effect on the three dependent variables, with the largest impact on Reconfiguration Capabilities ($f^2 = 0.209$), indicating a relatively stronger influence compared to other relationships in the model. Additionally, the Complementarity Relationship demonstrates a small effect across all variables, with the highest impact on Reconfiguration Capabilities ($f^2 = 0.140$). The effect sizes of Internal Learning Capabilities and Reconfiguration Capabilities on Competitive advantage are small, with f^2 values of 0.054 and 0.051 respectively.

Overall, the findings suggest that while the predictors contribute to explaining the dependent variables, most of the effect sizes fall within the small to moderate range, with Process Innovation's impact on Reconfiguration Capabilities standing out as the most substantial relationship in the model. Process Innovation

and Reconfiguration Capabilities both have effect sizes of 0.05, which are considered small effects, indicating a modest but noteworthy influence on competitive advantage.

4.7.3 Predictive Relevance of the Model

The blindfolding technique can be used to achieve cross-validation of commonality and redundancy. This technique, along with R^2 values and effect sizes, is utilized to assess the quality of the structural model. According to Hair et al. (2011), PLS-SEM estimates for both the structural and measurement models are used to predict data in order to verify cross-validated redundancy, which is well-suited to the PLS-SEM method. When a latent variable has a value greater than zero, the cross-validated redundancy measure (Q^2) for that endogenous construct is also greater than zero, indicating that its latent explanatory constructs are predictive. The Q^2 criteria are used to evaluate the model's ability to predict data from excluded cases (Hair et al., 2013). Using the results of the Stone-Geisser test, the researcher can apply the following formula, as described by Valérie (2012, p. 109):

$$Q^2 = 1 - \{SSE/SSO\}$$

If the Q^2 value is greater than zero, the model can be considered predictive. However, if it does not exceed zero, the predictive significance of the model cannot be determined (Hair et al., 2011). The calculated results are shown in Table (4.11).

Table 4.11: Predictive Relevance of the Model (Q²)

Endogenous Construct	Q ² predict	RMSE	MAE
Competitive advantage	0.377	0.797	0.573
Internal Learning Capabilities	0.378	0.802	0.581
Reconfiguration Capabilities	0.418	0.781	0.564

The results presented in Table (4.11) assess the predictive relevance of the model using the predictive relevance (Q²) of the model for the endogenous constructs, along with the Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) values. The Q²predict values indicate that the model possesses acceptable predictive relevance, as all values are well above zero. Specifically, the Q² value for Competitive advantage is (0.377), for Internal Learning Capabilities it is (0.378), and for Reconfiguration Capabilities it is (0.418). These results suggest that the model has a good predictive ability for all three constructs, with the highest predictive relevance observed for Reconfiguration Capabilities. The RMSE values, which measure the average deviation between observed and predicted values, are relatively low, ranging from (0.781) to (0.802), indicating a good fit and reasonable predictive accuracy. Similarly, the MAE values, which reflect the average absolute errors, range from (0.564) to (0.581), further supporting the model's predictive reliability.

In summary, the results confirm that the model not only explains the variance in the dependent variable but also demonstrates solid predictive performance, especially regarding Reconfiguration Capabilities, and Internal Learning Capabilities which shows the strongest predictive power among the three constructs.

4.7. 4 Goodness of Fit (GoF) of the Model

Tenenhuis et al. (2005, p. 176) defined the Goodness of Fit (GoF) in PLS Structural Equation Modeling as a global measure of fit, calculated as the geometric mean of the average variance extracted (AVE) and the average R^2 of the endogenous variables. GoF can be determined using SRMR (Standardized Root Mean Square Residual) is often used as an additional global fit criterion. SRMR=0.086, **SRMR value below 0.12** is typically considered a good model fit (Henseler et al., 2015).

4.8 Hypotheses Testing

Finally, the mediation effects were estimated using the product indicator approach, which is the default method in Smart PLS for modeling interaction effects. This approach involves creating interaction terms by multiplying the indicators of the independent variable with those of the mediator. the PLS algorithm was executed, and bootstrapping was applied to evaluate the hypothesized relationships. Although path coefficients are crucial in PLS, the tested hypotheses should not be disregarded if the paths are significant or if the indicators align with the expected direction (Hair et al., 2011). On the other hand, significant paths that point in the hypothesized direction offer experimental support for the proposed correlational link. They also highlighted that the importance of each path coefficient, as well as the weights and loadings of the indicators, can be assessed using a bootstrapping approach.

To estimate the path coefficients through the bootstrapping method, for a two-tailed test, the critical t-values are 1.65 (at a 10% significance level), 1.96 (at a 5% significance

level), and 2.58 (at a 1% significance level). To calculate standard errors and t-statistics, the researcher used 5000 resampling iterations with replacement, with the number of bootstrap samples equal to the original sample size (204). The results for the path coefficients and bootstrapping analysis for the assumed relationships are presented in the following Figures and Tables.

Testing Hypothesis

The following Figure (4.11) presents the testing hypothesis; structural model represents the research hypothesis which the researcher test:

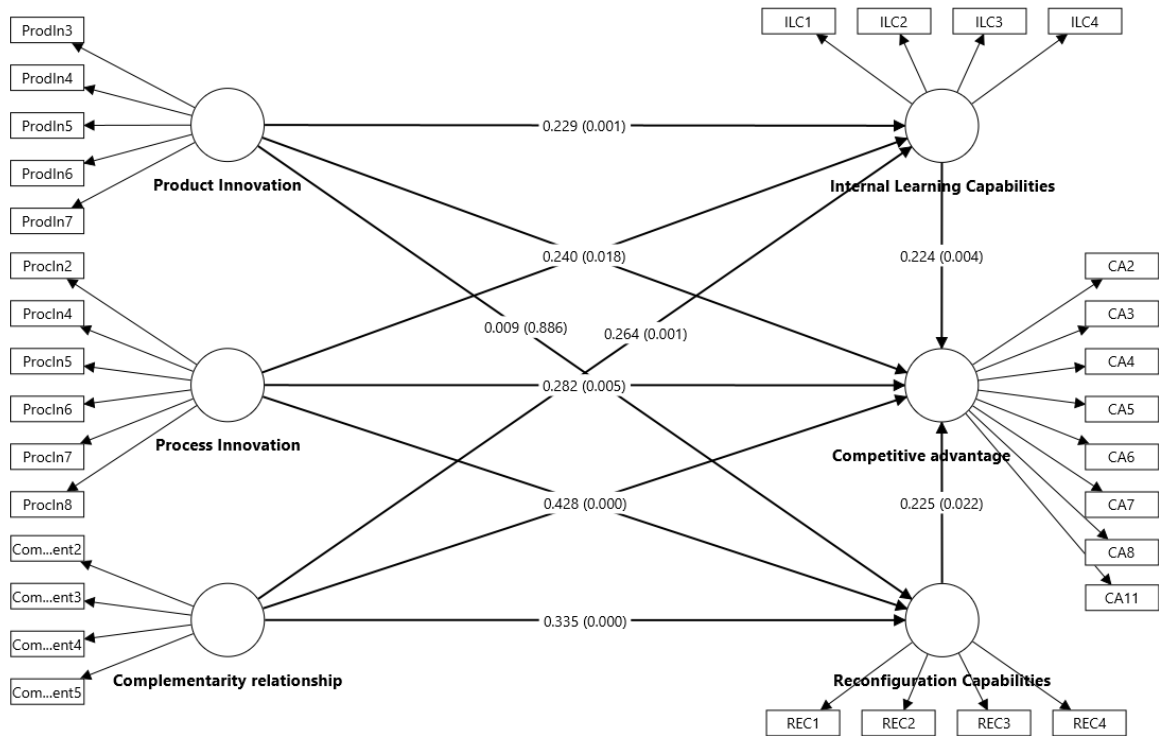


Figure 4.11: Structural Model

H1. Product innovation has a significant positive effect on competitive advantage in the PFPI.

Table 4.12: Result of the first hypotheses testing (Direct effect)

Hypothesis	Relations	B	t-value	Std deviation	P values
H1	Product Innovation -> competitive advantage	0.24	2.357	0.102	0.018*

Notes: t-values > 1.96* (p < 0.05); t-values > 2.58** (p < 0.01).

The results shown in Table (4.12) provide support for the first hypothesis, which proposed that product innovation has a significant positive effect on competitive advantage in the PFPI. The path coefficient (β) is 0.24, indicating a positive relationship between product innovation and competitive advantage. This suggests that improvements in product innovation are associated with notable enhancements in competitive advantage. The t-value is 2.357, which exceeds the critical threshold of 1.96 at the 0.05 significance level, confirming that the relationship is statistically significant and providing sufficient evidence to accept the hypothesis. Additionally, the p-value is 0.018, which is below the commonly accepted cutoff of 0.05, further supporting the significance of this effect. Therefore, the results validate the first hypothesis and confirm that product innovation plays an essential role in strengthening the competitive position of Palestinian food processing companies.

H2. Process innovation has a significant positive effect on competitive advantage in the PFPI.

Table 4.13: Result of the second hypotheses testing (Direct effect)

Hypothesis	Relations	B	t-value	Std deviation	P values
H2	Process Innovation -> competitive advantage	0.282	0.101	2.802	0.005**

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

The findings in Table (4.13) support the second hypothesis, which proposed that process innovation has a significant positive effect on competitive advantage in the PFPI.

The path coefficient (β) is 0.282, indicating a positive relationship between process innovation and competitive advantage, it still demonstrates that enhancing process innovation contributes meaningfully to improving competitive advantage. The t-value is 2.802, which exceeds the critical threshold of 2.58, indicating that the relationship is statistically significant at the 0.01 level. This is further confirmed by the p-value of 0.005, which is below the 0.01 significance threshold, providing sufficient evidence to accept the hypothesis. Based on these results, it can be concluded that process innovation positively and significantly influences competitive advantage.

H3. The combined implementation of product and process innovations has a stronger positive effect on competitive advantage than either innovation alone in the PFPI.

Table 4.14: Result of the third hypotheses testing (Direct effect)

Hypothesis	Relations	B	t-value	Std deviation	P values
H3	Complementarity relationship -> competitive advantage	-0.124	0.085	1.459	0.145

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

The results presented in Table (4.14) do not support the third hypothesis, which proposed that the combined implementation of product and process innovations has a stronger positive effect on competitive advantage than either innovation alone in the PFPI.

The path coefficient (β) is -0.124, indicating a negative relationship between the complementarity relationship (combined implementation of innovations) and competitive advantage. This suggests that, contrary to the hypothesis, the joint effect of product and process innovations does not enhance competitive advantage and may even have an adverse effect, although this result is not statistically significant.

The t-value is 1.459, which is below the critical threshold of 1.96 required for statistical significance at the 0.05 level. The associated p-value is 0.145, which is greater than 0.05, further indicating that the relationship is not statistically significant.

Based on these findings, the third hypothesis is rejected, and it can be concluded that in this study, the combined implementation of product and process innovations does not have a significantly stronger positive impact on competitive advantage compared to implementing them individually.

H4. Internal learning capabilities has a significant positive effect on competitive advantage in the PFPI.

Table 4.15: Result of the fourth hypotheses testing (Direct effect)

Hypothesis	Relations	B	t-value	Std deviation	P values
H4	Internal Learning Capabilities -> Competitive advantage	0.224	0.078	2.859	0.004**

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

The results in Table (4.15) provide a strong support for the fourth hypothesis, which stated that internal learning capabilities have a significant positive effect on competitive advantage in the PFPI. The path coefficient (β) is 0.224, indicating a positive relationship between internal learning capabilities and competitive advantage. This suggests that when companies develop and enhance their internal learning processes, they are more likely to improve their competitive position. The t-value is 2.859, which exceeds the critical threshold of 2.58 required for significance at the 0.01 level, indicating a highly significant result. Additionally, the p-value is 0.004, which is well below the 0.01 threshold, confirming the robustness of this finding. Based on these results, the fourth hypothesis is accepted, and it can be concluded that internal learning capabilities play an essential role in strengthening competitive advantage in the Palestinian food processing sector.

H5. Reconfiguration capabilities have a significant positive effect on competitive advantage in the PFPI.

Table 4.16: Result of the fifth hypotheses testing (Direct effect)

Hypothesis	Relations	B	t-value	Std deviation	P values
H5	Reconfiguration Capabilities -> Competitive advantage	0.225	0.098	2.288	0.022*

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

The findings in Table (4.16) support the fifth hypothesis, which proposed that reconfiguration capabilities have a significant positive effect on competitive advantage in the PFPI.

The path coefficient (β) is 0.225, indicating a positive effect of reconfiguration capabilities on competitive advantage. This result suggests that the ability of companies to effectively restructure, realign, and adapt their resources contributes meaningfully to enhancing their competitive advantage.

The t-value is 2.288, which exceeds the critical threshold of 1.96, indicating that the relationship is statistically significant at the 0.05 level. Additionally, the p-value is 0.022, which is less than 0.05, further confirming the significance of the effect. Based on these results, the fifth hypothesis is accepted, and it can be concluded that reconfiguration capabilities play a valuable role in improving competitive advantage within the Palestinian food processing sector.

H6. Internal learning capabilities significantly mediate the relationship between innovation (product innovation, process innovation and complementarity relationship) and competitive advantage.

Table 4.17: Result of the sixth hypotheses testing (Indirect effect)

Hypothesis	Relations	B	Std deviation	t-value	P values
H6	Product Innovation -> Internal Learning Capabilities -> Competitive Advantage	0.051	0.023	2.211	0.027*
	Process Innovation -> Internal Learning Capabilities -> Competitive Advantage	0.066	0.035	1.919	0.055
	Complementarity relationship -> Internal Learning Capabilities -> Competitive Advantage	0.059	0.026	2.233	0.026*

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

Table (4.17) presents the results for the sixth hypothesis, which examines the mediation effect of internal learning capabilities on the relationships between innovation

(product innovation, process innovation, and their complementarity) with competitive advantage.

Sub-Hypotheses and Decision on Acceptance or Rejection:

Sub-Hypothesis 1:

H6a:

There is an indirect effect of product innovation on competitive advantage through internal learning capabilities.

- **Results:**
 - $\beta = 0.051$
 - t-value = 2.211 (> 1.96)
 - P-value = 0.027 (< 0.05)

- **Decision:** Accepted

- **Justification:**

The t-value exceeds the critical threshold (1.96), and the p-value is less than the significance level of 0.05. This indicates a statistically significant indirect effect.

The first sub-hypothesis is accepted since the t-value (2.211) is greater than 1.96 and the p-value (0.027) is below 0.05. This confirms that product innovation significantly influences competitive advantage indirectly through internal learning capabilities.

Sub-Hypothesis 2:

H6b:

There is an indirect effect of process innovation on competitive advantage through internal learning capabilities.

- **Results:**

- $\beta = 0.066$
- t-value = 1.919 (< 1.96)
- P-value = 0.055 (> 0.05)

- **Decision: Rejected**

The t-value does not reach the critical value of 1.96, and the p-value exceeds the acceptable significance level of 0.05, indicating that the effect is not statistically significant.

The second sub-hypothesis is rejected because the t-value (1.919) is less than the required threshold (1.96), and the p-value (0.055) is greater than 0.05. This suggests that process innovation does not have a significant indirect effect on competitive advantage through internal learning capabilities.

Sub-Hypothesis 3:

H6c:

There is an indirect effect of the complementarity relationship on competitive advantage through internal learning capabilities.

- **Results:**

- $\beta = 0.075$
- t-value = 2.233 (> 1.96)
- P-value = 0.026 (< 0.05)

- **Decision: Accepted**

- **Justification:**

The t-value is above 1.96 and the p-value is below 0.05, indicating that the indirect effect is statistically significant.

The third sub-hypothesis is accepted since the t-value (2.233) exceeds the critical value (1.96) and the p-value (0.026) is less than 0.05. This confirms that the complementarity relationship significantly impacts competitive advantage indirectly through internal learning capabilities.

H7. Reconfiguration capabilities significantly mediate the relationship between innovation (product innovation and process innovation and complementarity relationship) and competitive advantage.

Table 4.18: Result of the seventh hypotheses testing (Indirect effect)

Hypothesis	Relations	B	Std deviation	t-value	P values
H7	Product Innovation -> Reconfiguration Capabilities -> Competitive Advantage	0.002	0.015	0.133	0.894
	Process Innovation -> Reconfiguration Capabilities -> Competitive Advantage	0.096	0.047	2.053	0.04*
	Complementarity relationship -> Reconfiguration Capabilities -> Competitive Advantage	0.075	0.035	2.131	0.033*

Notes: t-values > 1.96** (p < 0.05); t-values > 2.58** (p < 0.01).

