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**Using Big Data for Enhancing a Competitive Strategy: The Case of
Dairy Industry in Palestine**

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**Using Big Data for Enhancing a Competitive Strategy: The Case of
Dairy Industry in Palestine**

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1445/2023

Al-Quds University
Deanship of Graduate Studies
Faculty of Business and Economics



Thesis Approval

Using Big Data for Enhancing a Competitive Strategy: The Case of Dairy Industry in Palestine

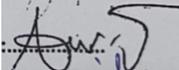
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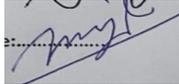
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Jerusalem – Palestine

1445/2023

Dedication

**To the teacher of all humankind, our Master Muhammad, may God bless
him and grant him peace**

To my beloved parents

To my first support and role model, my beloved father ... Professor Ibrahim Awad

To the symbol of giving and love, my beloved mother ... Sahar Awad

To my beloved husband

To my companion and soul mate, my dear husband ... Engineer Muhammad Marwan

To my mother-in-law and my mother-in-law

To the pure hearts and the symbol of giving ... My uncle Marwan, my aunt Inaam

To my dear brothers and sisters

To my beloved brothers.. Dr. Muhammad, Dr. Mahmoud, Abd-Al Razzaq, Diaa

To my beautiful sisters... Huda, Safia, Remas

To my beloved children and my beautiful daughter

To my great children.. Marwan, Ibrahim

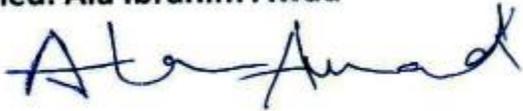
To my beautiful daughter, Inaam

Ala Ibrahim Awad

Declaration:

I certify that this thesis submitted for the degree of Master, is the result of my own research, except where otherwise acknowledged, and that this study, (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed: Ala Ibrahim Awad

A handwritten signature in black ink that reads "Ala Ibrahim Awad". The signature is written in a cursive style with a large initial 'A'.

Ala Ibrahim Mohammad Awad

Date: 6/12/2023

Acknowledgment

Firstly, I thank God Almighty for bestowing me the gift of reason and the strength to complete this dissertation.

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Last but not least, I would like to extend my sincere thanks and appreciation to all who contributed, advised, or guided me to shed light on this study.

Researcher: Ala Ibrahim Awad

Using Big Data for Enhancing a Competitive Strategy: The Case Dairy Industry in Palestine

Prepared by: Ala Ibrahim Awad

Supervisor: Prof. Mahmmoud EL-Jafari

ملخص الدراسة باللغة الإنجليزية

This study aims to clarify the impact of big data technology on the competitive advantage of Palestinian dairy companies. The descriptive and interpretive approach was used to achieve this study's objectives. A comprehensive survey was applied to the study population, which numbered 15 dairy factories. The sample of the study included the five largest dairy factories in Palestine, namely Al-Junaidi Company in Hebron, Al-Jabrini Company in Hebron, Hamouda Company in Jerusalem, Candia Company in Ramallah, and the dairy factory located within the Arab Project Company in Jericho.

The researcher prepared a questionnaire to obtain the necessary data for this study, and the data was collected and processed statistically using the Statistical Package for Social Sciences SPSS program. In addition, questions were developed for interviews with employees of dairy companies, and the data collected were analyzed using the VRIO model.

The study reached several results, the most important of which are: data collection and analysis helps companies increase their competitive advantage because it helps to know the market more, know customers' needs more accurately, and monitor competitors in the market. The results also showed that no dairy company adopts a department dedicated to data collection and analysis using modern methods and that there is an insufficient understanding among employees about big data technology and its importance in increasing competitive advantage and market share.

In light of the results of the study, one could recommend the need to carry out awareness courses and workshops that could help employees to learn about big data technology. It is highly importance to learn how to deal with big data that every dairy company should own a specialized department for collecting, processing and analyzing data using modern methods.

موضوع الرسالة: استخدام البيانات الضخمة لتعزيز الاستراتيجية التنافسية: حالة صناعة الألبان في فلسطين

إعداد الطالبة : الاء ابراهيم محمد عوض

المشرف:أ.د. محمود الجعفري

ملخص الدراسة باللغة العربية

هدفت هذه الدراسة إلى توضيح تأثير تقنية البيانات الضخمة على تعزيز الميزة التنافسية لشركات الألبان الفلسطينية. ولتحقيق أهداف هذه الدراسة تم استخدام المنهج الوصفي والتفسري ، وتم تطبيق مسح شامل على مجتمع الدراسة الذي بلغ 15 مصنعا ألبان ، وشملت عينة الدراسة أكبر خمسة مصانع ألبان في فلسطين ، وهي شركة الجنيدي في الخليل ، وشركة الجبرني في الخليل ، وشركة حمودة بالقدس ، شركة كانديا في رام الله ، ومصنع الألبان الكائن ضمن شركة المشروع العربي في أريحا.

وقد تم إعداد استبانة كأداة رئيسية للحصول على البيانات اللازمة لهذه الدراسة ، وتم جمع البيانات ومعالجتها إحصائياً باستخدام برنامج الرزم الإحصائية للعلوم الاجتماعية SPSS. بالإضافة إلى ذلك ، تم وضع أسئلة لإجراء مقابلات مع موظفي شركات الألبان ، وتم تحليل البيانات التي تم جمعها باستخدام نموذج VRIO.

توصلت الدراسة إلى عدة نتائج أهمها: أن ذلك النموذج يساعد في كيفية جمع البيانات وتحليلها الشركات على زيادة ميزتها التنافسية لأنها تساعد على معرفة السوق بشكل أكبر ومعرفة احتياجات العملاء بشكل أكثر دقة ومراقبة المنافسين في السوق. كما أظهرت النتائج عدم وجود شركة ألبان تتبنى قسماً مخصصاً لجمع البيانات وتحليلها باستخدام الأساليب الحديثة ، وعدم وجود فهم كافٍ بين الموظفين حول تقنية البيانات الضخمة وأهميتها في زيادة الميزة التنافسية والحصة السوقية.

في ضوء نتائج الدراسة أوصت الدراسة بضرورة إجراء دورات توعوية وورش عمل تساعد الموظفين على التعرف على تقنية البيانات الضخمة وأهميتها وكيفية التعامل معها ، وأن يكون لكل شركة ألبان قسم متخصص لجمع ومعالجة وتحليل البيانات باستخدام الأساليب الحديثة.

Terminology of study

Big Data: It is data that contains a great variety, comes in increasing sizes and faster speed, and is difficult to process by traditional data processing programs (Gillis, 2021).

Competitive Strategy: It is a set of policies and procedures that a business uses to gain a competitive advantage in the market (Indeed Editorial Team, 2023).

Market Share: Defined as the total customer purchases of a company's products, it is also considered as the percentage of total sales generated by the company. In addition, market share helps give a general idea of the company's size about its market and competitors (Hayes, 2022).

Value Proposition: It is a statement that identifies the benefits that the company's products and services will provide to its customers (Pratt & Lebeaux, 2021).

Capabilities: A core competency refers to the capabilities, skills, and resources that a company possesses. The company's core competency must be outstanding and cannot be imitated by its competitors (Pratt R. 2021).

Core Competency: The Company's capabilities are the basic building blocks of the company in activating the strategic goal and achieving the company's business results (Capstera Staff, 2023).

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Abbreviations

BD: Big Data

5V's: Volume, Variety, Velocity, Value, Veracity

WBGS: West Bank and Gaza Strip

GDP: Gross Domestic Product

DFS: Distributed File System

SVM: Support Vector Machine

MPP: Massive Parallel Processing

NPD: New Products Developing

NFPD: New food products developing

SPSS: Statistical Package for the Social Sciences

VRIO: Value, Rare, Inimitable, Organized

Chapter one: Part one - Introduction

1.1 Research background

Big data are data sets that are larger than they can be processed using traditional data processing applications. In particular, they have the following three characteristics: large, diverse (from structured or unstructured text, images, audio, and video). Also, they are accelerated, updated, and changed over time. Big data is classified according to the principle (5V's). They consist of volume, variety, velocity, value, and veracity. Concerning volume, it means the volume of data that is extracted from a source. It indicates the number of terabytes of data that are collected daily from the sources, and it is considered the most important characteristic in big data analysis. On the other hand, variety means the diversity of the extracted data, which includes structured data and unstructured data such as images, video clips, sound recordings, etc.. Velocity means how fast data production and change and the speed required to process it (Dwekat, 2019). The fourth principle, veracity, implies the accuracy of data and information assets, which often determines executive-level confidence. The final principle, value, comes from insight discovery and pattern recognition, leading to more operations that cover effective, stronger customer relationships (Teradata, 2022).

Big data is essential for organizations to gain a competitive advantage in all areas, such as development, marketing, industry, media, and politics. That is why Internet intelligence expert Andreas Weigand called it the new oil to be refined (Rangaiah, 2021). It provides a competitive advantage for organizations once they use it for analysis and predictions. Also, it enables organizations to understand customers' behavior in-depth. Thus, the process will lead to making adequate and accurate organizational decisions based on information extracted from customers' databases. As a result of an increase in improving achieve efficiency and consequently maxing and working on marketing campaigns well.

Using and analyzing and benefiting from the information generated by big data would enhance the competitive advantage of the food industry (Williamson, 2021). Big data would assist business leaders in coming up with the right decisions. They include marketing campaigns and enhancing demand for products. In addition, big data would empower firms to keep updating their competitors on growth rates, control quality, and assess purchasing and price stability decisions. Also, big data would help owners to keep track of highly paramount factors like the

quality of a product by determining if the product has been altered in terms of its ingredients. In addition, measurements are altered or even in case of less apparent causes like seasonal factors or changes in storage method (Rangaiah, 2021).

The sector of food industry companies is essential in the Palestinian economy, and these companies need to have a competitive advantage by keeping pace with technological developments, such as using and benefiting from big data to enhance their competitive capabilities. To stay competitive, food and beverage companies should highly consider implementing data analytical tools. Companies that have unbiased and analytical insight into their consumers and overall operations will have a severe advantage over their competitors ((Rangaiah, 2021).

Moreover, the Palestinian food industry sector is characterized by its vitality and ability to be developed (Wafa, 2014). Therefore, in light of the great development witnessed in the field of big data and the global trends towards it, should keep pace with this development and strive to invest in it. As a result, enhancing the competitive advantage, and increasing the market share of the food products in the local markets as shown in the table below (Palestinian Food Industries Federation,2016). The visual representation depicts the percentage of market share held by various industries in the domestic food market. It provides an overview of the relative size of each industry in terms of market share.

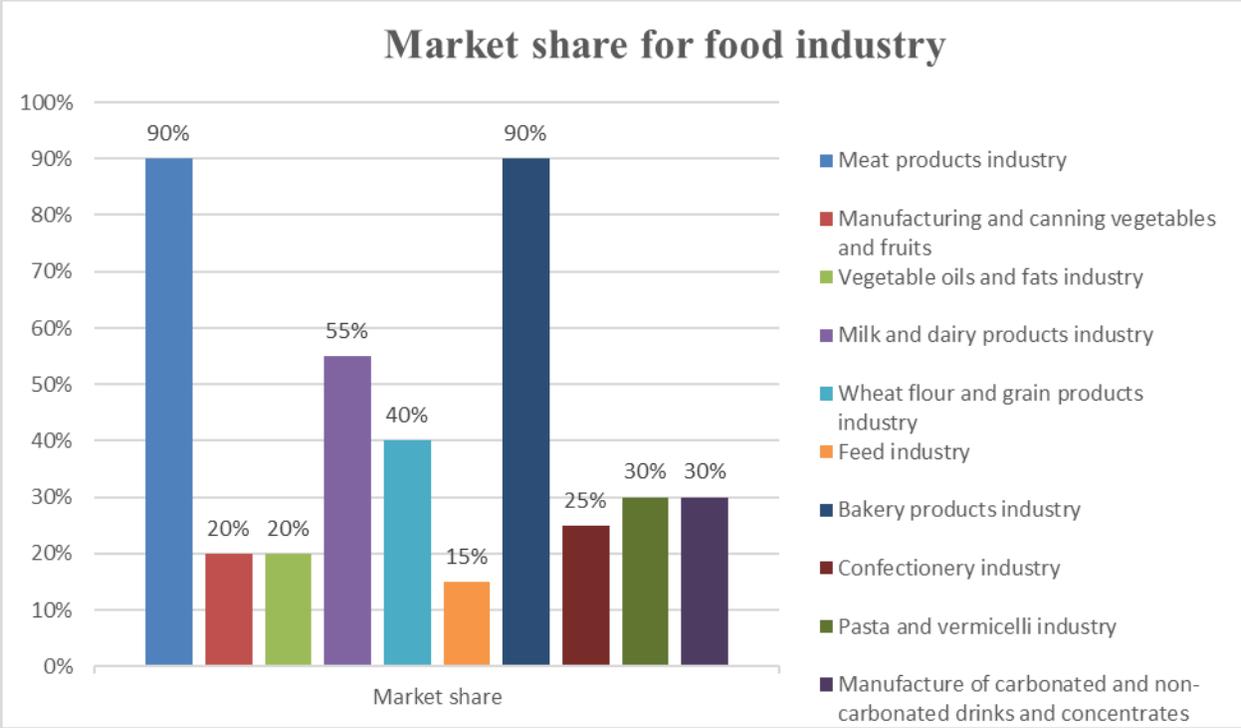


Figure 1.1: Market share for food industry

In this study, the focus will take place on the dairy industry in Palestine. Despite the progress of the dairy industry in Palestine and the emergence of many dairy factories, its market share is still relatively low. The market share of dairy factories has reached nearly 55%, so they should keep pace with new technological developments which will enhance the competitive advantage and increase the market share, mainly, when they use big data in decision-making.