The results in Table (4.18) address the seventh hypothesis, which proposed that reconfiguration capabilities significantly mediate the relationship between innovation (product, process, and their complementarity) and competitive advantage in the PFPI.

Sub-Hypothesis 1:

H7a:

There is an indirect effect of product innovation on competitive advantage through reconfiguration capabilities.

- Results:
 - $\beta = 0.002$
 - t-value = 0.133 (< 1.96)
 - P-value = 0.894 (> 0.05)
- Decision: Rejected

The t-value is significantly lower than the critical threshold (1.96), and the p-value is much greater than 0.05, indicating that the indirect effect is not statistically significant.

The first sub-hypothesis is rejected because the t-value (0.133) is well below the required level (1.96), and the p-value (0.894) is far above the acceptable significance level (0.05). This means that product innovation does not significantly influence competitive advantage through reconfiguration capabilities.

Sub-Hypothesis 2:

H7b:

There is an indirect effect of process innovation on competitive advantage through reconfiguration capabilities.

- Results:
 - $\beta = 0.096$
 - t-value = 2.053 (> 1.96)
 - P-value = 0.04 (< 0.05)
- Decision: Accepted

The t-value exceeds 1.96, and the p-value is less than 0.05, which confirms that the indirect effect is statistically significant.

- *The second sub-hypothesis is accepted as the t-value (2.053) surpasses the threshold of 1.96 and the p-value (0.04) is less than 0.05. This indicates that process innovation has a significant indirect effect on competitive advantage through reconfiguration capabilities.*

Sub-Hypothesis 3:

H7c:

There is an indirect effect of the complementarity relationship on competitive advantage through reconfiguration capabilities.

- Results:
 - $\beta = 0.075$
 - t-value = 2.131 (> 1.96)
 - P-value = 0.033 (< 0.05)

- Decision: Accepted

The t-value is above 1.96, and the p-value is less than 0.05, indicating that the indirect effect is statistically significant.

- *The third sub-hypothesis is accepted since the t-value (2.131) exceeds the critical threshold and the p-value (0.033) is less than 0.05. This suggests that the complementarity relationship significantly influences competitive advantage indirectly through reconfiguration capabilities.*

As seen in Table (4.19) the results of hypotheses.

Table 4.19 The Result of the Hypotheses

	The Hypothesis	Decision
H1	Product Innovation -> competitive advantage	Accepted
H2	Process Innovation -> competitive advantage	Accepted
H3	Complementarity relationship -> competitive advantage	Rejected
H4	Internal Learning Capabilities -> Competitive advantage	Accepted
H5	Reconfiguration Capabilities -> Competitive advantage	Accepted
H6a	Product Innovation -> Internal Learning Capabilities -> Competitive Advantage	Accepted
H6b	Process Innovation -> Internal Learning Capabilities -> Competitive Advantage	Rejected
H6c	Complementarity relationship -> Internal Learning Capabilities -> Competitive Advantage	Accepted
H7a	Product Innovation -> Reconfiguration Capabilities -> Competitive Advantage	Rejected
H7b	Process Innovation -> Reconfiguration Capabilities -> Competitive Advantage	Accepted
H7c	Complementarity relationship -> Reconfiguration Capabilities -> Competitive Advantage	Accepted

4.9 Qualitative Findings (Interview Analysis)

In addition to the quantitative findings presented earlier in this chapter, qualitative interviews were conducted to provide deeper contextual insights into how innovation practices are implemented within Palestinian food processing companies. The following section presents the thematic analysis of interview data, organized according to the study's research questions. The analysis of interview data in this study relied on the interpretive qualitative approach, as it was appropriate to the nature of the research questions. The objective analysis method was employed as the main methodological tool for analyzing the interview texts, due to its ability to organize qualitative data and extract semantic patterns that express the values and orientations underlying the participants' statements.

Research Question One: How do Palestinian food industry companies utilize product innovation to achieve a competitive advantage?

The findings of the telephone interviews indicate that product innovation constitutes one of the most important strategic tools adopted by Palestinian food industry companies to achieve a competitive advantage. This innovation takes multiple forms, ranging from improving existing products to developing entirely new ones. Companies demonstrated a clear orientation toward enhancing food formulations, increasing nutritional value, and improving taste in line with the preferences of both local and international consumers. In addition, they have introduced low-fat products, lactose-free alternatives, and products aligned with contemporary health trends.

Product innovation was also evident in the diversification of production lines through offering the same product in different sizes and flavors, as well as introducing ready-to-cook and ready-to-eat products. Moreover, packaging and processing were strategically employed as key differentiation tools through the use of safe, attractive, and long-shelf-life packaging. These practices contributed to strengthening consumer trust in local products, increasing access to new markets, and enhancing responsiveness to changing demand, thereby supporting the competitive position of companies operating in a highly competitive and constrained market.

Research Question Two: How do Palestinian food industry companies utilize process innovation to achieve a competitive advantage?

The results show that process innovation represents a fundamental pillar in enhancing the competitive capability of Palestinian food industry companies, as it is employed to improve operational efficiency, ensure quality control, and reduce costs and waste. Companies have adopted advanced food technologies, modernized production and packaging lines, and implemented automation and digitalization practices, all of which contribute to increasing production speed and flexibility.

Furthermore, adherence to food quality and safety management systems, such as internationally recognized quality certifications, emerged as a key factor in building reliability and competitiveness in both local and international markets. Practices such as preventive maintenance, multi-skilling of workers, and improving supply chain and storage management also proved effective in reducing operational costs and ensuring production continuity within an environment characterized by political and economic instability.

Research Question Three: To what extent are product innovation and process innovation integrated in Palestinian food industry companies, and how is this integration achieved?

The interview findings reveal that integrating product innovation and process innovation is both possible and necessary in certain branches of the food industry; however, the degree of integration varies among companies depending on their organizational and technological capabilities. Some companies demonstrated clear cases of integration, where the development of new or improved products necessitated modifications in production processes, including changes in mixing ratios, temperature controls, cooking methods, and packaging techniques. This reflects the close interdependence between the product and the production process.

Conversely, innovations in processes, such as the introduction of advanced packaging technologies or improvements in cooling and storage systems, enabled companies to launch new products with longer shelf lives or enhanced consumer attributes. This integration was particularly evident when entering new markets, as both product specifications and production processes had to be adjusted simultaneously to meet market requirements. Nevertheless, some interviews indicated that such integration is not always systematic, but rather occurs as a situational response to market demands or available capabilities.

Research Question Four: What obstacles limit the integration of product innovation and process innovation in Palestinian food industry companies?

The results reveal the presence of multiple interrelated obstacles that hinder the integration of product and process innovation. Foremost among these are the political

and economic constraints imposed on the Palestinian context, including import and customs restrictions, violations affecting the availability of raw materials, difficulties in introducing modern equipment and technologies, and export-related complications.

In addition, internal constraints were identified, such as limited financial resources, shortages of specialized technical expertise, and weak organizational flexibility. These challenges are compounded by the small size of the Palestinian market and the associated risks related to the return on investment in dual innovation. Moreover, a weak culture of pilot testing and phased development in some companies reduces opportunities to experiment with innovative ideas and integrate them effectively.

Research Question Five: How do organizational learning and adaptability capabilities contribute to enhancing innovation integration and achieving a competitive advantage?

The interview findings demonstrate that organizational learning and adaptability capabilities play a pivotal role in strengthening the integration of product and process innovation and transforming it into a sustainable competitive advantage. Companies with effective internal learning systems were able to analyze past production problems, benefit from laboratory test results and customer feedback, and convert this accumulated knowledge into tangible operational improvements.

Knowledge sharing among different departments, along with systematic documentation of experiences and procedures, further enhanced coordination between the two types of innovation. At the same time, adaptability capabilities enabled companies to rapidly reconfigure resources and operations, modify production lines,

and allocate human and technological resources in line with market requirements. This was reflected in faster product launches, improved quality, reduced costs, and stronger consumer trust, thereby reinforcing the sustainability of competitive advantage within a challenging and constrained environment.

4.10 Chapter Summary

This chapter has presented the empirical analysis and results of the study, providing a comprehensive overview of the statistical findings derived from data collected from 204 managers working in the PFPI. Through a systematic and multi-level analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), the study rigorously examined the measurement and structural models, ensuring the validity, reliability, and robustness of the findings.

- The demographic analysis revealed that the sector is dominated by male managers with substantial experience and predominantly bachelor-level education, and that large, well-established companies constitute the majority of the industry. This demographic context supports the relevance of innovation and capability-building as strategic tools for maintaining competitiveness in mature organizational settings.
- The measurement model confirmed the constructs' reliability and validity, as indicated by acceptable levels of composite reliability, Cronbach's alpha, and average variance extracted (AVE). The discriminant and convergent validity assessments verified that each construct was distinct yet theoretically coherent, strengthening the overall validity of the research model.

- The structural model results demonstrated moderate to strong explanatory power, as indicated by R^2 values ranging from 0.418 to 0.501, showing that the independent variables accounted for a significant proportion of variance in the endogenous constructs, particularly in competitive advantage. The model also exhibited strong predictive relevance (Q^2 values above 0.37) and an acceptable overall goodness of fit, confirming its empirical adequacy and robustness.

- Hypothesis testing provided key insights into the dynamics between innovation, learning, reconfiguration capabilities, and competitive advantage. The findings confirmed that both product innovation and process innovation have significant and positive effects on competitive advantage, emphasizing their strategic importance for organizational performance in the Palestinian food sector. In contrast, the complementarity relationship, representing the joint implementation of both innovation types, did not yield a significant direct effect on competitive advantage, suggesting that integrating innovation strategies may present practical challenges or require additional enabling conditions, such as organizational alignment or resource flexibility.

- Furthermore, internal learning capabilities and reconfiguration capabilities emerged as crucial mediating mechanisms. Internal learning capabilities significantly mediated the relationship between product innovation and complementarity relationships with competitive advantage, highlighting the importance of knowledge absorption and internal skill enhancement. Similarly, reconfiguration capabilities significantly mediated the effects of process innovation and complementarity relationships on competitive advantage, underscoring the role

of adaptive resource realignment and organizational agility in sustaining competitiveness.

- In summary, this chapter confirmed that innovation, when coupled with learning and reconfiguration capabilities, plays a pivotal role in fostering competitive advantage in the PFPI. The integration of these dynamic capabilities strengthens firms' ability to respond effectively to market and environmental changes. The results provide empirical support for the theoretical framework developed in earlier chapters, demonstrating that innovation-driven strategies and dynamic capabilities jointly enhance organizational competitiveness.

- It worth noting that the qualitative findings provide contextual explanations for the quantitative results reported earlier, particularly regarding the significant role of process innovation and the limited direct impact of complementarity relationships.

- The next chapter will discuss these findings in the context of the existing literature, interpret their theoretical and practical implications, and provide recommendations for both policymakers and industry practitioners.

Chapter Five: Discussion

5.1 Introduction

The main purpose of the study was to determine the effect of product innovation, process innovation, combined types on competitive advantage in PFPI. This chapter summarized and discussed the findings obtained from each of the five research questions. It also dealt with the conclusions that was derived from the analysis, as well as recommendations that can be implemented or used for future research, for each of the research objectives.

5.2 Summary of Findings

The purpose of the study was to determine the role of product and process innovation in achieving competitive advantage in PFPI through internal learning capabilities and reconfiguration capabilities. The study had the following as research objectives: To discover the effect of product innovation on competitive advantage, disclose the effect of process innovation on competitive advantage, investigate the effect of combined influence of product and process innovations on the achievement of competitive advantage, examine the mediating role of transformational capabilities in the relationship between innovation and competitive advantage and to determine strategic approaches PFP firms can adopt to leverage innovation and dynamic capabilities for sustainable competitive advantage.

This research study for several reasons used the quantitative research method and correlational design in particular. The study adopted a quantitative approach on the effect of product and process innovation on competitive advantage; it also adopted explanatory correlational design. The variables for the research study included product innovation, process innovation, and the complementarity relationship as independent variables, internal learning and reconfiguration capabilities as mediator variables, and competitive advantage was the dependent variable.

The target population comprised of 204 managers. Simple random sampling was used to divide the questionnaires. Research findings were analyzed to enable the researcher understand what the findings from the data collected meant and this was done with the help of the Smart PLS the demographic profiles of the respondents were analyzed via descriptive statistics, while direct and indirect relationships between constructs were analyzed using PLS-SEM with SmartPLS software, supported by bootstrapping for hypothesis testing and mediation analysis.

In regards to the effect of product innovation on competitive advantage, the findings suggested that companies currently do not prioritize introducing completely new food products, either those new only to the company or entirely new to the market; Instead, the company focuses more on improving existing products based on customer feedback and regularly adding new variations to its current product lines. This approach allows the company to enhance product quality and better meet customer needs without the higher risks associated with launching entirely new products. Additionally, product improvements support the company's efforts to enter new markets and expand its reach in a more gradual and manageable way. The company also fosters a culture of product innovation that

emphasizes continuous enhancement and adaptation, which helps maintain competitiveness and supports steady growth despite limited introduction of completely novel products.

In regards to the effect of process innovation on competitive advantage, the findings suggested that process innovation significantly influences the company's competitive advantage by enhancing production efficiency and flexibility. Although the companies are not currently interested in modern production technologies or advanced machinery, it shows a strong interest in improving and modifying its existing production methods. The use of automated applications to streamline production processes supports operational efficiency and helps reduce costs. Furthermore, the company emphasizes employee training to ensure effective use of machinery, which contributes to higher productivity and better-quality control. Flexibility in managing production operations enables the company to respond quickly to market changes and customer demands. Additionally, fostering a culture of process innovation encourages continuous improvement and adaptation, which strengthens the company's ability to maintain a competitive edge in the market despite limited use of the most advanced technologies.

In regards to the combined effect of product and process innovations on competitive advantage, the findings suggested that product innovations at the company do not typically require changes in production processes; however, process innovation has still played a role in supporting the development of new products, suggesting some level of interaction between the two. Despite this limited integration, the companies currently do not systematically coordinate product and process innovations to maximize their combined

effects. Thus, mutual effect does not reinforce each other, and the companies prefer to adopt each of them separately than exploiting combined effect between them.

In regard to the mediating role of internal learning capabilities in achieving competitive advantage, the findings suggested that these capabilities play a significant mediating role in the relationship between product innovation, the combined effect of product and process innovations, and competitive advantage. The companies' strong interest in research and development, encouragement of internal knowledge sharing, and ability to leverage previous experiences enhance its capacity to adapt to market changes. These internal learning capabilities enable the company to effectively translate product innovation efforts and the synergy of product and process innovations into sustained competitive advantage. However, this mediating role was not supported for process innovation alone, indicating that while learning capabilities amplify the benefits of product innovation and their integration with process innovation, process innovation by itself does not rely as strongly on internal learning for competitive advantage. This highlights the importance of fostering a learning-oriented culture to maximize innovation outcomes and maintain market competitiveness.

In regard to the mediating role of reconfiguration capabilities in achieving competitive advantage, the findings suggested that these capabilities play a significant mediating role in the relationship between process innovation, the combined effect of product and process innovations, and competitive advantage. The companies' ability to effectively redeploy resources, restructure operations to keep pace with changes, and coordinate across departments supports the successful implementation of process innovations. Additionally, integrating capabilities from various fields enables the company

to adapt and respond strategically to new initiatives, which enhances competitive advantage. However, this mediating role was not found for product innovation alone, suggesting that reconfiguration capabilities are more critical for leveraging process innovation and the synergy between product and process innovations. This indicates that the firm's dynamic capability to reconfigure processes and resources is essential for transforming process innovation efforts into sustained competitive advantage.

In regards to competitive strategies, the finding indicated that the companies adopt different types of strategies to increase their market share and customer satisfaction. Some companies seek to distinguish their products from competitors; they also have clear policies to increase the quality of products and consistently meet national standard specifications. On the other hand, most companies adopt cost-leadership strategy by reducing the percentage of defective products, increasing flexible according to market changes, and adherence to specific deadlines for delivering products to customers.