1.2 Research problem

The food industry is one of the most important economic sectors in Palestine. It occupies excellent importance for the Palestinian economy. That could be attributed to its ability to provide the Palestinian market with many job opportunities necessary to employ the local labor force. Food industries create jobs for more than 15 thousand workers. The number of Palestinian food establishments is approximately 14% of the total Palestinian establishments,

and they contributed more than 24% of the value of local industrial production and about 22% of the entire Palestinian exports merchandise [(Palestinian Central Bureau of Statistics, 2014)]. In contrast, food imports account for more than 65% of food consumption expenditures consumption consumers' needs (Palestinian Central Bureau of Statistics, Wafa, 2015).

The dairy industry is an essential part of the Palestinian food industry, as the number of factories has reached 41, employing more than 2324 workers, and its market share is 55% (Palestinian Food Industries Federation, 2016). Despite this, the milk and dairy industry suffers from many challenges and problems, most notably the Palestinian consumer's confidence in the products of Israeli companies such as Israel Tnuva dairy products. Israel's dairy industry's market share in the Palestinian market has reached nearly 50% (Alwan, 2016). Accordingly, milk and dairy factories must increase their competitive advantage by keeping pace with new developments to improve the quality and diversity of their products and work to innovate new products to meet the needs of their customers.

For the time being, a competitive position in local, regional, and international markets allows the food industry to outperform its competitors by providing products with high-quality value to customers (Williamson, 2021). Accordingly, food industry companies are always seeking to obtain a competitive advantage in production for the local markets and exports to international markets by taking advantage of modern technology services such as using big data (Rangaiah, 2021).

The volume of big data and its complex and changing nature make dealing with it difficult, mainly when food industry companies use big data. Incredible speed and accuracy are required in the analysis and processing to reach sound results and make timely decisions immediately. In addition, the cost of working on big data is very high because it requires substantial storage space, a lot of expenses for developing new tools for analysis and processing, and the need for analysts and specialists in this field. Big data would help provide a highly competitive advantage for companies if they can benefit from them. That could be attributed to the fact that big data would provide a deeper understanding of customer behavior. Consequently, the analysis will lead to making appropriate decisions within the company more effectively. It is based on information extracted from customer databases, thus increasing efficiency and profit and reducing losses (Dwekat, 2019). Given that, the research gap of this study focuses on developing an effective competitive strategy for food manufacturing companies using big data.

1.3 Objectives of the study

Main objective:

The study's main objective is to determine how using big data will lead to developing competitive strategies for the dairy industry in Palestine.

Specific Objectives:

The specific objectives that lead to implementing the research process aim to examine how to enhance the competitiveness of dairy industry companies in Palestine. These objectives are outlined below:

- Study the current competitive position of dairy industry companies.
- Clarify the impact of big data on the value proposition of the dairy industry.
- Clarify the impact of big data on the core competency of dairy industry companies.
- Clarify the impact of big data on the capabilities of dairy industry companies.
- Come up with several policies and recommendations necessary for the dairy industry's competitiveness.

1.4 Research questions

This study is developed to provide answers to the following questions:

Main question:

How will the utilization of big data lead to building a competitive strategy for the dairy products industry in Palestine?

Specific questions:

Several questions are derived from the main question:

- How is big data used, and how does it help to gain a competitive advantage?
- How could the current competitive position of dairy industry companies be improved?
- To what extent does big data, i.e., volume, variety, velocity, veracity, and value, affect the value proposition for dairy industry companies?
- How the effects of big data could improve competency for dairy industry companies?
- How could big data enhance affects the capabilities of dairy industry companies?

1. 5 Significance of the study

This study has an essential value to both policy makers and researchers, so that we will present the practical and theoretical significance of this study below:

Practical Significance:

- The study provides updated information for decision-makers to build a competitive strategy to enhance the competitive position of dairy industry companies in Palestine.
- Giving decision makers an idea about big data, i.e., volume, variety, velocity, veracity, value, and how to benefit from it in enhancing the competitiveness of dairy industry companies.
- Enhancing the market share of this dairy industry at the local level as well as at the regional and international levels.

Theoretical Significance:

- To use big data to improve the competitiveness of dairy industries in Palestine by achieving a deeper understanding of customers and their requirements and developing new products.
- To clarify how to use big data to enhance the dairy industry's competitiveness.
- To provide data and information base for researchers about the relationship using big data and enhancing competitiveness.

1.6 Study model

The model below shows the relationships between the study variable:

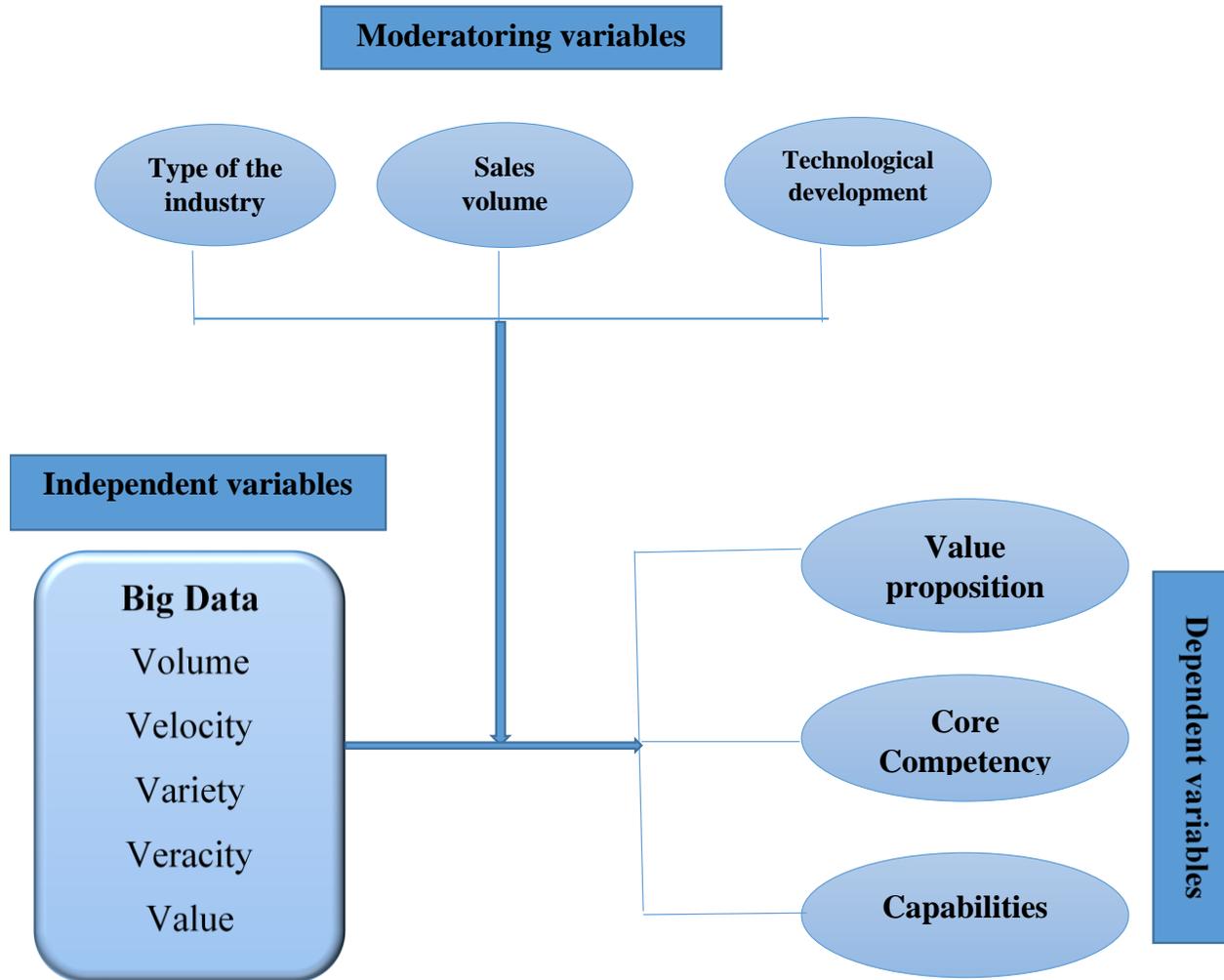


Figure 1.2: The proposed Study

Figure 1.2: The proposed study

1.7 Description of the Study variables

It is necessary to clarify the relationships that are likely to exist between variables concerning the previous studies related to the study's subject. Variables inserted in the model are defined as follows:

1) **Dependent variable:** The variable of primary interest of the study, such as sales and market share. It depends on the independent variable and changes in response to changes in other variables (Saunders et al., 2016). This variable is represented in this study:

- **Value proposition:** Determining customers the value of dairy products in Palestine and the degree to which they differ and distinguish them from competitors.
- **Core Competency:** Determining the core competencies of dairy industry companies in Palestine and how to develop and exploit them to succeed in facing competitors.
- **Capabilities:** Dairy industry companies in Palestine must effectively execute their plans, manage their workforce, and have the necessary expertise to carry out their crucial tasks.

2) **Independent variable:** The variable that influences the dependent variable in either a positive or negative way (Cooper and Schindler, 2014) and causes changes in the dependent variable but is not affected by it (Saunders et al., 2016). This study represents this variable by the big data, i.e., volume, variety, velocity, veracity, and value.

3) **Moderator variable:** It acts as a Moderator between the independent and dependent variables and transmits an independent variable's effect to a dependent variable (Saunders et al., 2016). This variable is represented here by the type of industry, Sales Volume, and Technological development.

Chapter two: Theory & literature review

In this study, we will discuss the three main variables: the food industry sector in Palestine, Big Data, competitiveness, value proposition, core competency, and capabilities, which previous studies will support.

2.1 The food industry sector in Palestine

2.1.1 An overview of the industrial sector in Palestine

The industrial sector is considered one of the main pillars of the Palestinian economy. It could be attributed to its multiple and prominent contributions to employment and GDP. Also, the significance of this sector arises from its role as the driver of economic growth and development despite the obstacles faced by the industrial sector. A large part of the state's strategy is due to its importance in achieving reasonable economic growth rates, creating job opportunities, and providing and developing local products to meet internal needs and external export. The industrial sector plays a large part in the state's strategy.

The number of industrial institutions operating in Palestine was 20,710 institutions (15,899 in the West Bank, 4,811 Foundations in the Gaza Strip). On the other hand, the number of workers in 2020 industrial institutions in Palestine was 109,640 workers. In addition, industry sector activities contribute 13% of the GDP. (Palestinian Central Bureau of Statistics, 2021).

2.1.2 Food industries in Palestine

The food industry is essential in the Palestinian economy because it supports political, social, and economic development. It is exporting many food products to Palestinian industrial facilities. In addition, the food industry is a strong supporter that provides the national economy with the capital necessary for growth and development, provides the Palestinian market with many job opportunities required to employ the Palestinian labor force, and combat unemployment.

The number of food establishments reached 14% of the total industrial establishments. They provide 15,000 job opportunities, suffer from critical their share of Palestinian exports amounted to 22%, and the sector's output constitutes 24% of the GDP (Palestinian National Information Center - Wafa, 2014).

However, Palestine is a business environment for new projects or expansion of existing projects within the food industry. Accordingly, there is an increase in the share of Palestinian food products (food and beverages) in the local market, reaching approximately 70% in 2016. This is due to government policies encouraging local investment and marketing campaigns to promote the culture of consuming local food and beverages. Therefore, the Palestinian food industries' products are marketed in all WBSG governorates. As for the export, 85% of the exported products are exported to the Israeli market, and the rest are exported to the Middle East and Europe, where the exports for 2016 amounted to one billion US dollars (Palestinian Food Industries Federation, 2016).

2.1.3 Subsectors operating in the food industry

- **Meat products industry:** 18 factories employing more than 556 workers, and the volume of investment in this industry is more than \$27.3 million. The market share of Palestinian meat products is 90% of the market size.
- **Manufacturing and canning vegetables and fruits:** there are 20 operating factories employing more than 557 workers, the volume of investment in this industry amounted to more than 36.6 million dollars, and the market share of Palestinian fruits and vegetable products is 20% of the market size.
- **Vegetable oils and fats industry:** There are 13 factories in this sector, employing more than 302 workers, and the volume of investment in this industry is more than \$18.7 million. The market share of Palestinian vegetable oils and fats products is 20% of the market size.
- **Milk and dairy products industry:** there are 46 operating factories, employing more than 2324 workers, the volume of investment in this industry amounted to more than 67 million dollars, and the market share of Palestinian Milk and dairy products is 55% of the market size.
- **Wheat flour and grain products industry:** There are 12 factories in this sector, employing more than 302 workers, and the volume of investment in this industry is more than \$48.7 million. The market share of Palestinian wheat flour and grain products is 30% of the market size.

- **Feed industry:** 26 operating factories employing more than 427 workers, the volume of investment in this industry amounted to more than 28.9 million dollars, and the market share of Palestinian feed products is 15% of the market size.
- **Bakery products industry:** The number of operating bakeries is 1500, employing more than 5900 workers, and the volume of investment in this industry is more than \$100 million. The market share of Palestinian bakery products is 90% of the market size.
- **Confectionery industry:** 33 operating factories employing more than 1075 workers, the volume of investment in this industry amounted to more than 22.6 million dollars, and the market share of Palestinian confectionery products is 25% of the market size.
- **Pasta and vermicelli industry:** 4 operating factories, employing more than 62 workers, and the volume of investment in this industry amounted to more than 24.7 million dollars, and the market share of Palestinian pasta and vermicelli products is 30% of the market size.
- **Manufacture of carbonated and non-carbonated drinks and concentrates:** there are 24 operating factories, employing more than 1414 workers, the volume of investment in this industry amounted to more than 33.5 million dollars, and the market share of Palestinian manufacture of carbonated and non-carbonated drinks and concentrates products is 30% of the market size.

2.1.4 Studies focus on solutions to the food and dairy industries' challenges and problems

Mustafa. (2005) prepared a study entitled "Competitiveness in the Palestinian Food Industries Horizons and Development. "

This study aims to develop a strategy for food processing, considering the reality of Palestinian food industries and the ways to support and develop them. This study relied on the descriptive-analytical approach and relied on documentary and literary sources as a tool for collecting information to analyze. Interviews were conducted with some food industry companies, and a questionnaire was designed specifically for this study to collect primary data. The study reached many results, most notably. Palestinian food industries possess a competitive ability at an average level. On the other hand, the food industries suffer from many problems, such as the

large volume of imported raw materials needed for the industry and a decrease in specialized skills in the food industries. The study recommended the necessity of increasing the focus on the food industries and working to raise the efficiency and performance of the food industries.

Mostafa. (2011) prepared a study entitled "Food Industries in Hebron Governorate, Reality, and Challenges".

This study aimed to identify the reality of the food industries in Hebron Governorate, the extent of their contribution to the industrial sector, and to present the problems they suffer from. This study relied on the descriptive analytical method using a questionnaire to collect primary data.

The study concludes that the food industry is somewhat reasonable. However, it suffers from many problems, the most important of which is the weak local demand for locally manufactured food products due to the reliance on Israeli products. The results showed that there is a weakness in the application of the quality system to the food industries. Accordingly, the study recommended that the food industry focus on controlling product quality and drawing up a marketing plan to overcome competition and increase its capabilities.

Abubaker. (2021) prepared a study entitled "The Impact of Marketing Mix Elements on Consumer Loyalty: An Applied Case on Dairy Products in the West Bank".

This study aims to determine the current situation of local dairy products in the West Bank and the impact of the marketing mix elements on consumer loyalty. This study used the descriptive analytical approach, and the data was collected through interviews with dairy company employees and the distribution of a questionnaire to the owners of shops that sell dairy products to consumers, and the data from the Palestinian Statistics Centre was used. The study reached many results, most notably that the marketing mix elements significantly impact consumer loyalty to dairy products, and a high percentage of consumers have high confidence in the quality of local dairy products. The study recommended the need to improve the quality and appearance of local dairy products to provide products worthy of the Palestinian consumer's confidence and push them to prefer them over Israeli and imported products.

After reviewing several previous studies related to the dairy sector in Palestine, it is concluded that increasing and enhancing market share were priorities to develop the industry's competitive position. Therefore, this study will follow a new methodology, big data, and how it can be used

and exploited to improve the dairy sector in Palestine and increase its competitiveness and market share.

2.2 Big Data

2.2.1 Studies that focus on the importance of using big data

Kubina et al. (2015) prepared a study entitled "Use of big data for the Company's competitive advantage".

This study aimed to enhance competitive advantage by using big data, research, and innovation methods based on analysis of literature and research. This study used the descriptive analytical approach through content analysis, a document study, comparative analysis, and empirical research. The study reached several results, primarily that the correct successful use of information is the basis for getting a competitive advantage in the market. The study recommended the need to use big data for companies. It allows a broader, deeper, and more accurate view. These conditions are necessary to enhance the ability to make correct decisions, allowing companies to create a more complex and complete picture of their customers. Consequently, more products and services will be developed.

Lambrecht et al. (2015) prepared a study entitled "Can big data protect a firm from competition".

This research aims to answer questions about making use of big data. In his study, Lambrecht raised a question: does big data provide operational advantages for the company, and could it provide a sustainable competitive advantage? This study used the descriptive-analytical method in addition to the interviews. It reached several results using big data to provide a competitive advantage. The study recommended that a company could build a sustainable competitive advantage. However, focusing on developing organizational and efficiency tools by using big data to provide value-added to consumers.

Maroufkhani et al. (2019) prepared a study entitled "Big data analytics and firm performance a systematic review".

This study aims to systematically review contributions related to big data analytics and corporate performance. This study used research methodology to review the literature in distinct phases, in-depth research dealing with publication-quality assessment, data classification, and synthesis of the results of previous studies. The study has reached several results, most in particular, and it is necessary to create conceptual and empirical research methods. The results could be employed by emphasizing the importance of big data analytics in improving company performance. The study recommended that all researchers and corporate officials understand the relationship between big data analysis and corporate performance, as this helps build a competitive advantage for companies. By improving the company's performance, whether on individual and organizational aspects, big data analytics capability, absorptive capacity, open innovation, and market orientation.

Bronson and Merryman. (2014) prepared a study entitled "Developing Competitive Strategy". Through this study, they concluded that "The real benefit of competition is not winning - it is improved Performance. Therefore, this study focused on the need for companies to have a competitive advantage, as it helps them to own good performance. Magnani and Shebeila. (2019) prepared a study entitled "The role of big data in supporting sustainable development in the Arab countries ".

This study clarified the importance of big data in supporting sustainable development in Arab countries. This study relied on the descriptive-analytical approach and documentary and literary sources as a tool for collecting information to analyze and treat the subject. The study reached many results, most notably that big data has a benefit that brings about change within society and helps achieve sustainable development goals. The study recommended the necessity of paying attention to the use of big data by decision-makers to enhance corporate performance.

2.2.2 Foreword: Big Data

Big data represents an essential stage of the development of information and communication systems. A vast amount of complex data exceeds the ability of software and traditional computer mechanisms to store, process, and distribute it. Thus, using big data will lead to developing advanced alternative solutions that enable control and control of its flow (Albar, 2018).

Big data can analyze data collected from social networking sites, websites, and sensors, as analyzing this data allows for correlations between a set of independent data to reveal many aspects.

2.2.3 What is big data?

Big data combines unstructured, semi-structured, or structured data collected by organizations. This data can be mined to gain insights and used in machine learning projects, predictive modeling, and other advanced analytics applications (Gillis, 2021). Big data refers to large and diverse information sets that are growing ever-increasingly. They include the volume of information and the speed at which it is generated and collected (Zechariah, 2021).

Accordingly, big data is a set of data that cannot be stored or processed using traditional data processing applications due to its bulk or complexity. Big data involves collecting data from everywhere: the messages we send to each other, the videos we post, weather information, GPS signals, etc. It has unique properties, which are volume, variety, velocity, veracity, and value.

2.2.4 Big data characteristics

We can describe big data with some of the following characteristics:

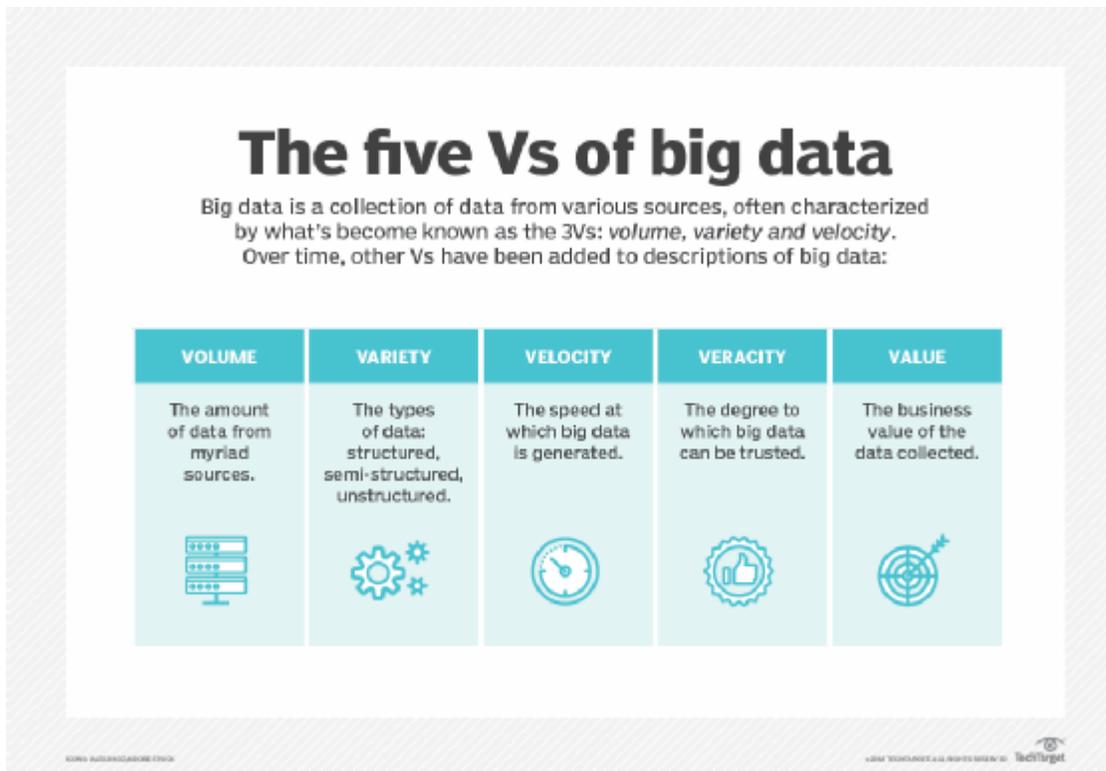


Figure 2.1: The five Vs. of big data

- **Volume:** Volume is one of the essential features to consider while dealing with big data. It also plays a vital role in determining the value of data (Zechariah, 2021). It also refers to data availability regarding volume patterns and how much data is collected. If the data is large enough, it could be considered big data (Gillis, 2021).
- **Variety:** Variety refers to the diversity of data types (Gillis, 2021). Organizations often get data from several sources inside and outside the organization. Thus the challenge for variety is how to standardize and distribute collected data.

The collected data can be structured, semi-structured, or unstructured. Structured data is organized into a formatted repository. Also, it is more capable of being processed and analyzed effectively. Unstructured data has become is different files or formats, including photos, videos, Monitoring devices, etc. (Gillis, 2021).
- **Velocity:** Velocity refers to how quickly data is created and how quickly it moves (Gillis, 2021). This aspect is essential for the company because it needs its data to flow rapidly to make the best possible business decisions.

Data flows from sources such as machines, networks, smartphones, or social media, and this data needs to be digested and analyzed quickly and promptly so that the organization can benefit from it.

- **Veracity:** Veracity denotes the quality and accuracy of the data, and credibility generally refers to the level of confidence in the data collected (Gillis, 2021). Since big data is collected from several sources, sometimes it can be inaccurate or may not be able to provide real and valuable insight, so new technologies must be developed that will facilitate the management of inaccurate data.
- **Value:** It refers to the value that big data can provide to organizations, such as the profit that can be obtained from the use of big data and the benefits they get, such as increasing their market position and competitiveness (Zechariah, 2021).

2.2.5 The importance of big data

Big data is of great importance, as it provides a high competitive advantage for companies if they can benefit from, process, and analyze them because they provide a deeper understanding of their customers and their requirements, and this helps to make the appropriate decisions within the company more effectively (Shalah, 2017).

Accordingly, big data offers many benefits to companies such as (Bastawi, 2022):

- **Reducing costs:** advanced big data reduces the costs of storing large amounts of data, it is characterized by its high ability to organize in a very efficient and helpful manner, and this helps companies carry out their work easily and smoothly.
- **Marketing Operations Development:** New big data technology is used to improve marketing and advertising, thus targeting customers according to their different tendencies and preferences, and this data provides a clearer picture when evaluating customer behavior.
- **Providing new products and services:** Using data analysis technology to know the opinion of customers, identify the needs of customers, and determine what satisfies them and achieves them greater happiness, and this helps companies develop the most demanded products and provide new services that customers will like.

- Helping to make the right decisions at the right time: Big data technology support companies to understand and analyze information to make appropriate decisions, leading to improving the mechanism of work and profit within companies.

2.2.6 The role of big data in supporting the food industry

Historically food industry has focused on reporting rather than sophisticated analytics. While data was stored in database tables in an orderly manner, limited the analysis that could be performed on big data, this indicated that companies are to exploit the data they collected entirely. Therefore, big data combine unstructured data from newer sources like social media with more traditional and structured data sources. This method of data analysis would improve data processing and better exploitation by businesses for data.

Big data plays a significant role in developing the industrial sector. It is considered part of the business intelligence system. Big data is processed for product development, creating a new product, reducing production costs, and avoiding errors to help decision-makers. Consequently, competitiveness will be enhanced and spreading innovation and renewal processes (Magnani & Shebeila, 2019). The following are the benefits that food industry companies can achieve by adopting big data technology:

BENEFITS OF BIG DATA AND ANALYTICS IN THE FOOD INDUSTRY



Figure 2.2: Benefits of big data and analytics in the food industry

- **Quality control**

Big data is of great importance in food quality control. The best example here is cold supply chain monitoring during transportation. Heat-sensitive products such as dairy, milk, and ice cream require delicate environmental conditions and can deteriorate during temperature fluctuations. Thus, with big data, we can process and analyze the data through specific sensors based on the Internet of Things and transmit it to all parties in real time. Providing the ability to monitor the entire supply chain cycle is the perfect solution here. Accordingly, using big data, we can replace damaged products on time with new ones and take preventive measures. Therefore, software and hardware powered

by big data could also be adapted and used with production processes, surveying the quality of incoming materials and finished products.

- **Enhanced efficiency**

Based on the information obtained, big data allows us to enhance any business and take advantage of new available strategies, such as information on customers, competitors, transportation information for shippers, and feedback from customers and suppliers. Accordingly, Big Data offers companies powerful opportunities to produce the best products through the data collected and the selection of the most efficient strategy for analysis.

- **Improved Insights**

Data analytics is the core of data science for the food industry or any other sector. Because through it, all information regarding price, condition, quality of products, customer preferences, market position, brand popularity, etc., can be covered. But big data needs an expert analyst and innovative software to analyze and effectively use all the acquired data. You can always be aware of his nutritional excesses through customer feedback and his behavior pattern.

Other benefits of big data in the food industry are shown below.