5.3 Discussion

This section aims to discuss the study results based on the statistical analysis and link these results to the context of previous relevant literature. This chapter focuses on interpreting the impact of product and process innovation, as well as examining the mediating role of both internal learning capabilities and reconfiguration capabilities in enhancing sustainable competitive advantage in the PFPI sector. The theoretical interpretation of the results will also be addressed, linking them to previous studies, and analyzing their compatibility or inconsistency with the scientific literature. The goal of this discussion is to add credibility and scientific value to the study by improving our

understanding of how innovation and transformational capacities affect gaining competitive superiority. It also intends to provide deeper interpretations of the results.

5.3.1 Discussion of Hypothesis 1

The results of the first hypothesis test indicate that product innovation has a positive and significant impact on the competitive advantage of Palestinian food industry companies. The path coefficient (β) value was 0.24, and the t value was 2.357, which is above the critical threshold at a significance level of 0.05 (1.96). The p value was 0.018, which is less than 0.05, confirming the statistical significance of the relationship.

This result supports the assumption that improving product innovation, whether through developing new products, introducing improvements to existing products, or expanding production lines, contributes to strengthening Palestinian companies' market positioning and enables them to respond flexibly to changing customer requirements and preferences.

These results are consistent with the findings of Hidayat et al. (2024), which indicated that product innovation enhances companies' competitive performance, especially when introducing entirely new or improved products that meet customer expectations. on the other hand, PFP firms tend to incremental product innovation more than radical This trend is also supported by Setiobudi (2021), who emphasized that innovation is a necessary strategic response to a changing competitive environment. Furthermore, this positive effect is consistent with Cooper (2017), who noted the importance of organizational resources, expertise, and knowledge in the success of product

innovation, as these factors are directly related to firms' ability to offer differentiated products that reduce risk and enhance added value for customers.

In the local context, this finding highlights the importance of Palestinian firms adopting product development policies and strategies as a means of compensating for resource constraints and enhancing competitiveness in a relatively volatile and narrow market. It also demonstrates the importance of innovation in enhancing market share and customer satisfaction, a finding also confirmed by studies such as Qubbaja & Jaradat (2020) and Ibidunni et al. (2014). As a result of that the companies mostly attend to adopt cost leadership strategy.

5.3.2 Discussion of Hypothesis 2

The results of the second hypothesis test reveal a statistically significant positive relationship between operational innovation and competitive advantage in Palestinian food industry companies. The path coefficient (β) = 0.282, which is higher than the coefficient in the first hypothesis, indicating the strength of the relationship. The t value = 2.802, which is higher than the critical value (2.58) at a significance level of 0.01, and the p value = 0.005, indicating that the relationship is highly significant.

This result indicates that operational innovation, whether at the technological or organizational level, effectively contributes to improving efficiency, reducing costs, and enhancing product or service quality. This reflects the critical role of operational innovation in enhancing competitive advantage by improving internal performance, business flexibility, and providing added value to customers. This finding is consistent with the findings of Maier (2018), who confirmed that process innovation is directly linked to

performance efficiency and productivity. The OECD (2018) further supported this approach by defining process innovation as encompassing production, distribution, infrastructure, organizational processes, and marketing. Furthermore, Boonklum (2023) indicated that process innovation is not always evident in final product outputs, but rather in operational efficiency, responsiveness, and adaptability. Purba et al. (2018) confirms this by distinguishing between innovation that is visible to the consumer and internal technical innovation, which has a long-term impact on performance quality.

These findings contribute to highlighting the importance of investing in technology, process redesign, and continuous employee training as key factors for enhancing competitiveness. Palestinian food industry companies face multiple challenges, such as limited resources, market pressures, and rapid changes in demand, making process innovation a strategic necessity for survival and growth. Accordingly, this hypothesis emphasizes that process innovation is not only complementary to product innovation, but is a fundamental pillar in building a sustainable competitive advantage. Therefore, the companies should support their cost leadership strategies with strong market development strategies.

5.3.3 Discussion of Hypothesis 3

The results of testing the third hypothesis do not support the hypothesis that implementing product and process innovation together leads to a stronger positive impact on competitive advantage than implementing each of them separately. The path coefficient ($\beta = -0.124$) is negative, indicating a weak inverse relationship between the complementarity relationship and competitive advantage. The t-value of 1.459 is lower

than the critical value of 1.96, and the p-value of 0.145 indicates that this relationship is not statistically significant.

This result suggests that combining product and process innovation, rather than enhancing the positive impact on competitive advantage, may in some cases lead to operational complexity or conflict in the allocation of resources within the organization, especially in resource-constrained work environments such as the Palestinian food industry.

Compared to previous studies, this result contradicts what Cruz-Sanchez et al. (2020) and Ibidunni et al. indicated. (2014) found that combining two types of innovation can achieve better results than relying on one type alone, by enhancing market responsiveness and achieving integration between innovative activities. However, this result cannot be generalized to all contexts, as the effectiveness of the complementary relationship depends on the degree of organizational maturity, the availability of resources, and the level of coordination between departments. Mohaghegh et al.'s (2024) study also demonstrated that the complementary relationship between innovations requires careful management and strategic planning; otherwise, it may become a source of distraction or duplication of effort, reducing its effectiveness. In this context, it may be better for Palestinian companies to focus on strategically enhancing one of the two types of innovation before integrating them into an integrated framework

From the researcher's perspective, the lack of a meaningful complementary relationship between product and process innovation in the Palestinian context reflects the nature of the operational environment within which food companies operate, rather than a weakness in the logic of integration itself. The researcher believes that combining two

types of innovation simultaneously requires a high level of strategic planning, internal coordination, and change management capabilities—requirements that may not be sufficiently met by many Palestinian companies operating within unstable economic and political conditions.

Moreover, the companies under study tend to adopt innovation reactively rather than strategically; that is, they develop a new product to counter direct competition or improve their processes to reduce costs, without an integrated framework linking the two types within a comprehensive competitive vision. Consequently, attempting to implement both innovations simultaneously may lead to a dispersal of limited resources rather than achieving cumulative added value, which explains the negative—though not statistically significant—trend of the relationship.

Furthermore, the nature of the Palestinian market, with its limited size and high price sensitivity, may make a phased focus on one type of innovation more effective than combining them simultaneously. Companies may achieve a clearer competitive advantage when they deepen their operational efficiency or focus on differentiating a specific product, rather than spreading their efforts across two innovation paths that require double the resources and organizational capabilities.

Therefore, the researcher concludes that integrating product and process innovation is not inherently detrimental, but in the Palestinian context, it requires a higher degree of organizational readiness, stability, and strategic coordination to transform it from a potential burden on resources into a genuine source of competitive advantage.

5.3.4 Discussion of Hypothesis 4

The results of testing the fourth hypothesis support the hypothesis that internal learning capabilities have a significant positive impact on competitive advantage in the PFPI. The path coefficient (β) showed a positive value of 0.224, indicating a direct relationship between internal learning capabilities and competitive advantage. The t-value was 2.859, exceeding the critical value of 2.58, indicating strong statistical significance at the 0.01 significance level. The p-value was 0.004, which is well below the acceptable threshold, enhancing the reliability of the results and confirming the validity of the hypothesis.

These results indicate that promoting internal learning within an organization, such as knowledge sharing among employees, using information technologies to store knowledge, and drawing lessons from successes and failures, plays a fundamental role in improving corporate performance and its ability to adapt to changes in the competitive environment. These capabilities contribute to accelerating innovation and developing flexible responses to problems, leading to improved performance in areas such as quality, cost, flexibility, and delivery.

These results are consistent with the findings of Jerez-Gómez et al. (2005), which confirmed that internal learning capabilities support innovation processes by learning from success and failure and promoting a culture of continuous improvement. They are also in line with Fu (2022), who noted the importance of internal knowledge-sharing systems and the use of information technologies in fostering an environment conducive to organizational innovation. Similarly, Huo et al. (2021) confirmed that companies' ability to absorb knowledge from internal sources, such as employees and work teams, directly

contributes to improving internal efficiency and responding quickly to change. Mohaghegh et al. (2024) emphasized the need to integrate internal learning capabilities into innovation processes to achieve a competitive advantage based on quality, cost, and speed of delivery.

Accordingly, the fourth hypothesis was accepted, and it can be concluded that internal learning capabilities are a pivotal element in enhancing the competitive advantage of Palestinian industrial companies, especially in a business environment characterized by rapid change and scarce resources.

5.3.5 Discussion of Hypothesis 5

The results of testing the fifth hypothesis confirm the existence of a significant, positive impact of reconfiguration capabilities on achieving competitive advantage in the Palestinian food industry sector. The path coefficient (β) reached a positive value of 0.225, indicating that companies' ability to reorganize and redirect their internal resources in a flexible and effective manner contributes to strengthening their competitive position. The t value (2.288) also exceeded the critical statistical threshold of 1.96, indicating significant significance at the 0.05 level. The p value reached 0.022, which is less than 0.05, enhancing the reliability of these results.

These results indicate that companies that adopt reconfiguration capabilities can improve the quality of their products, reduce costs, and respond flexibly to environmental and market changes, leading to enhanced competitive advantage elements such as efficiency, quality, speed, and customer satisfaction. These capabilities are not limited to rapid adaptation alone, but also include adopting new strategies and modifying organizational procedures to meet new opportunities.

This finding supports the findings of Mohaghegh et al. (2024), which confirmed that integrating reconfigurable capabilities into innovation processes contributes to improving product quality and integrating operational activities that enhance competitive advantage. Eckstein et al. (2015) also indicated the importance of these capabilities in addressing long-term changes and overcoming disruptions to demand and supply chains.

From this perspective, the fifth hypothesis was accepted, and it can be concluded that reconfigurable capabilities play a fundamental role in enabling Palestinian food industry companies to maintain their competitiveness and sustainability in an ever-changing business environment.

5.3.6 Discussion of Hypothesis 6

The sixth hypothesis aimed to test the mediating role of internal learning capabilities in the relationship between innovation (product innovation, process innovation, and complementary relationships) and achieving competitive advantage in the Palestinian food industry. The results showed that this mediating role was partially met, as two of the sub-hypotheses were accepted, while one was rejected.

Sub-Hypothesis 1: H6a

The results indicate a significant indirect effect of product innovation on competitive advantage via internal learning capabilities. The path coefficient value ($\beta = 0.051$), the t value = 2.211, which is above the critical value of 1.96, and the p value = 0.027, which is less than 0.05. This supports the acceptance of the first sub-hypothesis, and implies that product innovation contributes to enhancing competitive advantage by improving internal learning processes and utilizing knowledge available within the

company. This is also consistent with the findings of the study by Jerez-Gómez et al. (2005) emphasized that learning from successes and failures and internal knowledge sharing are critical elements for enabling productive innovation to achieve sustainable and profitable results.

Sub-hypothesis 2: H6b

The second sub-hypothesis was rejected, as the relationship between process innovation and competitive advantage via internal learning capabilities was not statistically significant. The t-value was 1.919, which is below the critical value of 1.96, and the p-value was 0.055, which is above the acceptable threshold of 0.05.

This may be attributed to the nature of operational innovation, which relies more on external organizational learning or redesigning organizational processes than on direct internal learning. Furthermore, many studies, such as Huo et al. (2021) and Salim & Sulaiman (2011), focused on the direct effect of operational innovation via organizational efficiency, without emphasizing the mediation of internal learning. Moreover, this rejection can be explained by the specific contextual nature of the Palestinian food industry, where process innovation is more reactive-operational than strategic-learning. In a conflict-affected environment, companies often improve their processes to adapt quickly to resource scarcity, supply chain disruptions, energy crises, and movement restrictions, rather than within a long-term, structured organizational learning framework. Therefore, the impact of process innovation is achieved directly through efficiency improvements and cost reductions, without the mediating pathway of developing internal learning capabilities.

Furthermore, the competitive advantage in conflict zones (CACA) perspective (Najjar, 2024) demonstrates that competitive advantage in fragile environments is shaped by geopolitical and geoeconomic constraints that may outweigh the impact of internal organizational capabilities. Market access restrictions, regulatory uncertainty, and political volatility can all limit a company's ability to translate organizational learning into a sustainable competitive advantage, even if some learning practices are in place. Therefore, the lack of significance of an internal learning mediating role does not negate the impact of process innovation on competitive advantage. Rather, it reflects that this impact is achieved through more direct pathways (such as operational flexibility and cost reduction) than through systematic knowledge accumulation. Consequently, the rejection of the hypothesis is attributed to the limited maturity of organizational learning systems in the sector under study, not to a weakness in process innovation itself.

Sub-Hypothesis 3: H6c

The results showed a statistically significant indirect effect of the complementary relationship between product innovation and process innovation on competitive advantage via internal learning capabilities. The path coefficient ($\beta = 0.059$) and $t = 2.233$, which is greater than 1.96, while the $p = 0.026$, which is less than 0.05, indicate that the integration of product innovation and process innovation can be more effective when supported by an active internal learning environment that enables knowledge sharing and the transformation of experiences into real improvements in competitive performance.

Accordingly, the sixth hypothesis can be partially accepted, as the mediating role of internal learning capabilities in the relationship between product innovation and the

complementary relationship on the one hand, and competitive advantage on the other, has been proven, while it has not been proven for process innovation.

5.3.7 Discussion of the Seventh Hypothesis

The seventh hypothesis sought to test the mediating role of reconfiguration capabilities in the relationship between innovation (productive innovation, process innovation, and complementary relationships) and achieving competitive advantage in the Palestinian food industry. The results showed a statistically significant indirect effect for some dimensions but not others, indicating a partial confirmation of the hypothesis.

Sub-Hypothesis 1: H7a

The results indicate no significant indirect effect of product innovation on competitive advantage via reconfiguration capabilities. The t-value was 0.133, which is significantly lower than the critical value of 1.96, while the p-value was 0.894, which is significantly higher than the permissible limit of 0.05. The absence of this effect may be attributed to the nature of product innovation, which primarily focuses on tangible outputs, such as new products or product lines, often involving incremental improvements within the existing organizational structure. Such innovations typically do not require fundamental restructuring of resources or the reshaping of institutional capabilities, unlike process innovation, which may necessitate more profound organizational changes.

Moreover, this interpretation aligns with Najjar's (2024) observations on competitive advantage in conflict zones. Companies in the Palestinian food industry operate under geopolitical instability and persistent economic constraints, leading them to prioritize continuity and short-term adaptive strategies over radical structural

transformations. As a result, any benefits derived from product innovation are realized directly in the market rather than through internal reconfiguration processes, explaining the absence of a mediating role for reconfiguration capabilities in enhancing competitive advantage.

Sub-Hypothesis 2: H7b

The results showed a statistically significant indirect effect of process innovation on competitive advantage through reconfiguration capabilities. The β value was 0.096, the t value was 2.053 (>1.96), and the p value was 0.04 (<0.05), indicating a significant relationship. This result supports the findings of Mohaghegh et al. (2024), who indicated that reconfiguration processes play a pivotal role in transforming operational innovation into competitive outcomes by improving product quality, integrating operational activities, and restructuring resources to align with changing market requirements.

Sub-Hypothesis 3: H7c

The significant indirect effect of the complementary relationship between product and process innovation on competitive advantage through reconfiguration capabilities was confirmed, with a t value of 2.131 (>1.96), and a p value of 0.033 (<0.05).

This finding suggests that the complementary relationship between the two innovations often requires integrated organizational adjustments and optimal utilization of resources and capabilities, which is what reconfigurable capabilities do, enhancing firms' competitive advantage. Based on the above, it can be argued that Hypothesis 7 was partially confirmed, as reconfigurable capabilities played a significant mediating role in the relationship between operational innovation and complementary relationships, on the one

hand, and competitive advantage, on the other. This role was not evident for product innovation.

5.4 Discussion of Qualitative Findings in Relation to Previous Studies

The qualitative findings provide important contextual depth to the quantitative results and contribute to a richer understanding of how product and process innovation operate within Palestinian food processing companies. The interview analysis revealed several key themes that both confirm and extend the findings of previous research.

Product Innovation and Competitive Advantage

The interview findings indicate that product innovation plays a significant role in strengthening competitive advantage through product quality enhancement, diversification, and responsiveness to changing consumer preferences. Managers emphasized the importance of adapting products to local tastes, improving packaging, and introducing incremental improvements rather than radical transformations.

These findings are consistent with previous studies such as Calantone et al. (2002), who demonstrated a positive relationship between product innovation and firm performance. Similarly, Varis and Littunen (2010) found that firms investing in product development are more likely to achieve superior competitive positioning. Rosenbusch et al. (2011) also confirmed that innovation positively affects firm performance, particularly in small and medium-sized enterprises.