- **Ability to understand customer needs and preferences**

Currently, there is a lot of daily data. Where there are unstructured forms such as tweets, blogs, photos, and videos, food industries have been unable to extract insights from these data types. However, using big data technologies, unstructured and structured data could be integrated. Based on that, customer and needs preferences could be a muse. Also, by monitoring big data on blogs, forums, customer review sites, video and photo portals, and other social media, real-time insights about customers, products, and competitors could be obtained. In addition, customers, preference for new products will be a significant driver for product innovation.

- **Marketing and Advertising**

With big data analytics, marketing departments can better target their customers by predicting consumer behavior and thus increase the effectiveness of their marketing spending. Also, through big data technology, it is possible to measure the effectiveness of advertising and promotional campaigns to determine the optimal promotions on the company's products and predict the success rate of future campaigns.

- **Operations, Supply Chain**

By integrating food companies' data with relevant information from other sources (e.g., SharePoint, log files, shared drives, barcodes, etc.) and analyzing this integrated data set, big data enables companies to understand their internal performance in ways that have not been possible before. This will help reduce wastage and supply chain costs and identify ways to improve efficiency in the organization.

Through the use of big data technology, the company's operational processes can also be improved. Thus, obtaining data such as the daily activity history of workers and the number of hours they work and providing vital information about the health and well-being of the infrastructure of the company's operational activity to maximize uptime and increase productivity.

2.2.7 Big data face challenges in the food industry

Rangaiah. (2020) prepared a study entitled "Benefits of big data in the food industry ".

This study aims to clarify the role of big data in improving the performance of the food industry by relying on the descriptive-analytical approach. Documentary and literary sources were employed as a tool in collecting information. The study reached many results. Most notably, big data helps companies improve their marketing campaigns. Came up with several results that could be employed to develop innovative products, allowing them to make the right decisions and give them a competitive advantage that could lead to improved quality.

Jin et al. (2020) prepared a study entitled "Big Data in Food Safety “. This study provides a historical overview of recent developments in big data applications in food safety. This study emphasized the importance of using big data technology in food safety by obtaining data related to food safety and its impact on the entire food supply chain and monitoring food safety in the supply chain. This study reached many results, most notably that new techniques have been implemented to deal with big data technology in the field of food safety and food supply chain control.

Williamson. (2021) prepared a study entitled "Big Data: Key Advantages for the food industry ". This study focused on the main benefits big data provides to the food industry and explained in detail (Quicker deliveries, Quality control, Improved efficiency). It has proven that big data technology can help companies identify the most profitable and highest revenue-generating items on their menu and can be beneficial in the context of the supply chain.

Porter. (2012) prepared a study entitled "Competitive Advantage: Enduring Ideas and New Opportunities”. He indicated that the economic foundations of competition and the good performance of companies originated from two distinct reasons: to determine the strategic position within the attractive industry structure and to ensure a sustainable competitive advantage. Porter illustrates the importance of shared value in providing broader economic value-creation opportunities through this paper.

How is this study significantly distinguished compared with other previous studies? This study is an extension of what was recommended by previous studies, and it will be applied to the Dairy Industry sector in the State of Palestine. Following the study model and variables, a descriptive analysis would be employed to describe using big data to develop a competitive strategy for the dairy industry companies in Palestine.

To the best of the researcher's knowledge, this study is one of the rare studies that examine the role of using big data to enhance the competitive strategy of the dairy industry in Palestine.

2.3 Value proposition

2.3.1 Foreword

Usually, company owners seek to improve their products, which is crucial to strengthen their position and increase their market share. This helps in attracting target customers, being close to your customers, and helping you know their needs and desires (Twin, 2022).

The company's value proposition is one of the most important ways to attract the target audience. It indicates the value the company promises to provide customers if they buy its products. And how their products offer more value than competitors' products or solve a problem for them.

2.3.2 The value proposition

A value proposition is a simple statement that summarizes why a customer chooses your product or service. They convey the most apparent benefit customers get from using your product. A value proposition also provides a statement that introduces the company's brand to consumers by telling them what it stands for and how it will offer products that meet their needs and desires (Wellington, 2022). A value proposition can be presented as a commercial or marketing statement that a company uses to summarize why a consumer purchases the company's product. If formulated persuasively, this statement would convince the potential consumer that the company's product will provide more value or that that product will solve a particular problem for you (Twin, 2022). In addition, the importance of value proposition is to make the company different from competitors because collecting information about consumers' opinions of the company's product and the value they obtain helps the company to know the extent of customer satisfaction with the products they prefer and desire.

2.3.3 The value proposition components

The value proposition has three main components:

Component 1: Determine the target audience and the problem you will solve for them.

The value proposition must be relevant to the intended audience (target customers).

Accordingly, when formulating a company's value proposition, it is necessary to identify the target customers to purchase its product. In addition, the problem you will solve should be made

clear to the target customers through your product, as this helps to convey to the customers that you understand their needs and desires (Astley, 2019).

Component 2: Clarify how your product will solve the target audience problem.

The company must explain to customers how this product will solve their problems and meet their needs. By explaining also, you can describe your product and its features as an opportunity to show your customers that you are providing the best value for them (Astley, 2019).

Component 3: Communicate the audience-specific intangible and quantifiable benefits of the solution.

Communicating and offering value to your target customers allows the company to differentiate itself in the marketplace by demonstrating its product's benefits, features, and value and how it works on a problem for the customer (Astley, 2019). In addition, it may be possible that competitors have similar products in the market. Still, through a value proposition, you can convince your target customers that you have more advantages, benefits, and value for your products.

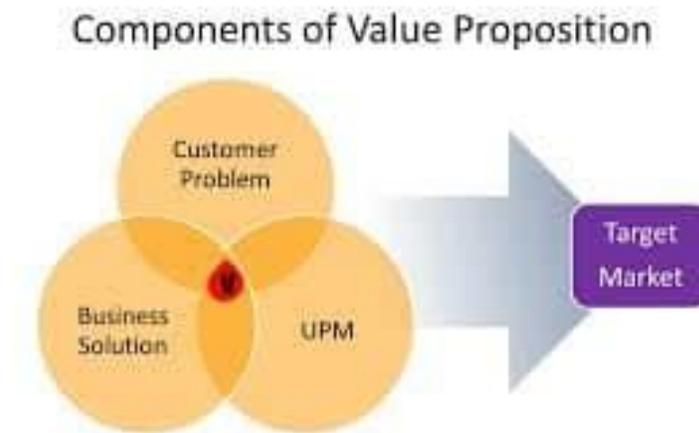


Figure 3.1: Components of value proposition

2.3.4 Corporate Value Proposition benefit

Provides the foundation for your offering: A compelling value proposition forms the foundation and underpins your sales, marketing, and product development efforts. The value proposition is a critical factor in your company's success because it is through it that you can capture customers' attention and encourage them to read more about your product (Rusmanica, 2022).

The value proposition creates a differentiation between you and your competitors: If the company can communicate the features and benefits of its product convincingly and how this product is suitable for the target customers in a convincing way that competitors do not enjoy. This would help the company to be superior to competitors in the market (Rusmanica, 2022).

Helps your organization internally: When a company creates a compelling value proposition, it must research competitors and their offerings to differentiate itself. This would push her to focus more on her products and how to increase the features and benefits of her products to impress her target customers (Rusmanica, 2022).

2.3.5 The impact of big data on the value proposition of companies

As previously mentioned, big data analytics has facilitated a business that contains a lot of information about their customers, which businesses use to increase customer acquisition and retain existing customers. This allows companies to understand customer insights and problems and deliver what customers want. Accordingly, big data technology is bound to impact companies' value propositions positively. That's because, through the value proposition, the company collects data about customers' opinions of its products and their satisfaction with your value. Therefore, the role of big data is to help companies manage and analyze the most significant amount of data collected about customer opinions, and by analyzing this data, the company can know the needs and desires of target customers and their satisfaction with the value they provide them.

2.4 Core competency

2.4.1 Foreword

Core competency refers to the skills and experience that a company possesses and excels with over its competitors. Core competencies are essential to a company as they help achieve a more significant market share, customer satisfaction, loyalty, and increased profits.

In addition, if distinct, the company's core competency gives it competitive advantages over other companies in the market and outperforms it, whether existing competitors or new entrants (Pratt, 2021).

2.4.2 What is a core competency?

(Pratt, 2021) A core competency for any organization, its core competency refers to the capabilities, knowledge, skills, and resources that constitute its 'defining strength.

The company's core competencies are the distinctive capabilities and competencies that the company possesses better than any other company. Accordingly, core Competence provides value to customers by bringing those benefits in terms of lower cost and better quality products. It also gives value to stakeholders and seizes new opportunities and growth. In addition, it helps the company create a sustainable competitive advantage in its industry or sector.

Accordingly, the company must possess one or more core competencies at the company level (Pratt, 2021), including:

- Product Quality
- Buying power
- Customer-centric Omni channel support
- Design or innovation capabilities
- Sales and marketing ecosystem
- Automated workflows and processes
- Size

Possessing these competencies for the company is important because it gives it success and superiority over competitors in the market.

2.4.3 Core competency standards

Core competencies meet three important criteria:

- Provide access to a variety of markets. That is access to a range of markets and consumers.
- Make a significant contribution to the customers' perceived benefits from the final product. That is, providing higher value to customers or consumers by offering more benefits and features through the company's product.
- Difficulty imitating competitors. That is, introducing new products with advantages and benefits that competitors can hardly imitate.

The company's ability to meet these criteria indicates that it possesses a core competency.

2.4.4 The role of big data in improving the company's core competency

Determining the basic competency of the company and the work it carries out helps it to excel and succeed. In addition, adopting modern data analysis methods instead of traditional methods helps the company distinguish them, such as using big data technology.

Big data analytics helps boost a company's core competency. This technology collects large amounts of data about consumers or customers, competitors, and suppliers. In addition, the ability to quickly analyze such a large amount of data. Big Data has become the catalyst to help businesses solve their need to understand their customers better and realize trends before the competition. Thus, big data provides the foundational platform for successful business platforms.

Accordingly, big data enhances the company's core competencies because it makes it easier for the company to understand the needs of its customers and provide them with the most significant benefits and advantages. In addition, collecting information about competitors and their products gives them the ability to offer new products that are difficult to imitate by competitors. This shows that big data helps companies meet the criteria of the company's core competencies.

2.5 Capabilities

2.5.1 Foreword

The company's capabilities are the basic building blocks that constitute the company's core business and how to activate the strategic objective and achieve business results. Accordingly,

capabilities indicate that the company can do business efficiently (Visscher, 2020). In addition, capabilities are represented in the innovation and implementation of the company's business, such as marketing and selling, and the ability can be arranged internally to achieve something external, such as the company's innovation of new products and services to the market.

2.5.2 What are capabilities?

Denman (2011) shows that a business capability is expressing or articulating the capacity, materials, and expertise an organization needs to perform core functions. Company capabilities give the company a clear vision of what it must do to achieve its goals. So by identifying capabilities, the company can determine if it should improve itself through outsourcing and remember what it lacks to perform its specific goals.

The main attributes of the capabilities can be identified, namely (Visscher, 2020):

They are the most stable building blocks of strategic planning.

Capabilities make company strategy more realistic.

If the capabilities are well defined by the company, it helps it to carry out its planned work and to overcome the problems it faces.

2.5.3 Categories of company capabilities

There are several categories of organizational capabilities centered on (Capstera Staff, 2022):

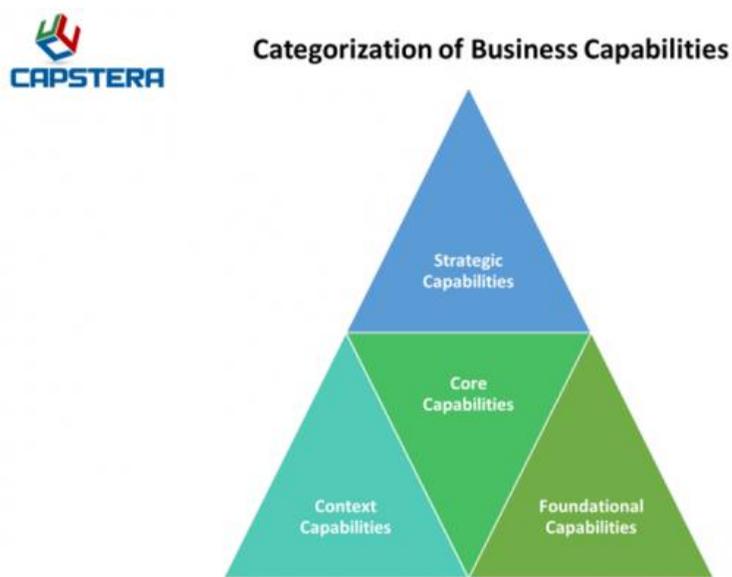


Figure 3.2: Categorization of business capabilities

Strategic Capabilities

The company's strategic capabilities provide competitive differentiation. This is because when the company's current capabilities must be improved and developed, the company resorts to acquiring strategic capabilities. Strategic capabilities are the access to resources and materials for production, the brand's ability to attract consumer loyalty, the company's ability to differentiate in multiple markets rather than being in one market, developing products or services that meet desired needs in the market, and strengthening the relationship with customers.

Core Capabilities

Core capabilities are the capabilities inherent in the company's existence. These capabilities are product management knowledge, employee training, and customer relationship management.

Context Capabilities

Context capabilities are essential to get the company things done, represented in transaction services, finance, and accounting, improving time use, such as products with less time and higher effort.

Foundational or Commodity Capabilities

These capabilities are essential to the business, such as lowering the operating cost, outsourcing business processes for improvement, and lowering the cost of products while providing added value.

2.5.4 The impact of big data on the company's capabilities

Big data provides a company with tremendous capabilities, so every company should put it into practice and work with this technology. Massive data has made obtaining, analyzing, storing, and using data more accessible. Therefore, applying big data in a company requires improving its capabilities, such as determining how to access and protect information, interacting with consumers with vital data, and taking advantage of new skills and technologies. Accordingly, the company must adopt new organizational structures or a new mindset to do business (Mikalef

et al., 2018). In addition, using big data helps the company's strategy to serve customers at the enterprise level and improve its competitiveness.

Chapter three: Milk and dairy products industry in Palestine

3.1 Introduction

The dairy and milk products industry began in Palestine as a commercial industry. It has expanded and spread until it has become one of the most essential Palestinian industries. Most dairy factories in the WBGs, reaching around 41 factories, own large cattle and poultry farms. The number of workers in this sector has been more than 3000, and the investment in this industry app more than \$67 million. The market share of dairy products in Palestine is approximately 45% of the market share. They also include traditional industries (Palestinian National Information Center - Wafa, 2014).

A few dairy factories in Palestine reach 14, 3 of which are considered advanced in production quantity. Namely, Al-Junaidi, Al-Jabrini, and Hammouda, and these factory's markets share approximately 70% of the total sales of Palestinian dairy products. The factories of Al-Safa, Al-Binar, Al-Rayyan, and Al-Marai are of a lower class in terms of the quantity of production or the use of milk, according to the opinion of the agricultural expert Fayyad Fayyad (Alwan, 2016).

The production capacity of dairy factories has reached 550-600 tons per day. They are allocated to produce basic commodities such as labneh, yogurt, and white cheese, cover about 90% of the Palestinian market, and are essential products in the dairy sector. In contrast, dairy factories export more than \$6 million of dairy products annually. In the West Bank, governorates produce about 70 million liters of cow milk annually. In the Gaza Strip, about 19 million liters of cow milk annually. (Statistics of the General Federation of Food Industries, 2018). The Director General of Al-Junaidi Dairy Factory confirmed that the local dairy factories sought to cover most of the needs of the Palestinians, who, until the year 2000, depended on Israeli farms and factories (Khalaf, 2010).

3.2 Challenges and obstacles faced by the dairy industry in Palestine

Palestinian dairy factories are currently committed to the mandatory technical specifications and instructions. According to Palestinian law and the specifications of the statement card, and setting production and expiry dates. They are also subject to periodic and continuous monitoring and inspection by competent authorities, and efforts are being made to obtain international quality certificates to meet the global market requirements (Statistics of the General Federation of Food Industries, 2018).

Despite the progress of the dairy industry in Palestine, there are many challenges, obstacles, and difficulties it faces, most notably Israeli harassment, such as preventing Palestinian companies, since the arrival of the Palestinian Authority, from distributing their products in the 1948 territories, addition to that, the dependence of the Palestinian economy on the Israeli economy. Therefore, the occupation is the biggest obstacle to the dairy industry, for several reasons, including:

- Difficulties in transporting milk from farms, most located in Area C, which Israel controls.
- Farmers face many problems importing feedings tuff, only available through Israel.
- Water problem, as Israel prevents water networks from reaching many areas, in addition to the high prices of water, which exceed six dollars per cubic meter.
- The number of cows has decreased, and the Israeli occupation authorities usually prevented the Palestinians from importing more heads from abroad.

3.3 The current situation of the dairy industry in Palestine

The dairy products sector is one of the critical sectors in the Palestinian food industry. Production of the value of dairy industries amounted to 153.5 million US dollars, approximately 17% of the total food production manufactured by Palestinian food industries. In addition, the dairy industry ranks second among the food industries in Palestine in terms of production value (Abubaker, 2021), as shown in the table below (3.1):

Table 3.1: Production value of food products industry activities by region 2018

The economic activity (Value in a million US dollars)	West Bank	Gaza Strip	Palestine	Percentage Palestine
Industry activities	4178.5	777.5	4956.0	100%

Food industry	681.9	215.7	897.6	18.11%
Meat processing and preservation	56.2	1.2	57.4	6.40%
Processing and preserving fruits, nuts, and vegetables	72.8	21.1	93.9	10.46%
Manufacture of vegetable and animal oils and fats	12.8	0.0	12.8	1.43%
Dairy Industry	128.1	25.4	153.5	17.10%
Grain mill products industry	28.0	42.7	70.7	7.87%
bakery products industry	204.8	76.8	281.6	31.37%
Manufacture of cocoa, chocolate, and sugary sweets	35.9	2.5	38.4	4.28%
Manufacture of pasta, noodles, afoul, and similar starchy products	9.4	0.6	10.0	1.12%
Manufacture of ready-made meals and dishes for distribution outside restaurants	0.0	0.0	0.0	0.00%
Manufacture of other food products not classified elsewhere	55.4	21.2	76.6	8.54%
Prepared animal feed industry	78.5	24.1	102.6	11.43%

Source: Palestinian Central Bureau of Statistics, 2020 Economic Surveys Series 2018 (unpublished data)

The percentages were calculated using the following equation: $((\text{the value to be calculated} \times 100) \div (\text{the total reference value}))$.

In addition, the number of dairy factories in Palestine has reached 105, of which 80 are in the West Bank, and 25 are in the Gaza Strip. Regarding employment, the number of workers in dairy factories reached approximately 1290 workers, including 1038 workers in the West Bank and 252 workers in the Gaza Strip (Statistics of the General Federation of Food Industries, 2018).

Concerning the import of dairy products in 2018, based on the data published by foreign trade surveys PCBS, the value of dairy products imports into Palestine for the year 2018 amounted to (82.1) million US dollars, of which (59.9) million US dollars came from the value of imports from Israel. Imports of dairy products from Israel constitute (73%) of the total value of imports of dairy products (Abubaker, 2021). Those indicate that the percentage of dairy products imported by Palestine is large. Therefore, efforts should be devolved to reducing the rate of imports so that we can increase the market share of dairy product facilities in Palestine.

As for exports, the value of dairy products exports from Palestine for the year 2018 amounted to (4.8) million US dollars, and dairy products exports from Palestine to Israel accounted for nearly (85%) (Abubaker, 2021). This indicates that most dairy product exports are currently to the Israeli market. Thus, despite the expansion of local production and the number of establishments in the dairy sector, there is a significant weakness in exporting these products.

3.4 Market share of Local Dairy products

The figure shows the change in the production value of the dairy industry. The value of production in 2015 approached (116.5) million dollars. By the following year, it went up (by 140.1) million dollars, which witnessed an increase of (20%). While there was a decrease in 2017 by (9%), the amount of production reached (127) million dollars, and it rose again in 2018 by (21%), reaching about (153.5) million dollars.

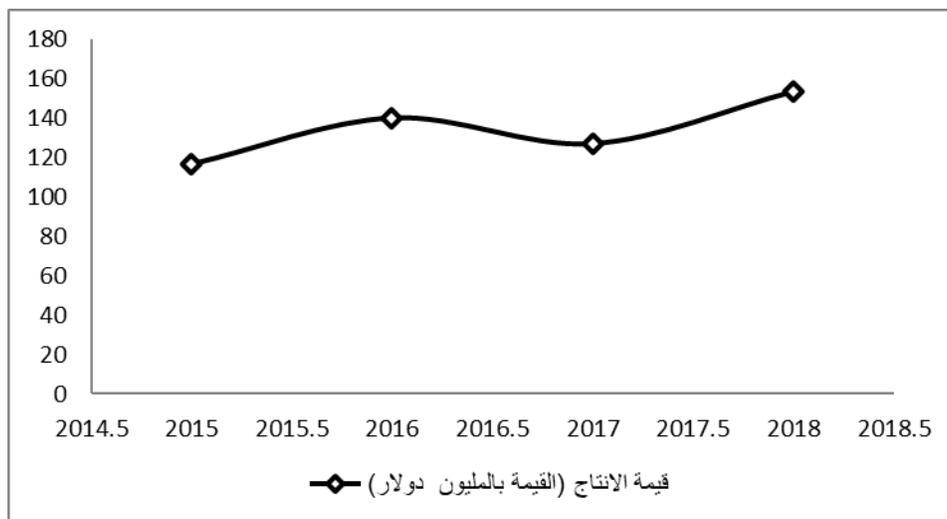


Figure 3.3: The production value of the dairy industry in Palestine

Source: (Abubaker, 2021)/ Palestinian Central Bureau of Statistics, 2020 Economic Surveys Series 2015-2018.

On the other hand, the Palestinian Ministry of National Economy revealed that dairy products in the local market account for 75% of the Palestinian market share, with an investment value of \$70 million annually. In addition, the Undersecretary of the Ministry of National Economy, Manal Farhan, confirmed that about 45 factories registered with the Ministry of National Economy work in the dairy sector, where the production capacity of dairy factories ranges between 550-600 tons per day. Such as yogurt and white cheese, approximately 90% of the Palestinian market (Farhan, 2021).

3.5 Dairy companies in Palestine, their market share, and competition.

Ministry of National Economy clarified that the dairy products in the local market are highly competitive in terms of quality and price. They obtain 75% of the share of the Palestinian market, indicating the quality of the products it could put on the table of the Palestinian consumer. Palestinian dairy factories are committed to the mandatory technical specifications and instructions. Also, their performance is subject to periodic and continuous monitoring and inspection by competent authorities. In addition, they are trying to obtain international quality certificates to meet the requirements of the global market (Farhan, 2021).

When looking at the history of dairy companies in Palestine, we find that:

- Al -Ban Al -Junaidi Company was the major player in the local market..Also, there was very intense competition between Al-Junaidi and Hammouda Company, and Al-Jebreni Company, as the items made by each of the companies increased to exceed 200 thousand classes to meet customers' needs.
- Recently, a French brand (Candia) appeared for the manufacture of dairy products. It entered the Palestinian market through the Spectrum Company. The company aims to provide dairy products with high quality, distinctive tastes, and different flavors and to satisfy customer needs. This indicates the openness of the Palestinian market to

international companies in the Palestinian market would raise the level of competition between Palestinian dairy products and Israeli products, besides the match between the Palestinian companies themselves (Palestinian Consumer Association, 2019).

The Undersecretary of the Ministry of National Economy explained that the competition between dairy companies in the Palestinian market is honest. Also, dairy companies strive to develop their products and satisfy consumers with them (Farhan, 2021).

3.6 Competition between Palestinian and Israeli dairy companies.

When looking at the Palestinian market, we find that Israeli dairy products flood the Palestinian market without any obstacles. However, Israeli products compete with Palestinian products. On the other hand, most Palestinian effects are prevented from entering the Israeli market, or many obstacles are placed on them, especially the lack of obtaining the Jewish certificate (kosher), which works to limit the entry of large quantities of Palestinian products to maintain the market share of their products and to prevent Palestinian effects from competing in the Israeli market (Abubaker, 2021).

Palestinian products also face unfair competition with Israeli products in terms of quality and price if they are marketed in Arab places such as East Jerusalem, which makes them difficult to market. Milk is one of the commodities subsidized by the Israeli government, which makes the cost of production lower for the Israeli factory and the ability to compete efficiently in the Palestinian market. Palestinian factories resort to Importing some product packaging from abroad, which entails an additional cost that limits their ability to compete. Many grocery stores and supermarkets offer Israeli products due to the demand for them by Palestinian consumers so that these stores do not suffer financial loss due to the lack of these products (Abubaker, 2021).

Several cons equation have resulted from competition in the local market between Palestinian and Israel dairy products, most notable:

- Israeli products have a longer turnover than Palestinian products. This indicator could be attributed to the difference in the proportions and nature of the additives added to each product, such as preservatives, sweeteners, antioxidants, and stabilizers. For example,

the shelf life of the Israeli milk product for the Tnuva Company is seven days, while the shelf life of the Palestinian milk product for the Al-Jabrini Company is three days.

- There is a weakness in the diversity of Palestinian dairy products compared to Israeli products. For example, Israeli and imported products could not be substituted by local products, such as condensed milk, butter, cream, and cream. The Palestinian products can be imported from abroad instead of investing in its products locally. Or it is not of the required variety, such as jameed, as it is limited to liquid jameed, and there are no other types, such as powder and steel. Its production is limited to the traditional home industry, and industrial investment is not made. The yellow cheese imported in large quantities from abroad is absent from Palestinian products. If any, they are not of the quality that allows them to compete with the consequences. The other imported ones make it an alternative option and not a first choice for the Palestinian consumer. Some Palestinian producers have an import line for these cheeses instead of producing them (Abubaker, 2021).

3.7 The market share of Israeli dairy products in the Palestinian market

The percentage of Israeli exports of dairy products to the Palestinian market approached 45% of the total consumption of dairy products by the WBGS. The Israeli company Tnuva is one of the larger companies with a market share in the Palestinian market. Even though the Palestinian dairy industry has doubled in terms of productivity and quality several times, the number of varieties, factories, and dairy products is still limited. Consequently, the share of Tnuva still maintains its share of the Palestinian market because restaurants and bakeries rely on Israeli cheese varieties to manufacture pizza and other foods (Alwan, 2016).

In addition, the Israeli company Strauss's dairy products have, to little extent, market share in the Palestinian market. That could be attributed to the fact that its products could not be substitutes in the Palestinian market. This is because they provide products when their products are produced locally, such as cream, butter, and condensed milk (Abubaker, 2021).

Chapter four: Research design and methodology

4.1 Introduction

This research aims to improve the competitive advantage of food companies and focuses on the dairy industry in Palestine. It includes an analysis of the theoretical framework, concepts, and variables involved in the study. This study stands out from previous ones due to its unique approach to addressing an old problem and utilizing a new methodology. The objective is to explore how big data can be used to enhance the dairy industry's competitive advantage, leading to an increase in its market share within the WBGS market.

This chapter will provide a detailed description of the methodology used in the study. The discussion will cover information on the sampling process, sample size, study method, data sources, study tools, model, and analysis.