However, the interviews suggest that product innovation in the Palestinian context is largely adaptive rather than radical. This nuance adds contextual depth to the literature

by highlighting that in emerging and resource-constrained environments, firms tend to prioritize incremental innovation strategies that reduce risk while maintaining competitiveness.

Process Innovation and Competitive Advantage

The qualitative results strongly emphasize the importance of process innovation in improving operational efficiency, reducing production costs, minimizing waste, and enhancing quality control. Many interviewees considered process innovation to be more immediately impactful than product innovation in sustaining competitiveness.

These findings align with Damanpour and Aravind (2012), who argued that process innovation contributes significantly to performance improvement. Piening and Salge (2015) similarly found that innovation in organizational and operational processes enhances efficiency and overall performance. Camisón and Villar-López (2014) further emphasized that process innovation strengthens the effect of product innovation on firm outcomes.

The interviews reinforce the quantitative results of the study, particularly the strong direct impact of process innovation on competitive advantage. In the context of food processing industries, where production efficiency, hygiene standards, and cost control are critical, process innovation appears to represent a strategic priority.

Integration Between Product and Process Innovation

The interviews revealed that product and process innovation are often interconnected in practice; however, this integration tends to be informal rather than

strategically structured. While managers acknowledged the complementary nature of both types of innovation, systematic coordination mechanisms were limited.

Previous research, including Atalay et al. (2013) and Hervas-Oliver et al. (2014), suggests that the simultaneous implementation of product and process innovation enhances firm performance more effectively than isolated innovation efforts. The qualitative findings partially support this argument but indicate that contextual constraints, such as financial limitations and environmental uncertainty, may restrict the full realization of innovation complementarity.

This finding provides an important contribution to the literature by demonstrating that while theoretical models emphasize strong complementarities, practical implementation in emerging economies may be constrained by structural and institutional factors.

Obstacles Limiting Innovation Integration

The interviews identified several barriers to innovation, including limited financial resources, regulatory constraints, market instability, and infrastructural challenges. These obstacles limit firms' ability to invest in advanced technologies or undertake large-scale innovation initiatives.

This observation is consistent with Rosenbusch et al. (2011), who noted that the impact of innovation depends heavily on environmental conditions. Studies on innovation in developing economies also emphasize that institutional instability and funding constraints significantly shape innovation outcomes.

By highlighting these contextual barriers, the qualitative findings extend prior research and underscore the importance of considering environmental and institutional factors when evaluating innovation-performance relationships.

Organizational Learning and Dynamic Capabilities

A particularly significant theme emerging from the interviews was the role of internal learning, employee development, and organizational adaptability in sustaining innovation efforts. Managers emphasized continuous training, knowledge sharing, and flexibility in responding to market changes.

These findings strongly support the theoretical framework of Dynamic Capabilities (Teece et al., 1997), which emphasizes sensing, learning, and reconfiguring organizational resources to maintain competitiveness in dynamic environments. The qualitative results confirm that internal learning and resource reconfiguration are not merely theoretical constructs but active mechanisms shaping innovation practices within Palestinian firms.

Thus, the interviews provide empirical support for the study's theoretical foundation and reinforce the mediating role of dynamic capabilities in linking innovation to competitive advantage.

5.5 Conclusion

1. The results supported the theory that product innovation directly and positively influences business performance and competitive advantage in PFP companies. However, they adopt product innovation to a limited extent due to consumer inertia; moreover, they tend to incremental product innovation more than radical because of high costs, experience, time and efforts radical innovation

requires. Most PFP firms only innovate when they have to; therefore, they tend to expand their production lines, increase their market share, and enter new markets more than modifying product specifications and characteristics especially during boycott campaigns the Palestinian people have been carrying out after the recent Israeli aggression on Gaza Strip. As a result of that the companies adopt cost leadership strategy more than differentiation strategy that they were adopted in the past.

2. According to the findings, process innovation directly influences competitive advantage of PFP companies. PFP firms tend to adopt process innovation more than product innovation and also agreed that product innovation requires process innovation; therefore, the companies encourage their employees towards process innovation; for example, they modify their current production methods, use automated applications to streamline production processes, and train their employees to use the machines in the best way. The companies also use cost leadership strategy to enhance operational efficiency, cost-effectiveness, product quality, organizational performance, their infrastructure, their delivery, distribution channel, marketing, and process development in addition to decrease defects and production costs. Furthermore, the integration of technological advancements, automation, and AI amplifies the positive effects of process innovation, enabling firms to rapid respond to changing market demands and organizational requirements. These findings ensure strategic importance of continuous process innovation for PFP companies which seeking long-term success, and sustainable competitive advantage.

3. Generally, there is sequential relationship between product and process innovation in PFP companies. However, implementing product and process innovation separately is more effective than implementing them combined. More clearly the combined implementation of product and process innovations in PFP companies has no effect on competitive advantage. Combining both simultaneously can lead to organizational complexity, coordination challenges, and resource constraints, especially in Palestinian geopolitical and geoeconomic situations that affect absorptive capacity to manage the integration effectively. Furthermore, adopting product and process innovation concurrently will increase daily issues and operational pressures, and divert firms' attention from their long-term goals, resulting in suboptimal innovation performance. This highlights that without a suitable internal and external environment, anticipated synergy from combined innovations will not happen. This result is mostly related to practical and organizational challenges; thus, this underlines the importance of complementary between organizational capabilities and external factors in realizing the full benefits of combined innovation strategies.

4. Internal learning capabilities have a critical impact on enhancing competitive advantage within the PFP companies. The acceptance of the hypothesis confirms that firms with strong internal learning capabilities are better in adapting, innovating, and responding to market changes, which surely leads to improved performance and sustained competitive advantage in this industry. This finding highlights the importance of improving knowledge gathering and acquisition from internal sources, knowledge absorption, internal knowledge sharing, knowledge

management, database management, and employee development to support strategic growth and maintain a competitive edge. Therefore, PFP firms are interested in R&D, encourage employees to share knowledge and lessons learned internally, and benefits from previous experiences in developing products and processes.

5. The reconfiguration capabilities significantly contribute to fostering the competitive advantage in the PFP companies. This acceptance highlights the critical role of firms' ability to adapt and realign their resources, capabilities, organizational structure, and processes in response to dynamic market, enabling sustainable competitive advantage in this industry. Therefore, PFP companies have clear mechanisms in place to restructure their operations to keep pace with changes, they can also redeploy their resources effectively as needed and efficiently coordinate across their departments to implement strategic changes, and they are able to integrate capabilities from various fields to support new projects.

6a. Product innovation has a significant indirect effect on competitive advantage through internal learning capabilities in PFP companies. This finding highlights the crucial mediating role of internal learning capabilities that enable organizations to leverage product innovation and increasing organizational performance. Therefore, fostering internal learning capabilities within PFP companies can raise the benefits of product innovation, ultimately contributing to build sustainable competitive advantage in this industry. This mediating role may be attributed to require product innovation to Knowledge Acquisition and Sharing by determining materials, technologies, and customer preferences thus enable firms to systematically capture and

share this knowledge across departments. These can also help the firms to adapt product innovation to better meet market demands.

6b. Process innovation does not have a significant indirect effect on competitive advantage through internal learning capabilities in PFP companies. This indicates that, internal learning capabilities do not mediate the relationship between process innovation and competitive advantage in PFP companies. This finding highlights the interaction between process innovation and internal learning capabilities frequently depends on additional factors such as organizational culture, technological capabilities, and external partnerships. In the Palestinian context, other mechanisms may play a more direct role in enhancing this relationship such as supply chain integration, and cross-functional collaboration.

6c. According to the findings, the complementarity relationship significantly influences competitive advantage indirectly through internal learning capabilities. The acceptance of this hypothesis highlights that the complementarity between product and process innovation does not directly yield competitive advantage, but rather operates through the enhancement of internal learning capabilities thus these capabilities serve as the channel which the benefits of complementarity are achieved. In the context of PFP companies, fostering internal learning capabilities allows firms to exploit the combined effect of product and process innovation effectively, thereby enhancing their innovation ability and maintain a competitive edge in a dynamic market.

7a. Product innovation does not have a significant indirect effect on competitive advantage through reconfiguration capabilities in PFP companies. This indicates that, reconfiguration capabilities do not mediate the relationship between product innovation

and competitive advantage in PFP companies. This result contrasts with broader empirical evidence from other contexts, where product innovation and dynamic capabilities often enhance competitive advantage, especially when supported by effective knowledge management. Based on the rejection of the hypothesis, the findings indicate that when product innovation channeled through reconfiguration capabilities does not have significant impact on competitive advantage in PFP companies.

This result contrasts with broader empirical evidence from other contexts, where product innovation and dynamic capabilities often enhance competitive advantage, especially when supported by effective knowledge management. However, in the context of PFP companies, other factors may play more significant role in fostering this relationship such as networking among firms, including linkages with related and supporting industries such as banks, universities, and government bodies, overcoming structural and external challenges, enhancing their dynamic capabilities, and achieving institutional and policy support.

7b. Process innovation has a significant indirect effect on competitive advantage through reconfiguration capabilities in PFP companies. This finding highlights the crucial mediating role of reconfiguration capabilities that enable organizations to leverage process innovation and enhancing the competitive advantage. This finding aligns with other empirical researches indicating that dynamic capabilities mediate the relationship between innovation and sustained competitive advantage particularly in dynamic environment. In PFP industries, firms that adopt process innovation and develop strong reconfiguration capabilities are better in adapting to the market changes, achieving operational efficiency, and maintaining the competitive edge. This mediating role in

transforming process innovation efforts into sustainable competitive advantage may be attributed to adapt quickly to changes, integrate new technologies or methods from process innovation, and optimize their operations effectively. This flexibility and adaptability allow the companies rapidly to respond to changes, market demands, and competitive pressure, leading to stronger competitive advantage. As a conclusion, process innovation alone is valuable; however, its real effect on competitive advantage is achieved through reconfiguration capabilities to leverage this innovation strategically.

7c. According to the findings, the complementarity relationship significantly influences competitive advantage indirectly reconfiguration capabilities. This finding highlights the significant mediating role of reconfiguration capabilities that enable organizations to effectively leverage innovation complementarities and enhance their competitive position. This finding aligns with other empirical researches indicating that reconfiguration capabilities mediate the relationship between innovation and sustained competitive advantage particularly in conflict areas. In PFP industries, firms that adopt product and process innovation together complementarily, they create added value that can only translate into competitive advantage if the firms effectively adapt, transform, and reallocate their internal resources and capabilities. This mediating role in transforming this complementarity relationship into sustainable competitive advantage may be attributed to enable firms to align their innovation efforts with market and operational changes, thereby converting innovation synergy into superior performance. Briefly, reconfiguration capabilities bridge the gap between innovation complementarity and the competitive advantage by facilitating organizational adjustment and strategic renewal. As a conclusion,

this complementarity relationship alone is not valuable; however, its real effect on competitive advantage is achieved through reconfiguration capabilities.

8. According to the findings, companies tend to adopt cost-leadership strategy than differentiation strategy which is more suitable to their objectives and process innovation that they tend to adopt.

9. In addition to the statistical evidence presented in this study, the qualitative insights derived from managerial interviews provided contextual depth to the interpretation of the findings. The interviews revealed that innovation practices in PFP companies are largely shaped by practical constraints, market volatility, geopolitical pressures, and resource limitations. Managers emphasized adaptive and incremental approaches to innovation rather than radical transformation, reflecting a strategic preference for risk minimization and operational stability.

10. The qualitative evidence further clarified why process innovation appears more immediately impactful than product innovation and why the expected synergy between both types of innovation does not automatically materialize. Organizational readiness, coordination mechanisms, and environmental uncertainty emerged as critical contextual factors influencing innovation effectiveness.

11. Therefore, the integration of quantitative and qualitative findings strengthens the overall conclusion that innovation in the Palestinian food processing sector is not merely a structural or statistical phenomenon, but a context-sensitive strategic process shaped by dynamic capabilities, institutional constraints, and managerial judgment. This mixed-method perspective enhances the explanatory power

of the study and provides a more comprehensive understanding of how competitive advantage is constructed in conflict-affected and resource-constrained environments.

5.6 Recommendations

5.6.1 Recommendation for Improvement

According to previous findings, discussions, and conclusions the researcher make some recommendations to improve PFP companies as following:

1. The companies should pay more attention to market studies to identify market gaps and customer needs, concentrate on incremental product innovation like focusing on product specification, diversify their product lines, and build collaboration with research institutions to reduce innovation costs and accelerate product improvements.
2. The companies should invest in automation and AI technologies and provide their employees training of using machines and new technologies, and optimize organizational infrastructure and supply chain to streamline production, reduce defects, and lower costs. Moreover, they should enhance marketing and process development to strengthen cost leadership strategy they use.
3. The company should adopt product or process innovation separately to allocate resources and attention effectively, and reducing coordination complexity.
4. The companies should foster collaborative learning by encouraging teamwork, knowledge sharing among employees, and facilitating skill transfer and professional growth. The companies may enhance knowledge sharing by improving

training and development programs, and internal knowledge-sharing platforms; in addition to supporting employees by access to e-learning resources. Moreover, they facilitate professional growth through assess skills gaps and set goals which required regularly analyze staff performance and align development plans with organizational objectives to target key capabilities effectively.

5. The companies should continuously evaluate, invest, and update their resources and capabilities to keep pace with fast-changing technology and market conditions. This involves recombining existing resources to sense and seize the opportunities while reallocating the resources and improving organizational techniques. Moreover, Organizational Culture Alignment and Resource Acquisition and Reorganization are required with new strategies to create new value, and respond dynamically to environmental changes.

6a. As a result of significant mediating role of internal learning capabilities to enhance product innovation and so on strengthen the competitive advantage, many steps should be followed to enhance them by dynamic capabilities enhancement, employee empowerment, and organizational flexibility and coordination. Dynamic capabilities are essential sense opportunities, seize innovation chances, and transform organizational techniques to sustain product innovation. Moreover, empowered employees can contribute creatively to improving and developing products and solving challenges, , thereby strengthening firms' innovation abilities. Furthermore, organizational flexibility influences Internal learning, enhances innovation culture, and allowing the organization to coordinate different functions effectively in developing and launching new products that will cause achieving competitive edge.

6b. The companies should adopt strategies to improve organizational culture, technological capabilities, external partnership, supply chain integration, and cross functional collaboration such as utilize digital tools for data collection, process monitoring, and quality control, train employees regularly on new technological tools, collaborate with technology providers, build strategic partnerships with suppliers, align their long-term goals with organizational structure, adopt integrated supply chain management systems, and promote teamwork across different departments to leverage diverse expertise and support process innovation culture.

6c. The researcher confirms the importance for managers to invest in learning-oriented strategies and resource integration to fully capitalize on the complementarity relationship and achieve long-term competitiveness.

7a. The companies should adopt strategies to build groups contains of related industries, research centers, banks, and government bodies to strengthen networking. They can also collaborate with them to increase productivity, enable innovation, enhance market access, test products, and develop new designs. Moreover, this collaboration can facilitate access to finance, overcome political and economic barriers.

7b. The companies should improve their organizational flexibility by focusing on innovative organizational culture, leadership style, organizational structure, technology and digital capabilities, knowledge management, and collaboration in addition to align their HR strategies with their strategic goals.

7c. The companies should evaluate and align their resources and strategies with their strategic goals in addition to adopt lean manufacturing strategies and process

improvement to reduce waste and improve operational efficiency to increase organizational response to innovation and market demands.

8. The companies should implement advanced technologies, automation and AI, in addition to optimize the supply chain through exploring vertical integration and strategic partnerships to minimize costs.

5.6.2 Suggestions for Further Studies

The study only focused on Palestinian food processing companies that registered in PFIU in WB due to their importance on Palestinian economic situation hence further research needs to be carried out on the effect of innovations on competitive advantage in each food subsector and in Gaza Strip. Moreover, this study only focused on product and process innovation separately and combined; therefore, further studies need to be carried out on other types of innovations, and they also may study more deeply the complementarity-in-use between different types of innovation in other sectors. The researcher considered the dynamic capabilities framework in this study particularly transformation capabilities hence further studies need to be carried out on the mediating role of dynamic capabilities in achieving competitive advantage in other sectors. Furthermore, the researcher considered specific classifications of competitive advantage so future studies may consider other classifications. The population of this study was restricted to registered companies in PFIU; therefore, further studies may consider all food processing firms work in Palestinian economy. Finally, further research needs to be carried out on the effect of different types of innovation on competitive advantage in private companies, non-governmental organizations and public sectors.

References

- Abernathy, W.J., Utterback, J. M., 1978. Patterns of Industrial Innovation. *Technology Review*. June-July: 41-47.
- Abu Rayhan. (2023). The Future of Work: How AI and Automation Will Transform Industries. <https://doi.org/10.13140/RG.2.2.36092.51848>.
- Abu Zaroor, A. (2006). Informal Food Processing Industries in the Palestinian Territories: current status and prospects. Palestine Economic Policy Research Institute-MAS.
- قطاع الصناعات الغذائية غير المنظم في الأراضي الفلسطينية: الواقع و الآفاق.
- Adeolu, A., & Femi, B. (2020). Product innovation and its effects on sustainable competitive advantage among 10 selected manufacturing firms in Ibadan Metropolis, Nigeria. *The International Journal of Humanities and Social Studies*, 8(6), 470 – 484.
- Adewumi, N. A., Ewim, N. S. E., Sam-Bulya, N. N. J., & Ajani, N. O. B. (2024). Strategic innovation in business models: Leveraging emerging technologies to gain a competitive advantage. *International Journal of Management & Entrepreneurship Research*, 6(10), 3372–3398. <https://doi.org/10.51594/ijmer.v6i10.1639>.
- Afaneh, R. M. I. (2018). Corporate Strategies in the Palestinian Food Industry: A Framework Development, Doctoral dissertation, An-Najah University.
- Agaba, M., Emenike, K.O., & Olutayo, O. (2018). Product innovation, price level and competitive advantage: A perception assessment of beer products. *Journal of Management Kewirausahaan*, 8(1), 26 – 34.
- Agazu, B. G., & Kero, C. A. (2024). Innovation strategy and firm competitiveness: a systematic literature review. *Journal of Innovation and Entrepreneurship*, 13(1). <https://doi.org/10.1186/s13731-024-00381-9>.

- Al-Aghber, M. O. M. (2007). Analysis and Evaluation of Current Situation of the Food Industries in Nablus City (Doctoral dissertation). تحليل و تقييم واقع الصناعات الغذائية في مدينة نابلس
- Alam, M. W., Kumar, J. V., Awad, M., Saravanan, P., Al-Sowayan, N. S., Rosaiah, P., & Nivetha, M. S. (2025). Emerging Trends in Food Process Engineering: Integrating Sensing Technologies for Health, Sustainability, and Consumer Preferences. *Journal of Food Process Engineering*, 48(1). <https://doi.org/10.1111/jfpe.70035>.
- Al-Amery, M & Al-Ghaliby, M. (2004). Knowledge capital: the new competitive advantage for business organizations in the digital economy. The Fourth Annual International Scientific Conference on Knowledge Management in the Arab World. Al-Zaytoonah University of Jordan, Jordan.
- Al-azzam, A. F. M., Al-rwaidan, R. M., & Hayel, F. (2024). The Impact of Innovation Types on Competitive Advantage in SMEs in Jordan. *Journal of System and Management Sciences*, 14(7), 105–121. <https://doi.org/10.33168/jsms.2024.0706>.
- Al-Bitawi, W. (2019). Developing Competitiveness and increasing the share of National Products: Food Sector. Palestine Economic Policy Research Institute-Mas. تطور تنافسية و زيادة حصة المنتج الوطني: قطاع الصناعات الغذائية الفلسطينية
- Alinda, K., Tumwine, S., & Kaawaase, T. K. (2024). Environmental innovations and sustainability practices of manufacturing firms in Uganda. *Asia Pacific Journal of Innovation and Entrepreneurship*, 18(2), 102 – 130.
- Alnasr, F., Kharoub, T., & Yahya, A. (2025). Impact of innovation on competitive advantage in Palestinian telecommunications. *An-Najah University Journal for Research - B (Humanities)*, 39(5). <https://doi.org/10.35552/0247.39.5.2357>.

- Alrai, M. I. (2004). Dairy products Industry in Palestine (status and prospects). Palestinian National Authority, Ministry of National Economy, 13. ورقة عمل/ صناعة منتجات الألبان في فلسطين (الواقع والآفاق).
- Arachchige, U., Chandrasiri, S., Wijenayake, A., Chandrasiri, G. S. M., Wijenayake, K. I. A., & Arachchige, U. S. P. R. (2022). Development of automated systems for the implementation of food processing. *J. Res. Technol. Eng*, 3 (1). <https://www.researchgate.net/publication/357732780>.
- Asikhia, O. A., Dr. Magaji, N. & Muritala, A. S. (2019). Technological Intelligence and organizational Performance: Moderating Role of Process Innovation. *Open Journal of Economics and Commerce*, 2(1), 25–31. <https://doi.org/10.22259/2638-549x.0201005>.
- Afthanorhan, A., & Afthanorhan, B. W. (2013). A comparison of partial least square structural equation modeling (PLS-SEM) and covariance-based structural equation modeling (CB-SEM) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology (IJESIT)*, 2(5), 198–205.
- Awad, H. (2024). Palestinian Central Bureau of Statistics. The performance of the Palestinian economy during 2024 and the economic forecasts for 2025. https://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_ForecastingRep2025EPCBS.pdf.
- Aziz, N.N.A., & Samad, S. (2016). Innovation and Competitive Advantage: Moderating Effects of Firm Age in Foods Manufacturing SMEs in Malaysia. *Procedia Economics and Finance*, 35, 256-266. [https://doi.org/10.1016/s2212-5671\(16\)00032-0](https://doi.org/10.1016/s2212-5671(16)00032-0).
- Bain, J.S. (1959), *Industrial Organization*, Wiley, New York, NY.

- Baldwin, J. R. (1995). Innovation: The key to success in small firms. Statistics Canada Working Paper, 76.
- Ballota, G., Fakhkakh, F., Galia, F., & Salterd, A. (2013). The Fateful Triangle Complementarities between Product, Process and Organizational Innovation in the UK and France. Working papers halshs-00812141, Hal.
- Baregheh, A., Rowley, J., Sambrook, S., & Davies, D. (2012a). Food sector SMEs and innovation types. *British Food Journal*, 114(11), 1640–1653. <https://doi.org/10.1108/00070701211273126>.
- Baregheh, A., Rowley, J., Sambrook, S., & Davies, D. (2012b). Innovation in food sector SMEs. *Journal of Small Business and Enterprise Development*, 19(2), 300–321. <https://doi.org/10.1108/14626001211223919>.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>.
- Barney, J. B. (1995). Looking inside for competitive advantage. *Academy of Management Perspectives*, 9(4), 49-61.
- Barratt, M., & Oke, A. (2007). Antecedents of supply chain visibility in retail supply chains: A resource-based theory perspective. *Journal of Operations Management*, 25(6), 1217–1233. <https://doi.org/10.1016/j.jom.2007.01.003>.
- Becker, J. M., Klein, K., and Wetzels, M. (2012). Hierarchical latent variable models in pls-sem: guidelines for using reflective-formative type models. *Long Range Planning*, 45(5–6), 359–394. <https://doi.org/10.1016/j.lrp.2012.10.001>.
- Bessant, J. and Tidd, J. (2007), Innovation and Entrepreneurship, Wiley, Chichester.

- Bititci, U. S., Ackermann, F., Ates, A., Davies, J. D., Gibb, S., MacBryde, J., ... & Shafti, F. (2011). Managerial processes: an operations management perspective towards dynamic capabilities. *Production Planning and Control*, 22(2), 157-173.
- Bleady, A., Ali, A. H., & Ibrahim, S. B. (2018). Dynamic capabilities theory: pinning down a shifting concept. *Academy of Accounting and Financial Studies Journal*, 22(2), 1-16.
- Blome, C., Schoenherr, T., & Rexhausen, D. (2013). Antecedents and enablers of supply chain agility and its effect on performance: a dynamic capabilities perspective. *International Journal of Production Research*, 51(4), 1295-1318.
- Boonklum, N. (2023). Key Success Factors and Competitiveness of the Food Processing Industry: Insights from a Qualitative Study. *Corporate and Business Strategy Review*, 4 (4), 359–368. <https://doi.org/10.22495/cbsrv4i4siart16>.
- Bortola, G. W., Kero, C. A., & Bali, N. (2024). Impact of product and process innovation practices on competitiveness of manufacturing enterprises in Ethiopia mediated by competitive advantage. *Ethiopian Journal of Science and Sustainable Development*, 11(2), 99-113.
- Brewin, D. G., Monchuk, D. C., & Partridge, M. D. (2009). Examining the adoption of product and process innovations in the Canadian food processing industry. *Canadian Journal of Agricultural Economics*, 57(1), 75–97.
- Byrne, B. M. (2010). *Structural Equation Modeling With Amos : Basic Concepts, Applications, And Programming*. Routledge (Vol. 5).
- Canh, N. T., Liem, N. T., Thu, P. A., & Khuong, N. V. (2019). The impact of innovation on the firm performance and corporate social responsibility of Vietnamese manufacturing firms. *Sustainability*, 11(13), 3666.

- Capitanio, F., Coppola, A., & Pascucci, S. (2009). Indications for drivers of innovation in the food sector. *British Food Journal*, 111(8), 820–838. <https://doi.org/10.1108/00070700910980946>.
- Capitanio, F., Coppola, A., & Pascucci, S. (2010). Product and process innovation in the Italian food industry. *Agribusiness*, 26(4), 503–518. <https://doi.org/10.1002/agr.20239>.
- Cavana, R. Y., Delahaye, B. L., and Sekaran, U. (2001). *Applied Business Research: Qualitative and Quantitative Methods*. John Wiley & Sons Australia.
- Cavusgil, S. T., & Deligonul, S. Z. (2024). Dynamic capabilities framework and its transformative contributions. *Journal of International Business Studies*, 56(1), 33–42. <https://doi.org/10.1057/s41267-024-00758-8>.
- Cepeda, G., & Vera, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, 60, 426 – 437.
- Chandler, G.N., Hanks, S.H. (1994). Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal of Business Venturing*, 9 (4), 331-349.
- Chandy, R. K., & Tellis, G. J. (1998). Organizing for radical product innovation: The overlooked role of willingness to cannibalize. *Journal of marketing research*, 35(4), 474-487.
- Chang-Muñoz, E., Mercado-Caruso, N., Gazabon, D. O., Segarra-Oña, M., & Osorio, S. N. (2022). Product or process innovation? The dilemma for exporting SMEs in emerging economies: the case of the Colombian Caribbean. *Procedia Computer Science*, 198, 620-625.
- Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655–690). <https://doi.org/10.1002/0471667196.ess1914.pub2>.
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo

simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217.

Cochran, W. G. (1977). *Sampling Techniques* (3rd ed.). John Wiley & Sons, New York.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*-Routledge (2nd ed.). Lawrence Erlbaum Associates.

Cooper, D. and P. Schindler. (2014). *Business Research Methods*, 12th ed. New York: McGraw-Hill Irwin.

Cooper, R. (2017). *Winning at New Product: Creating Value Through Innovation*. 1st ed., New York: Basic Books.

Cruz-Sanchez, O. M., Sarmiento-Muñoz, M. H., & Castellanos Dominguez, O. F. (2020). Disruptive Innovation and Dynamic Capabilities Approach: Sensing, Seizing, and Transforming. In *Eurasian Economic Perspectives: Proceedings of the 25th Eurasia Business and Economics Society Conference* (pp. 271-286). Springer International Publishing.

Daft, R.L. (1978), A dual-core model of organizational innovation, *Academy of Management Journal*, 21, pp. 193-210.

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of management journal*, 34(3), 555-590.

Damanpour, F., & Gopalakrishnan, S. (2001). The dynamics of the *adoption* of product and process innovations in organizations. *Journal of Management Studies*, 38(1), 45–65.
<https://doi.org/10.1111/1467-6486.00227>.

Damanpour, F., Szabat, K., & Evan, W. (1989). The relationship between types of innovation and organizational performance. *Journal of Management Studies*, 26(6), 587–601.

- Dessie, W. M., Mengistu, G. A., & Mulualem, T. A. (2022). Communication and innovation in the performance of weaving and pottery crafts in Gojjam, Ethiopia. *Journal of Innovation and Entrepreneurship*, 11(1), 9.
- Distanont, A., & Khongmalai, O. (2018). The role of innovation in creating a competitive advantage. *Kasetsart Journal of Social Sciences*.
<https://doi.org/10.1016/j.kjss.2018.07.009>.
- Doran, J. (2012). Are differing forms of innovation complements or substitutes? *European Journal of Innovation Management*, 15(3), 351-371.
- Dorin, M. (2018). Product and process innovation: A new perspective on the international journal of advanced engineering and management research product and process innovation: a new perspective on the organizational development. *International Journal of Advanced Engineering and Management Research*, 3(6), 132–138.
- Drucker, P. F. (1994). *Post-capitalist society*/Peter F (1st ed.). New York, NY: Harper Business.
- Drucker, P.F. (1985). *Innovation and Entrepreneurship*. Butterworth-Heinemann, Oxford.
- Dweekat, A., & Arman, H. (2011, May). Integrated manufacturing system design for food industry in Palestine. Paper presented at the International Graduate Conference on Science, Humanities and Engineering, Nablus.
- Earle, M. (1997). Innovation in the Food Industry. *Trends in Food Science & Technology*, 8, 166–175. [https://doi.org/10.1016/S0924-2244\(97\)01026-1](https://doi.org/10.1016/S0924-2244(97)01026-1).
- Eckstein, D., Goellner, M., Blome, C., & Henke, M. (2015). The performance impact of supply chain agility and supply chain adaptability: the moderating effect of product complexity. *International Journal of Production Research*, 53(10), 3028-3046.

- Ennen, E., & Richter, A. (2010). The whole is more than the sum of its parts, or is it? A review of the empirical literature on complementarities in organizations. *Journal of Management*, 36(1), 207-233.
- Evan, W.M. (1966), "Organizational lag". *Human Organizations*, 25 (1), pp. 51-3.
- Expósito, A., & Sanchis-Llopis, J. A. (2019). The relationship between types of innovation and SMEs' performance: A multi-dimensional empirical assessment. *Eurasian Business Review*, 9(2), 115–135. <https://doi.org/10.1007/s40821-018-00116-3>.
- Fabrizio, C. M., Kaczam, F., de Moura, G. L., da Silva, L. S. C. V., da Silva, W. V., & da Veiga, C. P. (2022). Competitive advantage and dynamic capability in small and medium-sized enterprises: a systematic literature review and future research directions. *Review of Managerial Science*, 16(3), 617-648.
- Fainshmidt, S., Wenger, L., Pezeshkan, A., & Mallon, M. R. (2019). When do dynamic capabilities lead to competitive advantage? The importance of strategic fit. *Journal of Management Studies*, 56(4), 758-787.
- Farida, I., & Setiawan, D. (2022). Business Strategies and Competitive Advantage: The role of Performance and innovation. *Journal of Open Innovation Technology Market and Complexity*, 8(3), 163. <https://doi.org/10.3390/joitmc8030163>.
- Fonseca, T. (2014). Combining product and process innovation: is organizational innovation the crucial complement. DRUID Academy Conference in Rebild, Aalborg ..., February.
- Fornell, C., and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>.

- Freeman, C., & Soete, L. (1997). The economics of industrial innovation (3rd ed.). Cambridge, MA: MIT Press.
- Fryer, P.J., and Versteeg, C. (2008). Process technology innovation in the food industry. *Innovation: Management, Policy and Practice*, 10 (1), pp. 74-90.
<http://dx.doi.org/10.5172/impp.453.10.1.74>.
- Fu, J. S. (2022). Understanding the internal and external communicative drivers of organizational innovativeness. *Communication Research*, 49(5), 675-702.
- Galanakis, C. M. (2024). The future of food. *Foods*, 13(4), 506.
- Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: a literature review. *Journal of Product Innovation Management: An international publication of the product development & management association*, 19(2), 110-132.
- Geng, L.; Shi, X.; Zu, L.; Chai, M.; Xing, J. (2021). Importance Calculation of Customer Requirements for Incremental Product Innovation. *Front. Psychol.* 2021, 12, 633472.
- Ghanad, A. (2023). An overview of quantitative research methods. *International journal of multidisciplinary research and analysis*, 6(08), 3794-3803.
- Gill, J. & Johnson, P. (2010). Research Methods for Managers. 4th Ed. London, UK: Sage Publications Ltd.
- Gotz, O., Lier-Gobbers, K., and Krafft, M. (2010). Evaluation of Structural Equation Models Using the Partial Least Squares (PLS) Approach. In *Handbook of partial least squares* (pp. 691–711).
- Grant, R. (2016). Contemporary Strategy analysis text and Cases. Ninth edition. John Wiley & Sons.