4.2 Research method

Descriptive and explanatory methodologies are following this study. A descriptive analysis would be employed to describe using big data to develop a competitive strategy for the dairy industry in Palestine. The descriptive approach was used because it helps provide researchers with an accurate profile of events, situations, or people and describes relevant aspects of the phenomenon of interest from an individual, organizational, or industry-oriented perspective (Saunders et al., 2012). In addition, an explanatory study will determine dairy companies with a competitive advantage. Explanatory research helps study the problem and explains the relationships between the variables (Saunders et al., 2012). Accordingly, this study will use a new methodology to solve some of the problems facing the dairy industry. It depends on how the use of big data improves the dairy industry in Palestine. As a result, and based on the conclusions, the study will come up with a set of policies and recommendations to increase its market share, enhance its competitiveness in the local Palestinian market, and improve the state of the competitors in the domestic market, to they enjoy Palestine customer loyalty.

For this study, two methods of data analysis were employed, they are:

Quantitative analysis: Quantitative analysis involves using statistical and computational techniques to analyze measurable data. This data is collected through opinion polls and closed questionnaires and is obtained from a large sample size. The quantitative results will be summarized, followed by an in-depth analysis that will inform the development of policies and recommendations. (Kalab, 2022).

Qualitative analysis: Qualitative analysis depends on the analysis of non-numerical data, such as text and audio, and is used to understand concepts, opinions, and experiences. Primary data will be analyzed through a qualitative approach using collected observations, interviews, and questionnaire questions. Also, data is gathered based on open questions through which a person can express his opinion comfortably (Kalab, 2022).

This data is analyzed by classifying, identifying, and interpreting the data, through which we can deeply understand a problem or link between two subjects and determine the relationship between them.

This research can be classified as mixed research as it involves two types of data analysis: qualitative and quantitative. Including both data, types ensures a comprehensive understanding of the study and enhances its generalizability and credibility. A mixed approach of quantitative and qualitative data will be measured to provide a more complete picture of the research.

4.3 Data collection sources

In this study, two sources will be used to collect data: a primary source through interviews and a questionnaire and a secondary source based on previous studies related to the research topic and other literature.

Primary sources

It is the information obtained directly by the researcher from the variables of interest for a specific purpose of the study. This study will use interviews with some of the dairy companies in Palestine, and a questionnaire will be developed based on the literature review and previous studies.

Secondary sources

This study draws on previous studies relevant to the research topic, including books and articles from high-level journals and other literature.

4.4 Study tools

4.4.1 Questionnaire

The questionnaire is a set of questions linked to each other to achieve the goal sought by the researcher (Qasim, 2021). After reading previous studies on the research topic and reviewing the literature, the study variables were determined on which the questionnaire would be developed. This is because the questionnaire is the main tool for obtaining primary data that helps achieve the study objectives and answer the study questions. The questionnaire was designed in both Arabic and English and sent to the arbitrators. Then, it was modified based on the recommendations of the arbitrators and then distributed to the study population.

4.4.2 D The questionnaire development

The questionnaire is used for both descriptive and explanatory research. In descriptive research, the questionnaire helps to identify and describe the variation in different phenomena. In explanatory research, a questionnaire helps examine and explain relationships between variables. The questionnaire will be used in this study because it is one of the most used means of data collection within the survey strategy. Each respondent will be asked to respond to the same set of questions. The responses are collected from the study sample.

The questionnaire consists of six sections:

The first section related to the respondents' file: social and demographic variables (gender, specialization, class of work, age, educational qualification, scientific experiences, factory workplace) and consists of 7 questions.

The second section, related to big data and its use in Palestinian dairy companies, contains five dimensions: big data, size property, diversity property, speed property, and value property. This section consists of 20 questions.

The third section relates to the value proposition of Palestinian dairy companies and consists of 11 questions.

The fourth section is related to the basic competency of dairy companies and contains three dimensions: market access, providing higher value to customers, and competitiveness. It consists of 20 questions.

The fifth section relates to the capabilities of dairy companies and contains three dimensions: strategic capabilities, core capabilities, contextual capabilities, and foundational or commodity capabilities. It consists of 28 questions.

In the second, third, fourth, and fifth sections, the items were measured using a Likert scale. The answer scale and weights were given as follows:

Table 4.1: Paragraphs' answer scale and weights

Answer scale	Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
Weight	6	5	4	3	2	1

The sixth section relates to how the Palestinian dairy companies deal with the collected data, and it consists of three open questions.

4.5 Validity of the study tool

The researcher designed the questionnaire in its initial form by studying the information available in the theoretical framework, adding her practical experience, and deducing the questions that the employees of the dairy companies need. To express their opinion about them for the Palestinian dairy companies to benefit from them. On the other hand, the validity of the tool was also verified by calculating the Pearson correlation coefficient for the questionnaire items from the total score of the tool, and it became clear that there was a statistical significance in all items of the questionnaire, indicating that there was internal consistency between the items. The result of the tool's validity by calculating the Pearson correlation coefficient was more than 55%. It is less than 70% due to the study's small sample. However, this does not

preclude achieving the credibility of the questionnaire. To obtain more information about the tool's validity, see Appendix No. (4) at the end of the study clarifies this.

4.6 Reliability of the study tool

The researcher verified the tool's stability by calculating the strength of the total score for the stability coefficient for the fields of study according to the Cronbach alpha stability equation and the total score for all areas of study = (0.974). The results are shown in Table No. (4.2), where it is clear that the values are higher than 0.70, which indicates that the study tool has a high degree of stability. Table No. (4.3) shows the result of the Cronbach alpha stability equation for the study tool for all domains and shows the reliability coefficient for the total score, in addition to the stability of the study in the event of deleting one of the fields, as the value in the event of deleting any of the fields does not undergo any significant change.

Table 4.2: The result of the Cronbach alpha stability equation for the study tool

Cronbach's Alpha	Cronbach's Alpha is based on standardized items.	Number of domains
.974	.974	4

Table 4.3: The result of the Cronbach alpha stability equation for the study tool for all domains

Sections	Scale means if an item is deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if the item is deleted
Big Data	3.978	20.26	.792	.974
Value proposition	3.977	20.18	.723	.975
Core competency	3.983	20.42	.651	.974
Company Capabilities	3.978	20.32	.632	.974

4.7 Study population

The population of this study consisted of all dairy factories in Palestine. The total number of dairy factories is approximately 15 (Alwan, 2016). 4 dairy companies are classified as advanced, namely Al-Junaidi, Al-Jebrini, Hamouda, and Candia. While the rest are considered to be of a low category, such as Al-Safa Company, the Arab Project, Al-Binar, Al-Safi Dairy and Foodstuffs, Al-Diyaa Dairy Products, Al-Ajouri Cheese, Atef Al-Zahir Dairy and Cheese, the National Dairy Company (Almarai), Al-Natsha Dairy, Qafisha Dairy, Al-Radwan Dairy, and Khaled Dairy. Abu Al-Awf.

4.8 Sample design

Non-random sampling and its type (purposive sampling) were used in this study. The intended sample is the one that the researcher wants to apply the study to a specific group, and this intention may be due to scientific considerations, such as the existence of logical evidence or proofs that show that this sample represents the community (Qooqazeh, 2020).

-The non-random sample was chosen for five dairy companies in Palestine: Al-Junaidi Company in Hebron, Al-Jabrini Company in Hebron, Hamouda Company in East Jerusalem, Arab Project Company in Jericho, and Candia Company in Ramallah.

19 questionnaires were distributed to the five companies, and 19 were retrieved. That is, the response rate was 100%.

Note: Besides distributing the questionnaires, interviews were conducted with the companies mentioned to collect more accurate and reliable information.

4.9 Socio-demographic characteristics of the study sample

The following tables and figures describe the socio-demographic information of the respondents, including Gender, Specialization, Classwork, Age, Academic Qualification, Work Experience, and Factory workplace.

Table 4.2: Gender

	Frequency	Percent
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Valid	Female	5	26.3
	Male	14	73.7
	Total	19	100.0

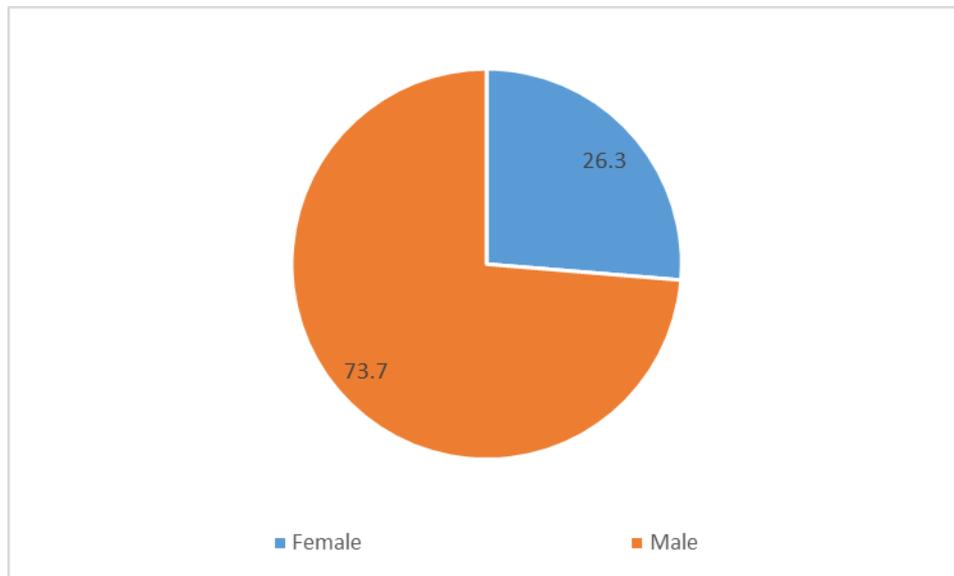


Figure 4.1: Gender

According to the Age, 73.7% of the sample are male, 26.3% % of the sample are female.

Table 4.3: Specialization

		Frequency	Percent
Valid	Business administration	10	52.6
	marketing	1	5.3
	Accountant	2	10.5
	Information technology	2	10.5
	other major	4	21.1
	Total	19	100.0

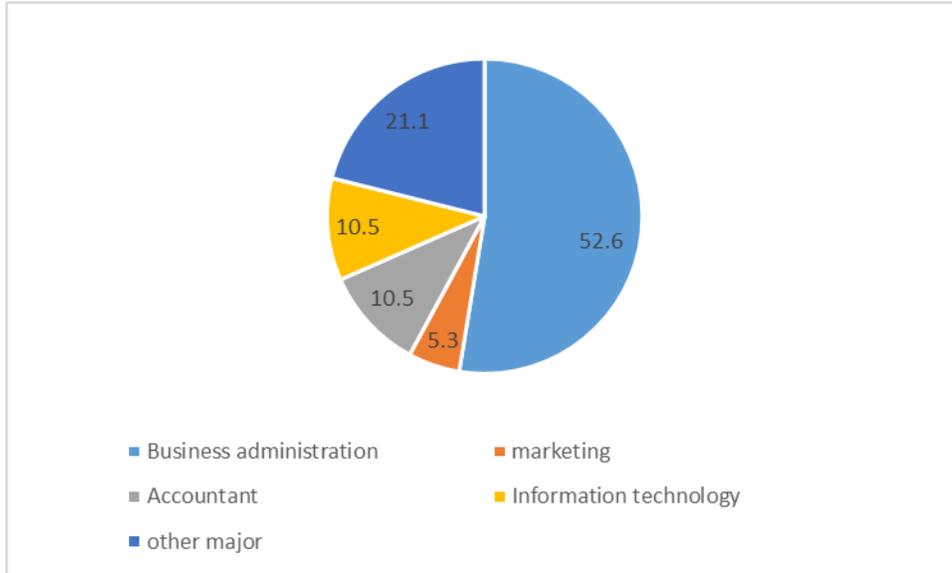


Figure 4.2: Specialization

According to Specialization, 52.6% of the sample were business administration, 5.3% were marketing, 10.5% were accounting, 10.5% were IT, and 21.1 % were other significant.

Table 4.4: Work Type

		Frequency	Percent
Valid	Employee	12	63.2
	Mangaer	6	31.6
	Deputy manager	1	5.3
	Total	19	100.0

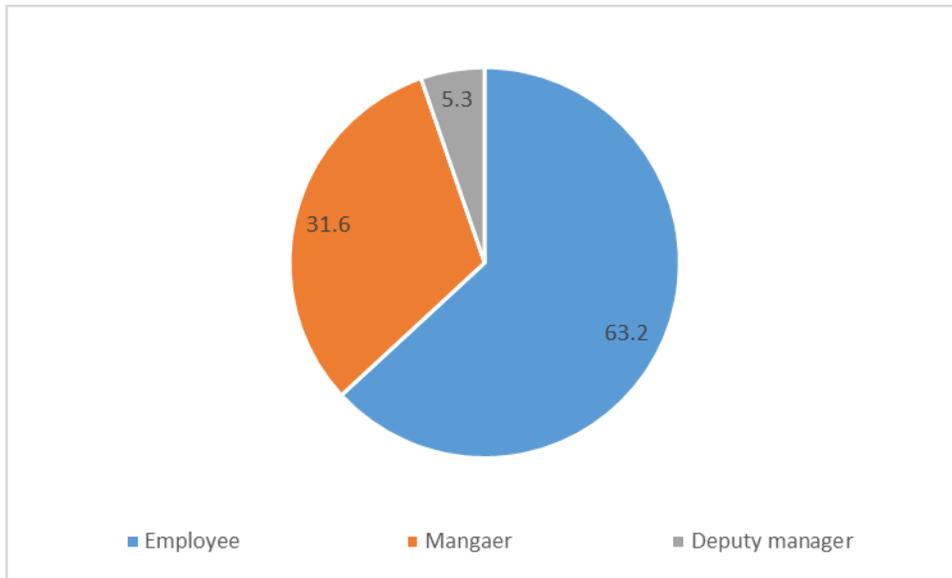


Figure 4.3: Work Type

According to work type, 63.2% of the sample were employees, 31.6% were managers, and 5.3% were deputy managers.

Table 4.5: Age

		Frequency	Percent
Valid	Less than 30 years	9	47.4
	From 30-40 years	5	26.3
	From 40-50 years	3	15.8
	From 50-60 years	1	5.3
	Above 60 years	1	5.3

	Total	19	100.0
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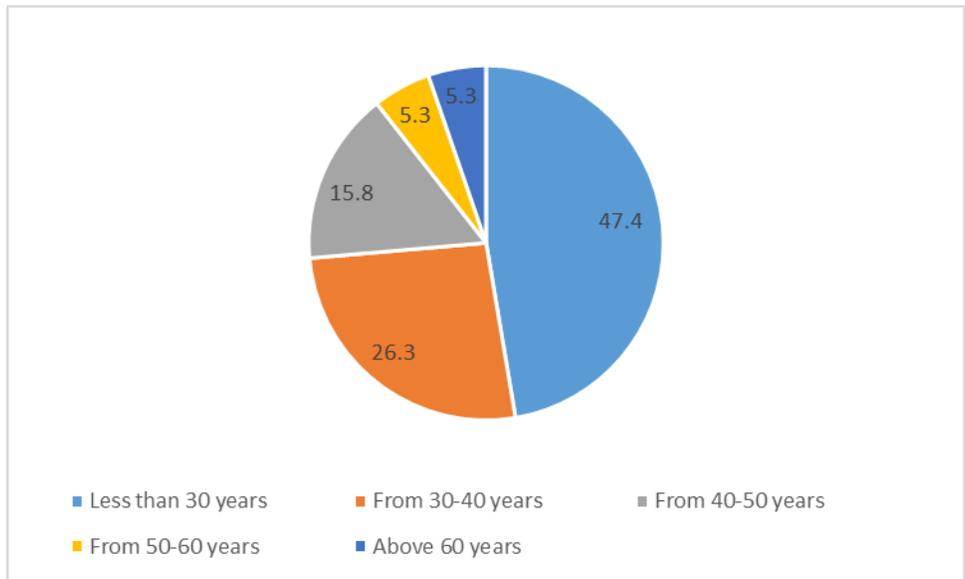


Figure 4.4: Age

According to The Age, 47.4 % of the age sample was less than 30, 26.3% of the sample was from 30-40 years, 15.8% of the sample was from 40-50 years, 5.3% of the sample was from 50-60 years, and 5.3% were above 60 years.

Table 4.6: Academic Qualification

		Frequency	Percent
Valid	BA/BSc	12	63.2
	Higher Studies	7	36.8
	Total	19	100.0

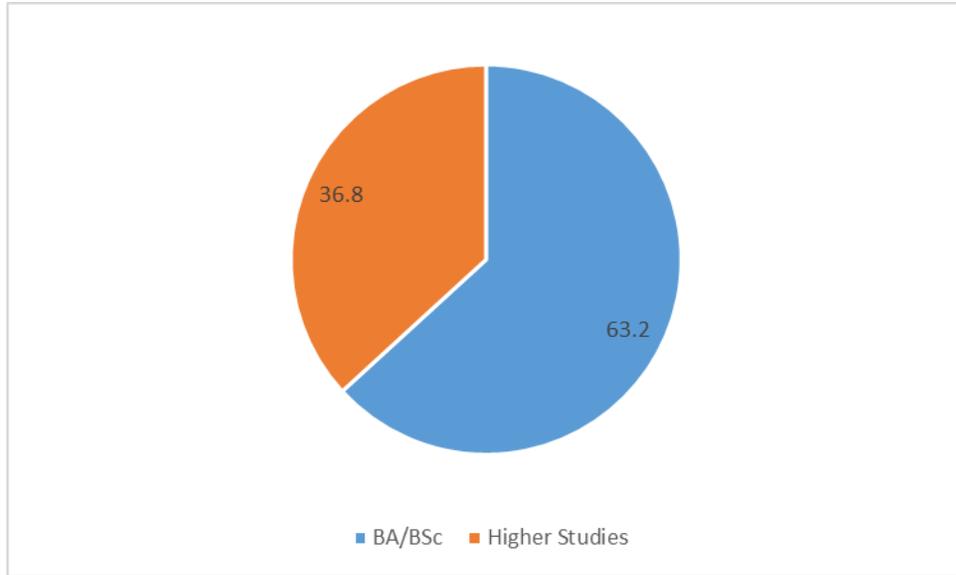


Figure 4.5: Academic Qualification

According to The Academic Qualification, 63.2 % of the sample were BA, and 36.8% of the sample were higher studies.

Table 4.7: Work Experience

		Frequency	Percent
Valid	Less than 3 years	3	15.8
	from 3 to 6 years	6	31.6
	from 6 to 9 years	3	15.8
	more than 9 years	7	36.8
	Total	19	100.0

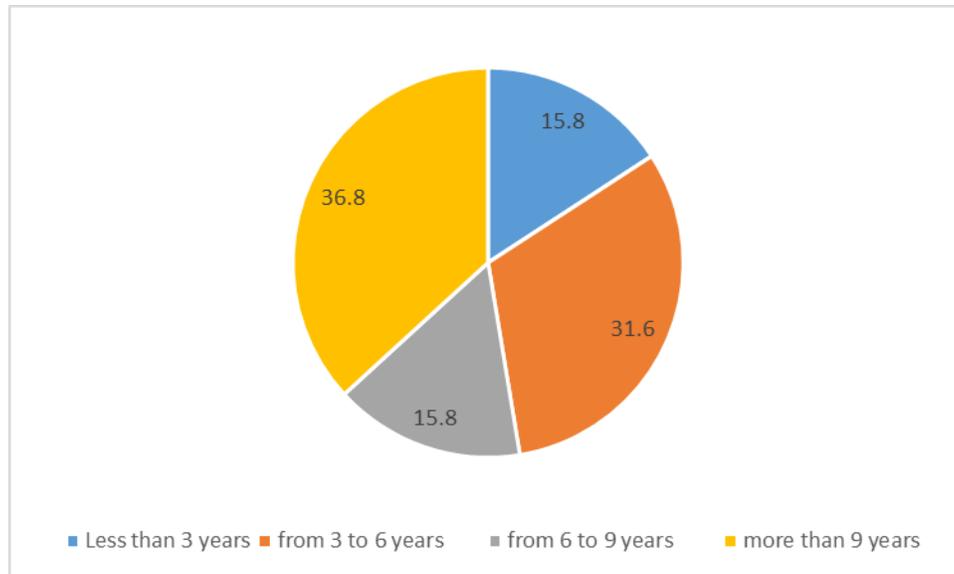


Figure 4.6: Work Experience

According to Work experience, 36.8% of the sample were more than 9 years, 15.8% were from 6-9 years, 31.6 % were from 3-6 years, and 15.8% were less than three years.

Table 4.8: Factory workplace

		Frequency	Percent
Valid	Hebron	10	52.6
	Jerusalem	7	36.8
	Jericho	1	5.3
	Ramallah	1	5.3
	Total	19	100.0

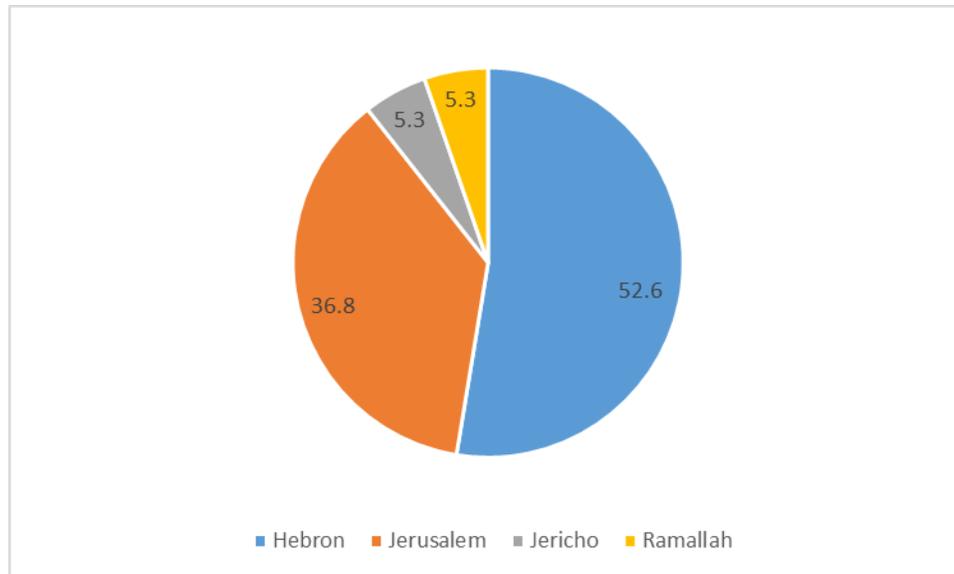


Figure 4.6: Factory workplace

According to the factory workplace, 52.6% of the sample was Hebron, 36.8% of the sample was Jerusalem, 5.3% of the sample was Jericho, and 5.3% of the sample was Ramallah.

4.10 Statistical techniques

The researcher collected the data through Interviews work and distributing the questionnaire to the study sample. Data were considered collected through a questionnaire of a cross-sectional type, processed statistically by the computer using the Statistical Package for Social Sciences program SPSS for statistical analysis and description required by the research. The following statistical techniques and methods will be used:

Statistical methods used in the analysis of the research are:

- Frequencies and Percentages to describe personal and demographic variables.
- Means (averages), Standard Deviations, and Coefficients of Variation to measure respondents' perceptions toward the Questionnaires' Items.
- The VRIO model was used to analyze the open-ended questions in the questionnaire and to analyze the interview questions.

4.11 Method correction

Some of the results were produced by the Likert scale method and the following distribution was used in the correction of the questionnaire's paragraphs:

Table 4.9.: Likert scale

Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
6	5	4	3	2	1

The respondent's answers were given numbers, to weights their trends from 1-6, the difference between the highest value (6) and the lowest value (1) was calculated then it was divided by the number of fields: $(6-1)/6=.083$). The intervals are calculated by increasing (.83) to the lowest value. To be able to determine the level and intensity of the responses based on the arithmetic mean.

Table 4.10: Correction Key

Mean	Level
Less than 1.8	Very Low
1.8 – less than 2.6	Low
2.6 – less than 3.4	Moderate
3.4 – less than 4.2	High
From 4.2 or more	Very High

Source: (AMOS Help, V.24)

Chapter Five: Empirical Results

5.1 Introduction

This chapter focuses on the analysis of the collected data and research findings.

5.2 Descriptive analysis of the research sample

5.2.1 Analysis of statements (Big data)

1. Big data

Table 5.1 shows the means, standard deviation, and variation coefficient to use big data in Palestinian dairy companies.

Table 5.1: The significant differences in all of use of big data

	Statement	Mean	Standard Deviation	C. V.
BD 1.1	Your company uses big data technology	4.89	.567	.11
BD 1.2	The company adopts a huge data analysis policy	5.10	.567	.11
BD 1.3	IT infrastructure and software are available to perform data analysis regarding market and competitors	5.21	.787	.15
BD 1.4	There is sufficient technical infrastructure for effective and secure data exchange between employees	5.21	.787	.15
BD 1.5	Data helps meet customer needs	5.26	.805	.15
BD 1.6	Data analysis helps in creating new products	5.15	.834	.16
	Total	5.13	.7245	.14

Note: See the correction key in table 4.10 to recognize the overall standards for each average and the deviation in the questionnaire analysis presented in chapter four.

The coefficient of variation (CV) is the standard deviation divided by the mean and is expressed as a percentage (Saunders et al., 2016).

As indicated in the table above, it is clear that the total degree of use of Big Data is approximately very high (5.13) with a slight variation coefficient of (0.14).

The statement "Data helps meet customer needs" has the highest mean (5.26) with the smallest C.V of (0.15). However, the statement "Your company uses big data technology" has the smallest mean (4.89) with a C.V of (0.11).

The results showed that Palestinian dairy companies seek to use and benefit from big data but face difficulty providing the necessary technological techniques.

2. Size property

Table 5.2 shows the means, standard deviation, and variation coefficient of the Size property of data collected and analyzed in dairy companies in Palestine.

Table 5.2: The significant differences in all of size property

	Statement	Mean	Standard Deviation	C. V.
BD2.1	Analyze large amounts of data	5.05	.94	.18
BD2.2	Explore a large amount of data	5.10	.73	.14
BD2.3	Use of large amounts of data	4.89	1.19	.24
BD2.4	Examine large amounts of data	4.68	1.24	0.26
	Total	4.93	1.0	.20

From the table above, it is clear that the total degree of size property is approximately moderate (4.93) with a slight variation coefficient of (0.20).

The statement "Explore a large amount of data" has the highest mean (5.10) with the smallest C.V of (0.14). However, the statement "Examine large amounts of data" has the smallest mean (4.68) with a C.V of (0.26).

The results indicated that the Palestinian dairy companies are interested in collecting large amounts of data about the market, consumers, and competitors. However, they find it challenging to examine and analyze this data using data technology.

3. Diversity property

Table 5.3 shows the means, standard deviation, and variation coefficient of the diversity property of data collected and analyzed in dairy companies in Palestine.

Table 5.3: The significant differences in all of diversity property

	Statement	Mean	Standard Deviation	C. V.
BD3.1	Get data from multiple sources	5.26	.80	.15
BD3.2	Analyze many types of data	5.0	.74	.14
BD3.3	Data flows into the company from a variety of sources	5.05	.77	.15
	Total	5.10	.77	.15

As indicated in the table above, it is clear that the total degree of diversity property is very high (5.10) with a slight variation coefficient of (0.15).