- Grimsby, S., & Kure, C. F. (2019). How open is food innovation? The crispbread case. *British Food Journal*, 121(4), 950–963. <https://doi.org/10.1108/BFJ-07-2018-0462>.
- Gronhaug, K. & Kaufmann, G. (1998), *Innovation: a cross-disciplinary perspective*, Oslo, Norwegian University Press
- Grunert, K., Harmsen, H., Meulenberg, M., Kuiper, E., Ottowitz, T., Declerck, F., Traill, B. and Goëransson, G. (1997), “A framework for analysing innovation in the food sector”, in Traill, B. and Grunert, K. (Eds), *Product and Process Innovation in the Food Industry*, Blackie Academic and Professional, London, pp. 1-37.
- Guisado-González, M., Wright, L.T. and Guisado-Tato, M. (2017), “Product-process matrix and complementarity approach”, *The Journal of Technology Transfer*, 42 (3), pp. 441-459.
- Gunday, A., Kandah, P. & Ranch, L. (2011). Product innovation and mastering marketplace, *Journal of Management*, 9(7), 36-42.
- Haenlein, M., and Kaplan, A. M. (2004). A Beginner’s Guide to Partial Least Squares Analysis. *Understanding Statistics*, 3(4), 283–297.
- Hair Jr, J. F., Sarstedt, M., Ringle, C. M., and Gudergan, S. P. (2017). *Advanced Issues in Partial Least Squares Structural Equation Modeling*. SAGE Publications.
- Hair, J. F., Ringle, C. M., and Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/MTP1069-6679190202>.
- Hair, 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*, 26(2), 106–121.

- Hair, J. F., Sarstedt, M., Ringle, C. M., and Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, 40(3), 414–433.
- Hair, J., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). *Multivariate Data Analysis* (7th Edition). Pearson Prentice Hall.
- Hair, J., Ringle, C. M., and Sarstedt, M. (2013). Corrigendum to editorial partial least squares structural equation modeling: rigorous applications, better results, and higher acceptance. *Long Range Planning*, 47(6), 392.
- Hajjaj, A. (2015). The role of technological innovation in developing the competitive advantage of economic institutions: "A comparative study between the Condor Corporation in Bordj Bou Arreridj using the data-encapsulated analysis method during the period 2004-2013". University Kasdi Merbah Ouargla. Algeria. دور الإبداع التكنولوجي في تنمية الميزة التنافسية للمؤسسة الاقتصادية "دراسة مقارنة بين وحدات مؤسسة كوندور بيج بو عريريج باستخدام أسلوب تحليل مغلف البيانات خلال فترة 2004-2013"
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>.
- Hamdani, N. A., & Ramdani, R. R. (2024). The Influence of Product Innovation on Competitive Advantage in the Beverage Business Tekun.id (Vol. 1). Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-234-7_187.
- Hanaysha, J. (2016). The importance of product innovation in driving brand success: an empirical study on automotive industry. *American Journal of Economics and Business Administration*, 8(1), 35-43.

- Hantash, I. (2012). Ways to increase the market share of Palestinian products. Palestine Economic Policy Research Institute-Mas.
- Hatammimi, J., & Thahara, A. (2022, September). Capturing competitive advantage through product innovation: Study of a small culinary business. In ECIE 2022 17th European Conference on Innovation and Entrepreneurship. Academic Conferences and publishing limited.
- 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), 115-135.
- Henseler, Jörg, Ringle, C. M., and Sinkovics, R. R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing. *Advances in International Marketing*, 20, 277–319.
- Hidayat, D., Princes, E., Eni, Y., & Danang, N. F. (2024, January). Examining the Impact of Innovation Capabilities and Transformational Leadership on Competitive Advantage: A Case Study. In 2024 18th International Conference on Ubiquitous Information Management and Communication (IMCOM) (pp. 1-7).
- Hilaly, W. (2009). General foundations for building competitive advantages and their role in creating value. Master dissertation. Mohamed Boudiaf University. Algeria. الأسس العامة لبناء MOBILIS. المزايا التنافسية و دورها في خلق القيمة دراسة حالة: الشركة الجزائرية للهاتف النقال
- Hollenstein, H. (1996), “A composite indicator of a firm’s innovativeness: an analytical analysis based on survey data for Swiss manufacturing”, *Research Policy*, 25, pp. 633-45.
- Hullova, D., Trott, P. & Simms, C. D. (2016). Uncovering the reciprocal complementarity between product and process innovation. *Research Policy*, 45(5), 929–940.

- Huo, B., Haq, M. Z. U., & Gu, M. (2021). The impact of information sharing on supply chain learning and flexibility performance. *International Journal of Production Research*, 59(5), 1411-1434.
- Hussain, Z. N., Al-Hakeem, L. M., Shaheed, J. M., Amanah, A. A., & Fadhil, A. H. (2024). the Impact of Dynamic Capabilities on Achieving a Sustainable Competitive Advantage. *Journal of Modern Project Management*, 12(1), 28–39. <https://doi.org/10.19255/JMPM3403>.
- Ibidunni, O. S., Iyiola, O., & Ibidunni, A. S. (2014). Product Innovation, a Survival Strategy for Small and Medium Enterprises in Nigeria. *European Scientific Journal*, 10(1), 1857–7881.
- Indriyani, R., & Shan, J. A. (2024). The Role Of Product Innovation And Marketing Performance In Enhancing Competitive Advantage In Micro, Small, And Medium Enterprises (MSMEs) In The Fashion Sector. *EKOMBIS REVIEW: Journal Ilmiah Economy and business*, 12(3), 3229–3242. <https://doi.org/10.37676/ekombis.v12i3.5974>.
- Jerez-Gomez, P., Céspedes-Lorente, J., & Valle-Cabrera, R. (2005). Organizational learning capability: a proposal of measurement. *Journal of business research*, 58(6), 715-725.
- Jin-Hai, L., Anderson, A. R., & Harrison, R. T. (2003). The evolution of agile manufacturing. *Business Process Management Journal*, 9(2), 170-189. <https://doi.org/10.1108/14637150310468380>.
- Joudeh, S. (2024, August 25). The demise of Palestinian productive Sectors: Internal trade as a microcosm of the impact of occupation | Al-Shabaka. Al-Shabaka. <https://al-shabaka.org/briefs/the-demise-of-palestinian-productive-sectors-internal-trade-as-a-microcosm-of-the-impact-of-occupation/>

- Ju, B. (2012). An Evaluation of Critical Factors Influencing Product Innovation in the Food Industry, A Case Study of China Mengjiu Dairy Company. *International Journal of Business and Management*, 7(3). <https://doi.org/10.5539/ijbm.v7n3p104>.
- Kahn, K. B. (2018). Understanding innovation. *Business Horizons*, 61(3), 453–460. <https://doi.org/10.1016/j.bushor.2018.01.011>.
- Kanter, R.M. (1984), *The Change Masters: Innovation and Entrepreneurship in the American Corporation*, Simon and Schuster, New York, NY.
- Karabulut, A. T. (2015). Effects of Innovation Types on Performance of Manufacturing Firms in Turkey. *Procedia - Social and Behavioral Sciences*, 195, 1355–1364. <https://doi.org/10.1016/j.sbspro.2015.06.322>.
- Karatsareas, P. (2022). Semi-structured interviews. *Research methods in language attitudes*, 99.
- Kefyalew Endale (2023). The effects of informal competition on manufacturing firm productivity in Ethiopia. *Journal of the Knowledge Economy*, 1-32. <https://doi.org/10.21203/rs.3.rs-1768543/v2>.
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of Behavioral Research* (4th ed.)
- Khatijatusshalihah, K. (2017). Exploring the Strategic Role Of Human Resources Development in Capacity Building. *Psikoislamedia Jurnal Psikologi*, 1(2). <https://doi.org/10.22373/psikoislamedia.v1i2.922>.
- Khuwaildat, Muhammad Mujahid; Bouamama, Khamra (2021). The impact of strategic leadership on entrepreneurial marketing: A case study of mobile phone dealers in Ouargla, *Journal of Algerian Enterprise Performance*, University of Ouargla, 10 (1): p.107-p.124. دور القيادة الاستراتيجية في تعزيز الالتزام التنظيمي لدى معلمات المرحلة الثانوية بمدينة الزلفي.

- Kılıç, F. (2022). Effect of Competitive Strategies on Firm Performance and Mediating Role of Product Innovation. *International Journal of Business and Management*, 17(3), 93. <https://doi.org/10.5539/ijbm.v17n3p93>.
- Knight, K. E. (1967). A descriptive model of the intra-firm innovation process. *The journal of business*, 40(4), 478-496. <https://doi.org/10.1086/295013>.
- Kozielec, A., Piecuch, J., Daniek, K., & Luty, L. (2024). Challenges to food security in the Middle East and North Africa in the context of the Russia–Ukraine conflict. *Agriculture*, 14(1), 155. <https://doi.org/10.3390/agriculture14010155>.
- Kozludzhova, K. (2023). Key Aspects of Product Innovations: Theoretical Knowledge and Research Study. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, 8(6), 29. <https://doi.org/10.55908/sdgs.v11i5.1130>.
- Kumar, V., Anand, A., & Song, H. (2017). Future of retailer profitability: An organizing framework. *Journal of Retailing*, 93(1), 96-119. <https://doi.org/10.1016/j.jretai.2016.11.003>.
- Kuncoro, W., & Suriani, W. O. (2018). Achieving sustainable competitive advantage through product innovation and market driving. *Asia pacific management review*, 23(3), 186-192. <https://doi.org/10.1016/j.apmr.2017.07.006>.
- Laforet, S. and Tann, J. (2006), “Innovative characteristics of small manufacturing firms”, *Journal of Small Business and Enterprise Development*, Vol. 13 No. 3, pp. 363-80. <https://doi.org/10.1108/14626000610680253>.
- Lee, K., & Yoo, J. (2019). How does open innovation lead competitive advantage? A dynamic capability view perspective. *PloS one*, 14(11), e0223405. <https://doi.org/10.1371/JOURNAL.PONE.0223405>.

- Lei, D., Slocum, J. W., & Pitts, R. A. (1999). Designing organizations for competitive advantage: the power of unlearning and learning. *Organizational dynamics*, 27(3), 24-38. [https://doi.org/10.1016/s0090-2616\(99\)90019-0](https://doi.org/10.1016/s0090-2616(99)90019-0).
- Lowry, P. B., and Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication*, 57(2), 123–146. <https://doi.org/10.1109/TPC.2014.2312452>.
- Lugo-Morin, D. R. (2024). Artificial intelligence on food vulnerability: Future implications within a framework of opportunities and challenges. *Societies*, 14(7), 106. <https://doi.org/10.3390/soc14070106>.
- Ma, X., & McSweeney, P. (2008). Product and process innovation in the food processing industry: case study in Guangxi province. *Australasian Agribusiness Review*, 16.
- Maier, D. (2018). Product and process innovation: A new perspective on the organizational development. *International Journal of Advanced Engineering and Management Research*, 3(6), 132-138.
- Makadok, R. (2001). Towards a synthesis of resource based and dynamic capability views of rent creation. *Strategic Management Journal*, 22: 387-402. <https://doi.org/10.1002/smj.158>.
- Marcoulides, Chin, and Saunders. (2009). A Critical Look at Partial Least Squares Modeling. *MIS Quarterly*, 33(1), 171. <https://doi.org/10.2307/20650283>.
- Marcus, A. A. (1988). Responses to externally induced innovation: Their effects on organizational performance. *Strategic Management Journal*, 9(4), 387-402. <http://www.jstor.org/stable/2486273>.

- Mardiyono, A., & Sugiyarti, G. (2024). The Role of Product Innovation Capability in Increasing Competitive Advantage. *Saudi Journal of Economics and Finance*, 8(06), 185–196. <https://doi.org/10.36348/sjef.2024.v08i06.004>.
- Mason, E. S. (1939). Price and production policies of large-scale enterprise. *The American economic review*, 29(1), 61-74. <https://www.jstor.org/stable/i331339>.
- McLeod, S. (2024). Mixed methods research guide with examples. ResearchGate. <https://doi.org/10.13140/RG.2.2.31329.93286>.
- Mesquita, L. F., Lazzarini, S. G., & Cronin, P. (2007). Determinants of firm competitiveness in Latin American emerging economies: Evidence from Brazil's auto-parts industry. *International Journal of Operations & Production Management*, 27(5), 501-523. <https://doi.org/10.1108/01443570710742384>.
- Mohaghegh, M., Åhlström, P., & Blasi, S. (2024). Agile manufacturing and transformational capabilities for sustainable business performance: a dynamic capabilities perspective. *Production Planning & Control*, 35(16), 2273-2285. <https://doi.org/10.1080/09537287.2023.2229264>.
- Mokhtar, S. (2021, March). A framework for sustainable environmental analysis. In *IOP Conference Series: Earth and Environmental Science*, 685 (1). <https://doi.org/10.1088/1755-1315/685/1/012005>.
- Moubarac, J. C., Parra, D. C., Cannon, G., & Monteiro, C. A. (2014). Food classification systems based on food processing: significance and implications for policies and actions: a systematic literature review and assessment. *Current obesity reports*, 3, 256-272. <https://doi.org/10.1007/s13679-014-0092-0>.

- Mugo, P. C., & Namada, J. M. (2020). Process innovation and competitive advantage in telecommunication companies. *International Journal of Business Strategy and Automation (IJBSA)*, 1(4), 40-55. <https://doi.org/10.4018/IJBSA.2020100103>.
- Mustafa, L. A.-H. (2005). Competitiveness in Palestinian Food Industries Horizons and Development. Published Master Thesis. An-Najah National University. القدرة التنافسية للصناعات الغذائية الفلسطينية و آفاق تطورها.
- Muthoni, B.M. (2017). Effect of innovation on competitive advantage in fast moving consumer goods, A case of Pz Cussons East Africa Ltd. MBA Thesis, United States International University – Africa. <http://erepo.usiu.ac.ke/11732/3307>.
- Na, K., & Kang, Y. H. (2019). Relations between innovation and firm performance of manufacturing firms in Southeast Asian emerging markets: Empirical evidence from Indonesia, Malaysia, and Vietnam. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4). <https://doi.org/10.3390/joitmc5040098>.
- Nagy, J., Oláh, J., Erdei, E., Máté, D., & Popp, J. (2018). The role and impact of Industry 4.0 and the internet of things on the business strategy of the value chain, the case of Hungary. *Sustainability*, 10(10), 3491. <https://doi.org/10.3390/su10103491>.
- Naila, D., Nandone, F., & Makindara, J. (2024). Review of empirical studies on food process innovation: Status quo and future research agenda. *Sustainable Technology and Entrepreneurship*, 3(3). <https://doi.org/10.1016/j.stae.2024.100073>.
- Najjar, R. (2024). Geoeconomics, Geopolitics, and the Competitive Advantage in Conflict Areas (CACA): A focus on Palestine. In *IntechOpen eBooks*. <https://doi.org/10.5772/intechopen.114315>.

- Nasir, M., Arief, M., Alamsjah, F., & Elidjen, E. (2024). Systematic Literature Review: The Role of Innovation and Competitive Advantage of Micro, Small, and Medium Enterprises as Mediation Variables. *Quantitative Economics and Management Studies*, 5(3), 600–612. <https://doi.org/10.35877/454ri.qems2610>.
- Nasser, M. (2005). Food Industries Sector in Palestine. Industry Modernization Center. Massar Consulting & Technical Services. قطاع الصناعات الغذائية.
- Nelson, R. and Winter, S. (1982), An Evolutionary Theory of Economic Change, The Belknap Press of Harvard University Press, Cambridge.
- Newbert, S. (2007). Empirical research on the Resource-Based View of the firm: an assessment and suggestions for future research. *Strategic Management Journal*, 28(2), 121-146. <http://dx.doi.org/10.1002/smj.573>.
- Nimfa, D. T., Uzir, M. U. H., Maimako, L. N., Eneizan, B., Latiff, A. S. A., & Wahab, S. A. (2021). The impact of innovation competitive advantage on product quality for sustainable growth among SMES: An empirical analysis. *International Journal of Business Science & Applied Management (IJBSAM)*, 16(3), 39-62. <https://doi.org/10.69864/ijbsam.16-3.152>.
- Noel, A. (2016). The Effect Of Emotional Intelligence On Employee Performance In The Private Sector: A Case of Kinyara Sugar Limited Performance, Published Master's thesis of Science in Organizational Development (MOD). Chandaria School of Business. United States International University – Africa.
- Oboreh, L. E., & Samuel, A. P. (2023). An analysis of product innovation and competitive advantage in selected plastic manufacturing industries in Onitsha, Anambra State, Nigeria. Department of Business Administration, Delta State University of Science and Technology, Ozoro, Nigeria. <https://doi.org/10.57233/gijmss.v6i13.5>

- OECD - Oslo Manual. (2005). Proposed guidelines for collecting and interpreting technological innovation data (2nd ed.)
- OECD (2009). Innovation in Firms: A Microeconomic Perspective.
- OECD, (2015). The measurement of scientific and technological activities. Oslo manual.
- OECD/Eurostat. (2018). Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation. In The Measurement of Scientific; Technological and Innovation Activities. <https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm>..
- Padagas, R., & Hajan, B. (2020). Academic reading and writing needs of undergraduate nursing students in research. *International Journal of Learning, Teaching and Educational Research*, 19(5), 318–335. <https://doi.org/10.26803/ijlter.19.5.20>.
- Palakurti, N. R. (2022). AI applications in food safety and quality control. *ESP Journal of Engineering & Technology Advancements*, 2(3), 48-61. https://www.espieta.org/jeta-v2i3p111?utm_source.
- Palestine Trade Center (PAL Trade). (2005). The Palestinian Processed Food Sector. Trade Development Strategy.
- Palestinian Central Bureau of Statistics, 2023. Press Report, Preliminary Estimates of Quarterly National Accounts (First Quarter 2023). Ramallah – Palestine
- Palestinian Federation. (2009, April). The current state of sectors in Palestine: Outlook based on indicators. [Funded by USAID]. <https://www.ppu.edu/ppuittc/sites/default/files/The%20Current%20Status%20of%20the%20Industrial%20Sector%20in%20Palestine.pdf>.
- Palestinian Food Industries Union. (n.d.). About us. Retrieved August 30, 2025, from <https://pfiu.org/>

- Pallant J. (2016). *SPSS Survival Manual: A Step by Step Guide to Data Analysis using SPSS for Windows* (6th ed.). Open University Press.
- Park, E., & Kwon, S. J. (2018). Effects of innovation types on firm performance: an empirical approach in South Korean manufacturing industry. *International Journal of Business Innovation and Research*, 15(2), 215. <https://doi.org/10.1504/ijbir.2018.10009761>.
- Parmigiani, A., Klassen, R. D., & Russo, M. V. (2011). Efficiency meets accountability: Performance implications of supply chain configuration, control, and capabilities. *Journal of operations management*, 29(3), 212-223. <https://doi.org/10.1016/j.jom.2011.01.001>.
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley.
- Porter, M. E. (1980). *Competitive Strategy*. Free Press, New York.
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York and London: Free Press.
- Pundziene, A., Nikou, S., & Bouwman, H. (2022). The nexus between dynamic capabilities and competitive firm performance: the mediating role of open innovation. *European Journal of Innovation Management*, 25(6), 152-177. <https://doi.org/10.1108/EJIM-09-2020-0356>.
- Purba, H. H., Maarif, M. S., Yuliasih, I., & Hermawan, A. (2018). Innovation typology in food industry sector: A literature review. *International Journal of Modern Research in Engineering and Technology*, 3(2), 8-19. July.
- Purwanto, A. (2024). *Linking The Influence of Dynamic Capabilities and Innovation Capabilities on Competitive Advantage: PLS-SEM Analysis*. December.
- Qubbaja, A., & Jaradat, N. (2020). The effect of innovation in achieving the competitive advantage in the industrial companies operating in Hebron governorate. <https://doi.org/10.26389/ajsrp.a151219>.

أثر الابتكار في تحقيق الميزة التنافسية في الشركات الصناعية العاملة في محافظة الخليل.

Quffa, M. M. (2007, July 30). Development horizons for the food industries sector in Palestine:

(A case study for the food industries in Gaza Strip). *Islamic University Journal*, 15(2), 727-

777. أفاق نمو قطاع الصناعات الغذائية في فلسطين: دراسة حالة الصناعات الغذائية في قطاع غزة.

Quintane, E., Mitch Casselman, R., Sebastian Reiche, B., & Nylund, P. A. (2011). Innovation as a knowledge-based outcome. *Journal of knowledge management*, 15(6), 928-947.

<https://doi.org/10.1108/13673271111179299>.

Raghu, H. V., Parkunan, T., & Kumar, N. (2020). Application of Nano biosensors for food safety monitoring. *Environmental Nanotechnology*, 4, 93-129. [https://doi.org/10.1007/978-3-](https://doi.org/10.1007/978-3-030-26668-4_3)

[030-26668-4_3](https://doi.org/10.1007/978-3-030-26668-4_3).

Rainey, D.L. (2005). *Product innovation: leading change through integrated product development*, New York, USA. Cambridge University Press.

Rajee, F.S, (2005). Sustaining product Innovation in the new economy: the case of Lever Brother Nigeria Limited. *Journal of Sales and Marketing*, 4 (16), 21, September.

Ramadhan, T. S., & Farida, E. (2023). Product Innovation for Sustainable Competitive Advantage through Starbucks Coffee Marketing Perfome in Malang. *IJEED (International Journal of Entrepreneurship and Business Development)*, 6(1), 102–112.

<https://doi.org/10.29138/ijebd.v6i1.2090>.

Ramayah, T., Lee, J. W. C., and In, J. B. C. (2011). Network collaboration and performance in the tourism sector. *Service Business*, 5(4), 411–428. [https://doi.org/10.1007/s11628-011-](https://doi.org/10.1007/s11628-011-0120-z)

[0120-z](https://doi.org/10.1007/s11628-011-0120-z).

- Reinartz, W., Haenlein, M., and Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, 26(4), 332–344. <https://doi.org/10.1016/j.ijresmar.2009.08.001>.
- Rianawati, A., Darmasetiawan, N. K., Hadi, F. S., Oktavianus, J., & Utama, C. A. (2024). Enhancement of Indonesia's blue economy sector through innovation and competitive advantage based on Resource-Based View theory. *Problems and Perspectives in Management*, 22(2), 165–181. [https://doi.org/10.21511/ppm.22\(2\).2024.14](https://doi.org/10.21511/ppm.22(2).2024.14)
- Ringle, C. M., Wende, S., and Becker, J. M. (2015). Smartpls 3.0. Boenningstedt: SmartPLS GmbH. <http://www.smartpls.com>.
- Ruttan, V. W. (1977). Induced innovation and agricultural development. *Food Policy*, 53, 1–14. [https://doi.org/10.1016/0306-9192\(77\)90080](https://doi.org/10.1016/0306-9192(77)90080).
- Sajid, M., Al-bloush, H. B., AL-Faieq, M., Monsef, S., & Sadeghi, M. (2015). Role of Innovation in the Development of New Products for Improving Organizational Performance. *Journal of Advanced Management Science*, April 2019, 261–264. <https://doi.org/10.12720/joams.3.3.261-264>.
- Mousa, K., Zhang, Z., & Hemdan, W. (2024). Challenges in adopting artificial intelligence for food manufacturing and supply chain post-pandemic in Palestine. *International Journal of Internet Manufacturing and Services*, 11(2). <https://doi.org/10.1504/IJIMS.2025.10063898>.
- Salim, I. M., & Sulaiman, M. (2011). Organizational Learning, Innovation and Performance: A Study of Malaysian Small and Medium Sized Enterprises. *International Journal of Business and Management*, 6(12), 118–125. <https://doi.org/10.5539/ijbm.v6n12p118>.

- Saraswati, T. T., & Sudarmiati, S. (2024). The Role Product Innovation on Business Performance Thought Competitive advantage as Mediation Variable. *International Journal of Business, Law, and Education*, 5(2), 1581–1592. <https://doi.org/10.56442/ijble.v5i2.635>.
- Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., and Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, 5(1), 105–115.
- Saunders, M., Lewis, P., & Thornhill, A., (2012). *Research Methods for Business Students* (6th ed.) Harlow: Pearson Education.
- Schumpeter, J. (1949). *Economic Theory and Entrepreneurial History*. In R. R. Wohl (Ed.), *Change and the Entrepreneur: Postulates and the Patterns for Entrepreneurial History* (pp. 131-142). Cambridge, MA: Harvard University Press.
- Schumpeter, J.A. (1934) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credits, Interest, and the Business Cycle*.
- Sekaran, U. & Bougie, R. (2013). *Research Methods for Business: A Skill-Building approach*. 6th ED. West Sussex, UK: John Wiley & Sons Ltd.
- Sekaran, U. (2003). *Research Methods for Business : A Skill-building Approach* (Fourth Edi).
- Setiobudi, A. (2021). The effect of product innovation on interest with satisfaction as mediation. *Review of Management and Entrepreneurship*, 5(1), 45–58. <https://doi.org/10.37715/rme.v5i1.1640>.
- Shaikh, T. A., Rasool, T., & Lone, F. R. (2022). Towards leveraging the role of machine learning and artificial intelligence in precision agriculture and smart farming. *Computers and Electronics in Agriculture*, 198, 107119.

- Sharma, R., Kamble, S. S., Gunasekaran, A., Kumar, V., & Kumar, A. (2020). A systematic literature review on machine learning applications for sustainable agriculture supply chain performance. *Computers & Operations Research*, 119, 104926. .
<https://doi.org/10.1016/j.cor.2020.104926>.
- Sharma, S., Gahlawat, V. K., Rahul, K., Mor, R. S., & Malik, M. (2021). Sustainable innovations in the food industry through artificial intelligence and big data analytics. *Logistics*, 5(4), 66. <https://doi.org/10.3390/logistics5040066>.
- Sijabat, E. A. S., Nimran, U., Utami, H. N., & Prasetya, A. (2021). The Effects of Dynamic Capabilities, Entrepreneurial Creativity and Ambidextrous Innovation on Firm's Competitiveness. *Journal of Asian Finance, Economics and Business*, 8(1), 711–721.
<https://doi.org/10.13106/jafeb.2021.vol8.no1.711>.
- Singh, S., Kumar, R., Panchal, R., & Tiwari, M.K. (2020), "Impact of COVID-19 on logistics systems and disruptions in food supply chain", *International Journal of Production Research*. <https://doi.org/10.1080/00207543.2020.1792000>.
- Song, X., Zhang, X., Dong, G., Ding, H., Cui, X., Han, Y., Huang, H., & Wang, L. (2025). AI in food industry automation: applications and challenges. *Frontiers in Sustainable Food Systems*, 9. <https://doi.org/10.3389/fsufs.2025.1575430>.
- Storey, J., & Wright, P. M. (2023b). *Strategic Human Resource Management*.
<https://doi.org/10.4324/9781003364276>.
- Su, Y. H. (2023). The effect of product innovation, CSR, environmental sustainability and technology innovation on firm performance: a mediated moderation model. *Economic Research - Ekonomska Istrazivanja*, 36(2).
<https://doi.org/10.1080/1331677x.2023.2180417>.

- Sulaiman, K. S. (2021). Role of Palestine Standards Institution in improving the competitiveness advantage of local product (A survey study on the food industry). Published Master Thesis. Al-Quds Open University. دور مؤسسة المواصفات و المقاييس الفلسطينية في تحسين الميزة التنافسية للمنتج المحلي (دراسة ميدانية على الصناعات الغذائية).
- Susano, A., Subiantoro, H., & Meirinaldi, M. (2023). HR development through capacity building to increase company productivity. *Journal Indonesia Social Science*, 4(06), 499–508. <https://doi.org/10.59141/jiss.v4i06.838>.
- Taherdoost, H. (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science & Engineering Research*, 5(1), 53-63. <https://doi.org/10.30564/jmser.v5i1.4538>.
- Taneja, A., Nair, G., Joshi, M., Sharma, S., Sharma, S., Jambrak, A. R., ... & Phimolsiripol, Y. (2023). Artificial intelligence: Implications for the agri-food sector. *Agronomy*, 13(5), 1397. <https://doi.org/10.3390/agronomy13051397>.
- Tavassoli, S., and Karlsson, C. (2016). Innovation Strategies and Firm Performance: Simple or Complex Strategies? *Economics of Innovation and New Technology* 25 (7): 631–650. <https://doi.org/10.1080/10438599.2015.1108109>.
- Teece, D. J (2014). The Foundations of Enterprise Performance: Dynamic and Ordinary Capabilities in an (Economic) Theory of Firms. *Academy of Management Perspectives*, 28 (4): 328–352. <https://doi.org/10.5465/amp.2013.0116>.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.

- Teece, D. J., G. Pisano, and A. Shuen (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18 (7): 509– 533. https://doi.org/10.1142/9789812796929_0004.
- Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M., and Lauro, C. (2005). PLS path modeling. *Computational Statistics and Data Analysis*, 48(1), 159–205. <https://doi.org/10.1016/j.csda.2004.03.005>.
- Thomas, R., Shaw, G., & Page, S. J. (2011). Understanding small firms in tourism: A perspective on research trends and challenges. *Tourism management*, 32(5), 963-976. <https://doi.org/10.1016/j.tourman.2011.02.003>.
- Tidd, J., Bessant, J. and Pavitt, K. (1997): *Managing Innovation: Integrating Technological, Market, and Organizational Change*, Wiley, New York, NY.
- Tohidi, H., & Jabbari, M. M. (2012). The important of innovation and its crucial role in growth, survival and success of organizations. *Procedia Technology*, 1, 535-538. <https://doi.org/10.1016/j.protcy.2012.02.116>.
- Tse, Y. K., Zhang, M., Akhtar, P., & MacBryde, J. (2016). Embracing supply chain agility: an investigation in the electronics industry. *Supply Chain Management: An International Journal*, 21(1), 140-156. <https://doi.org/10.1108/SCM-06-2015-0237>.
- United Nations. (2008). *International Standard Industrial Classification of All Economic Activities, Revision 4 (Statistical Papers, Series M No.4/Rev.4)*. Department of Economic and Social Affairs, Statistics Division.
- Utterback, J.M. and Abernathy, W.J. (1975), “A dynamic model of process and product innovation”, *Omega*, 3 (6), pp. 639-656.

- Valérie, J. (2012). (Re) discovering the PLS approach in management science. *M@ N@ Gement*, 15(1), 102–123.
- Van de Ven, A. H. (1986). Central problems in the management of innovation. *Management Science*, 32(5), 590-607.
- Vanderroost, M., Ragaert, P., Devlieghere, F., & De Meulenaer, B. (2014). Intelligent food packaging: The next generation. *Trends in food science & technology*, 39(1), 47-62. <https://doi.org/10.1016/j.tifs.2014.06.009>.
- Vinzi, V. E., Trinchera, L., and Amato, S. (2010). *PLS Path Modeling: From Foundations to Recent Developments and Open Issues for Model Assessment and Improvement*. (V. Esposito Vinzi, W. W. Chin, J. Henseler, and H. Wang, Eds.). Berlin, Heidelberg: Springer Berlin Heidelberg. <https://doi.org/10.1007/978-3-540-32827-8>.
- Wang, C. K., & Ang, B. L. (2004). Determinants of venture performance in Singapore. *Journal of Small Business Management*, 42(4), 347–363. <https://doi.org/10.1111/j.1540-627x.2004.00116.x>.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171– 180. <https://doi.org/10.1002/smj.4250050207>.
- West, M.A. and Farr, J.L. (1990), “Innovation at work”, West, M.A. and Farr, J.L. (Eds.), *Innovation and Creativity at Work: Psychological and Organizational Strategies*. Wiley, Chichester, UK, pp. 3-14.
- Widya-Hasuti, A., Mardani, A., Streimikiene, D., Sharifara, A., & Cavallaro, F. (2018). The role of process innovation between firm-specific capabilities and sustainable innovation in SMEs: Empirical evidence from Indonesia. *Sustainability*, 10(7), 2244. <https://doi.org/10.3390/su10072244>.

- Belete, W. (2018). Patterns of innovation and knowledge in two Ethiopian informal-sector clusters: A study of the Shiro Meda handloom-weavers and Merkato shoemakers. *The African Journal of Information and Communication (AJIC)*, 22, 83–109. <https://doi.org/10.23962/10539/26170>.
- Yusuf, Y. Y., Sarhadi, M., & Gunasekaran, A. (1999). Agile manufacturing: The drivers, concepts and attributes. *International Journal of production economics*, 62(1-2), 33-43.
- Zott, C. (2003). Dynamic capabilities and the emergence of interindustry differential firm performance: insights from a simulation study. *Strategic management journal*, 24(2), 97-125. <https://doi.org/10.1002/smj.288>.

APPENDICES

APPENDIX A: INTRODUCTION LETTER

Dear sir/madam.

My name is Shahd Sandouka. I am a master student at Arab American University conducting research, under the supervision of Dr. Raed Najjar, about the role of product and process innovation in achieving competitive advantage in Palestinian food processing industries. This research studies the mediating impact of transformational capabilities in Palestinian food processing industries from the managers' perspective, in partial fulfillment of the requirements for a Master's degree in Strategic Planning and Fundraising from the Arab American University.

To achieve the study's objectives, I am providing you with this questionnaire. I kindly request that you complete each item thoughtfully and objectively, reflecting your perspective, to ensure the study's success. I would like you to complete the following survey. Your answers are completely confidential and results will not be reported in any way that individual responses can be identified, I will only use aggregate data.

Your participation is crucial for my data gathering.

Thank you for your cooperation.

Yours Faithfully.

Researcher: Shahd Sandouka

Supervisor: Dr. Raed Najjar

APPENDIX B: QUESTIONNAIRE

SECTION A: PERSONAL DETAILS

Could you please put a mark (×) in the appropriate place:

1. Gender:
Male ()
Female ()
2. Educational Level:
High school diploma or lower ()
Diploma ()
Bachelor's degree ()
Master's degree or higher ()
3. Management Level:
Top Management ()
Middle Management ()
First-Line Management ()
4. Years of Experience:
Less than 5 years ()
From 5 to less than 10 years ()
From 10 to less than 15 years ()
15 years or more ()
5. Size of the company you work for:
Micro: 1-4 employees
Small: 5-9 employees
Medium: 10-19 employees
Large: 20 employees or more
6. Age of the company you work for:
Less than 5 years ()
From 5 to less than 10 years ()
From 10 to less than 15 years ()
15 years or more ()
7. Food processing subsectors:
Production & preserving of meat products ()
Preserving of fruit & vegetables ()
Manufacture of vegetable & animal oil ()
Manufacture of dairy products ()
Manufacture of grain mill products ()
Manufacture of bakery products ()
Manufacture of chocolate & sugar product ()
Manufacture of macaroni, & similar products ()
Manufacture of soft drinks & mineral water ()

- Manufacture of prepared animal feeds ()
 Manufacture of other food products ()
8. Geographical area of the company you work for:
- Jerusalem ()
 Bethlehem ()
 Hebron ()
 Ramallah and Al-Bireh ()
 Nablus ()
 Salfit ()
 Qalqilya ()
 Tulkarm ()
 Tubas ()
 Jenin ()
 Jericho and the Jordan Valley ()

SECTION B:

Could you please indicate the extent to which you agree with the following statements by placing a mark (×) in the box that represents your opinion.

A. Product Innovation

	Statement/ Level of agreements	Strongly Disagree	Disagree	Neither	Agree	Strongly agree
1	The company seeks to provide new food products that have not been produced before (new to the company but not to the market).					
2	The company seeks to introduce new food products that have not previously been introduced to the market.					
3	The company improves its existing products based on customer feedback.					
4	The company seeks to improve its current products to help it enter new markets.					

5	The company seeks to develop new products to enter new markets that were previously untapped.					
6	The company regularly adds new variations to its existing product lines.					
7	The company encourages a culture of product innovation.					

B. Process Innovation

	Statement/ Level of agreements	Strongly Disagree	Disagree	Neither	Agree	Strongly agree
8	The company relies on modern and advanced production technologies.					
9	The company is interested in improving current production technologies.					
10	The company uses advanced machinery in the production process.					
11	The company uses automated applications to streamline production processes.					
12	The company is interested in training its employees to use the machines in the best way.					
13	The company seeks to modify current production methods.					
14	The company has the flexibility to manage production operations.					
15	The company encourages a culture of process innovation.					

C. The Complementarity between Product and Process Innovation

	Statement/ Level of agreements	Strongly Disagree	Disagree	Neither	Agree	Strongly agree
16	Innovations in the company's products require changes in production processes.					

17	Process innovation has helped developing new products.					
18	The company systematically coordinates product and process innovations to maximize the combined effect.					
19	Innovations in product and process reinforce each other.					
20	The company's strategy clearly considers the interaction between product and process innovation.					

D. Transformation Capabilities (Internal Learning and Reconfiguration)

	Statement/ Level of agreements	Strongly Disagree	Disagree	Neither	Agree	Strongly agree
21	The company is interested in research and development.					
22	The company encourages employees to share knowledge and lessons learned internally.					
23	The company benefits from previous experiences in developing products and processes.					
24	The company has a high capacity to adapt to market changes.					
25	The company can redeploy its resources effectively as needed.					
26	The company has clear mechanisms in place to restructure its operations to keep pace with changes.					
27	The company efficiently coordinates across its departments to implement strategic changes.					
28	The company is able to integrate capabilities from various fields to support new initiatives or projects.					

E. Competitive Advantage

	Statement/ Level of agreements	Strongly Disagree	Disagree	Neither	Agree	Strongly agree
29	The company is constantly striving to reduce production costs.					
30	The company seeks to continuously reduce the percentages/rates of damaged and defective products.					
31	The company has a clear policy to increase the quality of products.					
32	Company products consistently meet national standard specifications.					
33	The company seeks to distinguish its products from competitors.					
34	The company is flexible according to market changes.					
35	The company is committed to specific deadlines when delivering products to customers.					
36	The company aims to increase its market share compared with competitors.					
37	The company aims to enter new markets compared with competitors.					
38	The company has good financial resources compared with competitors that enable it to develop.					
39	The company develops its policies to ensure increased customer satisfaction compared with competitors.					

APPENDIX C: ARABIC INTRODUCTION LETTER

تحية طيبة وبعد،

تقوم الباحثة بإجراء دراسة بعنوان "دور الابتكار في المنتجات والعمليات في تحقيق الميزة التنافسية: الأثر الوسيط للقدرات التحويلية في صناعات تجهيز الأغذية الفلسطينية من وجهة نظر المدراء"، وذلك للحصول على درجة الماجستير في برنامج التخطيط الاستراتيجي وتجنيد الأموال من الجامعة العربية الأمريكية.

ولتحقيق أهداف الدراسة، أضع بين يديك هذه الاستبانة، آملاً منك تعبئة فقرات هذه الاستبانة بما يتوافق مع وجهة نظرك باهتمام وموضوعية، حتى يتسنى تحقيق الأهداف المرجوة من هذه الدراسة، والإجابة عن فقراتها كافة دون استثناء، علماً بأن هذه البيانات ستستخدم لأغراض البحث العلمي فقط.

شاكرة لكم حسن تعاونكم

الباحثة: شهد صندوقة

إشراف : د. رائد نجار

APPENDIX D: ARABIC QUESTIONNAIRE

القسم الأول: البيانات الشخصية والعامة (المتغيرات التصنيفية)

يرجى التكرم بوضع إشارة (×) في المكان المناسب:

1. النوع الاجتماعي:

() ذكر

() انثى

2. المؤهل العلمي:

() توجيهي فأقل

() دبلوم

() بكالوريوس

() ماجستير فأعلى

3. المستوى الإداري:

() إدارة عليا

() إدارة متوسطة

() إدارة دنيا

4. سنوات الخبرة:

() أقل من 5 سنوات

() من 5 سنوات الي أقل من 10 سنوات

() من 10 سنوات إلى أقل من 15 سنة

() 15 سنة فأكثر

5- حجم الشركة التي تعمل بها:

() متناهية الصغر: تشغل من موظف الى 4 موظفين

() صغيرة: تشغل من 5 الى 9 موظفين

() متوسطة: تشغل من 10 الى 19 موظف

() كبيرة: تشغل 20 موظف فأكثر

6- عمر الشركة التي تعمل بها:

() أقل من 5 سنوات

() من 5 الى اقل من 10 سنوات

() من 10 سنوات إلى أقل من 15 سنة

() 15 سنة فأكثر

7- مجال الصناعات الغذائية:

() إنتاج وحفظ اللحوم ومنتجاتها

() تجهيز وحفظ الفواكه والخضروات

() صنع الزيوت والدهون النباتية والحيوانية.

() صنع منتجات الحليب والألبان

() صنع منتجات طواحين الحبوب وصنع النشاء

() صنع منتجات المخازير.

() صنع الكاكاو، والشوكولاتة والحلويات السكرية

() صنع المعكرونة والشعيرية

() صنع المشروبات الخفيفة والمياه المعدنية.

() صنع أعلاف حيوانية محضرة.

() صنع منتجات الأغذية الأخرى غير المصنفة في موضع آخر.

8- المنطقة الجغرافية للشركة التي تعمل بها:

() القدس.

() بيت لحم.

() الخليل.

() رام الله و البيرة.

() نابلس

() سلفيت

() قلقيلية

() طولكرم

() طوباس

() جنين

() أريحا و الأغوار

القسم الثاني: أرجو الإشارة إلى مدى موافقتك على العبارات التالية بوضع إشارة (×) في المربع الذي يمثل رأيك.

أ. ابتكار المنتجات

	العبارات	موافق بشدة	موافق	محايد	معارض	معارض بشدة
1	تسعى الشركة الى تقديم منتجات غذائية جديدة لم يسبق إنتاجها (جديدة بالنسبة للشركة و لكنها موجودة بالسوق)					
2	تسعى الشركة الى تقديم منتجات غذائية جديدة لم يسبق طرحها في السوق.					
3	تقوم الشركة بتحسين منتجاتها الحالية بناء على آراء العملاء.					
4	تسعى الشركة إلى تحسين منتجاتها الحالية ليساعدها على دخول أسواق جديدة					
5	تسعى الشركة الى تطوير منتجات جديدة لدخول أسواق جديدة لم تكن مستغلة سابقًا.					
6	تضيف الشركة بانتظام تنويعات جديدة على خطوط المنتجات الحالية.					
7	تشجع الشركة ثقافة الابتكار في المنتجات.					

ب. ابتكار العمليات

	العبارات	موافق بشدة	موافق	محايد	معارض	معارض بشدة
8	تعتمد الشركة على تقنيات إنتاج حديثة ومتطورة.					

					9 تهتم الشركة بتحسين تقنيات الانتاج الحالية.
					10 تستخدم الشركة آلات متطورة في عملية الانتاج.
					11 نستخدم تطبيقات آلية لتبسيط عمليات الإنتاج.
					12 تهتم الشركة بتدريب موظفيها لاستخدام الالات بالطريقة المثلى.
					13 تسعى الشركة إلى تعديل أساليب الانتاج الحالية.
					14 تمتلك الشركة المرونة في إدارة العمليات الإنتاجية.
					15 تشجع الشركة ثقافة الابتكار في العمليات.

ج. تكامل ابتكار المنتجات و ابتكار العمليات

معارض بشدة	معارض	محايد	موافق	موافق بشدة	العبارات	
					16 الابتكارات في منتجات الشركة يتطلب تغييرات في العمليات الإنتاجية	
					17 الابتكارات في العمليات ساعدت في تطوير منتجات جديدة.	
					18 تنسق الشركة بين ابتكارات المنتجات والعمليات بشكل منهجي لتحقيق أقصى استفادة من التأثير المشترك.	
					19 الابتكارات في المنتج والعمليات تعزز بعضها البعض.	

					20 تُراعي الشركة في استراتيجيتها التفاعل بين ابتكار المنتجات و العمليات بشكل واضح.
--	--	--	--	--	--

د. القدرات التحويلية (التعلم الداخلي و إعادة التشكيل)

	العبارات	موافق بشدة	موافق	محايد	معارض بشدة
21	تهتم الشركة بالبحث و التطوير .				
22	تشجع الشركة الموظفين على تبادل المعرفة والدروس المستفادة داخليًا.				
23	تستفيد الشركة من التجارب السابقة في تطوير المنتجات و العمليات.				
24	تمتلك الشركة قدرات عالية على التكيف مع متغيرات السوق.				
25	تستطيع الشركة إعادة توزيع مواردها بالشكل الفعال حسب الحاجة.				
26	تمتلك الشركة آليات واضحة لإعادة هيكلة عملياتها لمواكبة التغيرات.				
27	تنسق الشركة بكفاءة بين أقسامها لتنفيذ التغييرات الاستراتيجية.				
28	الشركة قادرة على دمج القدرات من مختلف المجالات لدعم المبادرات أو المشاريع الجديدة.				

هـ. الميزة التنافسية

	العبارات	موافق بشدة	موافق	محايد	معارض بشدة
--	----------	---------------	-------	-------	---------------

					29	تسعى الشركة إلى خفض تكاليف الإنتاج باستمرار.
					30	تسعى الشركة إلى خفض نسب/ معدلات المنتجات التالفة و المعيبة باستمرار.
					31	لدى الشركة سياسة واضحة لزيادة جودة المنتجات.
					32	تسعى الشركة إلى تقديم منتجاتها بمواصفات تتطابق مع المواصفات القياسية الوطنية.
					33	تسعى الشركة إلى التميز في منتجاتها عن المنافسين.
					34	تتسم الشركة بالمرونة تبعا لمتغيرات السوق.
					35	تلتزم الشركة بمواعيد محددة عند تسليم المنتجات إلى العملاء.
					36	تهدف الشركة إلى زيادة حصتها السوقية مقارنة مع المنافسين.
					37	مقارنة مع تهدف الشركة إلى دخول أسواق جديدة.
					38	مقارنة مع المنافسين تمتلك الشركة موارد مالية جيدة تمكنها من التطوير.
					39	تطور الشركة سياساتها بما يضمن زيادة رضا العملاء مقارنة مع المنافسين.

دور الابتكار في المنتجات و العمليات في تحقيق الميزة التنافسية في قطاع الصناعات الغذائية الفلسطينية

شهد صادق أحمد صندوقة

أسماء لجنة الإشراف:

د. رائد نجار

د. رائد شوملي

د. راني شهوان

الملخص باللغة العربية

تبحث هذه الدراسة في أثر ابتكار المنتجات والعمليات على الميزة التنافسية في قطاع صناعات الغذائية الفلسطينية في الضفة الغربية. كما تدرس الدور الوسيط للقدرة الديناميكية - وتحديدًا قدرات التعلم الداخلي وإعادة التشكيل - في هذه العلاقات. تهدف الدراسة إلى تحديد كيفية تفاعل أنواع الابتكار المختلفة والقدرة التنظيمية لتعزيز المواقع التنافسية للشركات في بيئة سوقية مليئة بالتحديات والديناميكيات.

اعتمدت الدراسة تصميمًا بحثيًا تفسيريًا وارتباطيًا، استهدف مديري 72 شركة عاملة في هذا القطاع. جُمعت البيانات من خلال استبيانات إلكترونية مهيكلية، أسفرت عن 204 إجابات صحيحة. أُجري التحليل باستخدام برنامج Smart-PLS، مع تطبيق الإحصاء الوصفي، وتقييم نموذج القياس، واختبار النموذج الهيكلي، وتحليل الوساطة للتحقق من صحة العلاقات المقترحة.

كشفت النتائج أن كلاً من ابتكار المنتج والعمليات يُحدث تأثيرات إيجابية كبيرة على الميزة التنافسية، في حين أن تطبيقهما معًا (تكاملهما) لا يُحدث تأثيرًا أقوى. علاوة على ذلك، وُجد أن قدرات التعلم الداخلي تؤثر بشكل كبير على العلاقة بين ابتكار المنتج والميزة التنافسية، بينما تؤثر قدرات إعادة التشكيل بشكل كبير على العلاقة بين ابتكار العمليات والميزة التنافسية. تُسلط هذه النتائج الضوء على أن القدرات الديناميكية تُشكّل آليات حيوية يُترجم من خلالها الابتكار إلى قدرة تنافسية مستدامة.

وتخلص الدراسة إلى أن تعزيز مبادرات الابتكار، إلى جانب عمليات التعلم وإعادة التشكيل الداخلية، يُعزز قدرة الشركات على التكيف وقدرتها على الاستجابة للسوق. وبناءً على ذلك، تُوصي الدراسة المدراء بإعطاء الأولوية للتعلم المستمر، ومرونة الموارد، والاستراتيجيات المُركّزة على الابتكار لتحقيق ميزة تنافسية طويلة الأجل في قطاع الصناعات الغذائية الفلسطينية.

الكلمات المفتاحية: ابتكار المنتجات، ابتكار العمليات، القدرات الديناميكية، التعلم الداخلي، قدرات إعادة التشكيل.