The statement "Get data from multiple sources" has the highest mean (5.26) with the smallest C.V of (0.15). However, the statement "Analyze many types of data" has the smallest mean (5.00) with a C.V of (0.14).

The previous results indicated that there is a diversity in the data that is collected, and this is logical. This is because companies collect data from several methods, such as social media, interviews, surveys, and more.

4. Velocity property

Table 5.4 shows the means, standard deviation, and variation coefficient of the velocity property of data collected and analyzed in dairy companies in Palestine.

Table 5.4: The significant differences in all velocity property

	Statement	Mean	Standard Deviation	C. V.
BD4.1	Analyze the data immediately after receiving it	4.52	1.34	.29
BD4.2	There is no period between data acquisition and analysis	4.05	1.64	.40
BD4.3	Analyze the data obtained by the company as quickly as possible	4.78	1.18	.24
	Total	4.45	1.38	.31

The table above shows that the total degree of Velocity property is very high (4.45) with a slight variation coefficient of (0.31).

The statement "Analyze the data obtained by the company as quickly as possible" has the highest mean (4.78) with the smallest C.V of (0.24). However, the statement "There is no time period between data acquisition and analysis" has the smallest mean (4.0) with a C.V of (0.40).

As shown in the previous results, the collected data was analyzed. Still, there is a period to obtain the analysis results due to the use of manual analysis methods.

5. Value characteristic

Table 5.5 shows the means, standard deviation, and variation coefficient of the value characteristic of data collected and analyzed in dairy companies in Palestine.

Table 5.5: The significant differences in all of value characteristic

	Statement	Mean	Standard Deviation	C. V.
BD5.1	The company analyzes and makes use of the data and converts it into reliable results	5.15	1.01	.19
BD5.2	The strength of the company's decisions lies in the accuracy of the data it obtains and analyzes in a timely manner	5.15	1.01	.19
BD5.3	The company analyzes the data it obtains to increase its production efficiency	5.21	.97	.18
BD5.4	The company analyzes data to help it increase its market share	5.10	1.1	.21
	Total	5.15	1.0	.19

The table above shows that the total degree of Value characteristic is very high (5.15) with a small variation coefficient of (0.19).

The statement "The company analyzes the data it obtains to increase its production efficiency " has the highest mean (5.21) with the smallest C.V of (0.18). However, the statement "The company analyzes data to help it increase its market share " has the smallest mean(5.10) with a C.V of (.21).

The results indicate the importance of analyzing data for Palestinian dairy companies, as it helps increase their production efficiency and market share.

5.2.2 Analysis of statements (Value proposition)

Value proposition

Table 5.6 shows the means, standard deviation, and variation coefficient of the Value proposition of data collected and analyzed in dairy companies in Palestine.

Table 5.6: The significant differences in all of the Value proposition

	Statement	Mean	Standard Deviation	C. V.
Value proposition 1.1	It relies on data to evaluate consumers' opinions and attitudes about the company's products.	5.26	.73	.13
Value proposition 1.2	There is importance to data about every new product that a company brings to the market	5.47	.69	.12
Value proposition 1.3	Utilizing data to know the needs and desires of consumers	5.21	.97	.18
Value proposition 1.4	The data provides implications and benefits about the company's products compared to competing products	5.00	1.00	.2
Value proposition 1.5	Accurately identify target customers	4.94	.91	.18
Value proposition 1.6	Determine customer satisfaction with the company's products	5.05	.70	.13
Value proposition 1.7	The data says that the customer is always right	4.57	1.64	.35
Value proposition 1.8	The company seeks to make	5.42	1.01	.19

	the customer a permanent loyalty			
Value proposition 1.9	The company invests in its relationships with customers to obtain new ideas	5.15	.83	.16
Value proposition 1.10	The company follows up on problems raised by customers	5.47	.77	.14
Value proposition 1.11	The data indicate that the prices of the company's products are commensurate with the capabilities of customers	5.05	.91	.18
	Total	5.14	.88	.17

The table above shows that the total degree of Value proposition is very high (5.14) with a small variation coefficient of (0.17).

The statement “There is importance to data about every new product that a company brings to the market “has the highest mean (5.47) with the smallest C.V of (0.12). However, the statement “The data says that the customer is always right " has the smallest mean (4.57) with a C.V. of (0.35).

The results showed that the Palestinian dairy companies are interested in achieving a good value proposition, taking care of customer's opinions, and acting upon them.

5.2.3 Analysis of statements (Core competency)

1. Market Reach

Table 5.7 shows the means, standard deviation, and variation coefficient of the market reach of data collected and analyzed in dairy companies in Palestine.

Table 5.7: The significant differences in all of market reach

	Statement	Mean	Standard Deviation	C. V.
Core competency 1.1	The products are easy to sell in the local markets	4.94	1.07	.21
Core competency 1.2	It is easy to access foreign markets	3.26	1.48	.45
Core competency 1.3	Facilitates access and acquisition of production inputs to manufacture products	4.36	1.60	.36
Core competency 1.4	Facilitates the company's products to shops in the majority of regions	5.31	.88	.16
Core competency 1.5	Legal government facilities help grant licenses to distribute products in all regions	4.52	1.26	.27
Core competency 1.6	Easy to reach new customers	4.73	1.14	.24
Core competency 1.7	Easy access to new suppliers	4.47	1.30	.29
	Total	4.51	1.24	.27

As the above table indicated, it is clear that the total degree Market Reach is approximately high (4.51) with a small variation coefficient of (0.27).

The statement “Facilitates the company's products to shops in the majority of regions “has the highest mean (5.31) with the smallest C.V of (0.16). However, the statement "It is easy to access foreign markets" has the smallest mean) 3.26) with the smallest C.V. of (0.45).

The results showed that dairy companies compete with each other to reach all shops in all regions to increase their market share. In addition, there is currently easy access to suppliers and obtaining raw materials. However, dairy companies suffer from access to foreign markets and exporting their products abroad. The reason is the restrictions the occupation imposes on Palestinian companies in general.

2. Provide higher value to customers

Table 5.8 shows the means, standard deviation, and variation coefficient of the Provide higher value to customers of data collected and analyzed in dairy companies in Palestine.

Table 5.8: The significant differences in all of Provide higher value to customers

	Statement	Mean	Standard Deviation	C. V.
Core competency 2.1	Provide high-quality products	5.52	.84	.15
Core competency 2.2	The prices of the company's products are suitable for all customers	5.15	.76	.14
Core competency 2.3	The quality of the products matches their prices	5.31	.88	.16
Core competency 2.4	There is an IT infrastructure and software to analyze customers' opinions about the company's products	4.78	1.47	.30
Core competency 2.5	Work on creating new products according to the desire and demand of customers	5.31	.82	.15
	Total	5.21	.95	.18

The above table shows that the total degree of providing higher value to customers is very high (5.21) with a small variation coefficient of (0.15).

The statement "Provide high-quality products" has the highest mean (5.52) with the smallest C.V of (0.15). However, the statement "There is an IT infrastructure and software to analyze customers' opinions about the company's products " has the smallest mean (4.78) with the smallest C.V of (0.30).

Dairy companies confirmed that they seek to provide high-quality products to consumers and strive to innovate new products. However, they are still suffering from a problem in the availability of an information technology infrastructure for analyzing the data collected on consumers. The availability of big data technology helps to accurately know the products preferred by customers and helps create new products.

3. Competitiveness

Table 5.9 shows the means, standard deviation, and variation coefficient of the Competitiveness data collected and analyzed in dairy companies in Palestine.

Table 5.9: The significant differences in all Competitiveness

	Statement	Mean	Standard Deviation	C. V.
Core competency 3.1	There is a variety of products of the company.	5.68	.94	.16
Core competency 3.2	The permanent ability to innovate new and high-quality products	5.36	.76	.14
Core competency 3.3	The company's products compete with local products in terms of price	5.10	1.28	.25
Core competency 3.4	The company's products compete with Israeli products in terms of price	5.26	.93	.17
Core competency 3.5	The company's products compete with Turkish and European products in terms of price	5.00	1.20	.24
Core competency 3.6	The company's products compete with local products in terms of quality	5.42	.90	.16
Core competency	The company's products compete	5.52	.69	.12

3.7	with Israeli products in terms of quality			
Core competency 3.8	The company's products compete with Turkish and European products in terms of quality	5.47	.77	.14
	Total	5.35	.93	.17

The table above shows that the average total degree of Competitiveness is very high (5.35) with a slight variation coefficient of (0.17).

The field “There is a variety of products of the company “has the highest mean (5.68) with the smallest C.V of (0.16). However, the field “The company's products compete with Turkish and European developments in terms of price ” has the smallest mean (5.00) with a C.V. of (0.24).

The results showed intense competition among the Palestinian dairy companies in providing high-quality products at a reasonable price. Dairy companies seek to compete with Israeli and foreign products.

5.2.4 Analysis of Statements (Company Capabilities)

1. Strategic capabilities

Table 5.10 shows the means, standard deviation, and variation coefficient of the Strategic capabilities of data collected and analyzed in dairy companies in Palestine.

Table 5.10: The significant differences in all Strategic Capabilities

	Statement	Mean	Standard Deviation	C. V.
Company Capabilities 1.1	The company formulates a strategy to achieve its objectives.	5.31	.74	.13
Company Capabilities 1.2	The company's vision is clear to its employees	4.73	1.36	.28

Company Capabilities 1.3	The company's strategy is comprehensive and flexible	4.84	1.42	.29
Company Capabilities 1.4	The company has material and organizational resource that enables it to provide distinctive products to its customers.	5.15	.76	.14
Company Capabilities 1.5	The company's senior management seeks to organize its material capabilities to maintain its competitive position.	5.36	.68	.12
Company Capabilities 1.6	The company has advanced information technology that helps it create the best products	5.00	1.00	.2
Company Capabilities 1.7	Seeking to increase market share	5.52	.51	.09
	Total	5.13	.92	.17

As the above table indicates, it is clear that the total degree of Strategic capabilities is very high (5.13) with a slight variation coefficient of (0.17).

The statement "Seeking to increase market share" has the highest mean (5.52) with the smallest C.V of (0.09). However, the statement "The company's vision is clear to its employees " has the smallest mean (4.73) with the smallest C.V of (0.28).

The results showed that the Palestinian dairy companies have strategic capabilities that help them develop good strategic plans for the company.

2. Basic capabilities

Table 5.11 shows the means, standard deviation, and variation coefficient of the Basic capabilities of data collected and analyzed in dairy companies in Palestine.

Table 5.11: The significant differences in all of the basic capabilities

	Statement	Mean	Standard	C. V.
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			Deviation	
Company Capabilities 2.1	The company is interested in developing its business by investing to create new opportunities.	5.47	.69	.12
Company Capabilities 2.2	The company's management motivates all working individuals to provide new ideas	4.84	1.21	.25
Company Capabilities 2.3	The company is keen to provide skilled workers	4.94	1.17	.23
Company Capabilities 2.4	The company is keen on hiring cheap workers	4.47	1.46	.32
Company Capabilities 2.5	Using modern technology	5.15	.83	.16
Company Capabilities 2.6	Training employees to increase their productivity	5.00	1.20	.24
Company Capabilities 2.7	The company is keen to provide training workshops to enhance the skills of workers	4.78	1.35	.28
Company Capabilities 2.8	The company is keen to use modern machines in production	5.31	.67	.12
	Total	4.99	1.07	.21

From the table above, it is clear that the average total degree of Basic capabilities is very high (4.99) with a small variation coefficient of (.21).

The field “The company is keen to use modern machines in production “has the highest mean (5.31) with the smallest C.V of (0.12). However, the field “The company is keen on hiring cheap workers " has the smallest mean (4.47) with a C.V. of (0.32).

In addition to the dairy companies possessing strategic capabilities, they also have the basic capabilities that help the company improve its productivity and increase its market share.

3. Context Capabilities

Table 5.12 shows the means, standard deviation, and variation coefficient of the Context capabilities of data collected and analyzed in dairy companies in Palestine.

Table 5.12: The significant differences in all of the Context Capabilities

	Statement	Mean	Standard Deviation	C. V.
Company Capabilities 3.1	The company has sufficient knowledge of the financial objectives	5.52	.61	.11
Company Capabilities 3.2	The company has sufficient resources to cover operating expenses	5.31	.74	.13
Company Capabilities 3.3	The company carries out periodic follow-ups on expenses	5.68	.58	.10
Company Capabilities 3.4	The company seeks to increase its sales	5.68	.47	.08
Company Capabilities 3.5	The company seeks to invest its relations with everyone in order to obtain new ideas	5.15	.76	.14
Company Capabilities 3.6	The company follows a strategy to regulate its financial capabilities	5.57	.69	.12
Company Capabilities 3.7	The company has a department to organize and manage its relationships with customers	4.94	1.26	.25
	Total	5.36	.73	.13

From the table above, it is clear that the average total degree of Context capabilities is very high (5.36) with a small variation coefficient of (0.13).

The field “The Company seeks to increase its sales “has the highest mean (5.68) with the smallest C.V of (0.08). However, the field “The company has a department to organize and manage its relationships with customers" has the smallest mean (4.94) with a C.V. of (0.25).

The results showed that dairy companies have context capabilities because they seek to increase their sales and productivity, pay attention to customers' opinions, and strive for the success and continuity of the company.

4. Foundational or commodity capabilities

Table 5.13 shows the means, standard deviation, and variation coefficient of the Foundational or commodity capabilities of data collected and analyzed in dairy companies in Palestine.

Table 5.13: The significant differences in all of the foundational or commodity capabilities

	Statement	Mean	Standard Deviation	C. V.
Company Capabilities 4.1	Providing high-quality and competitive products	5.52	.61	.11
Company Capabilities 4.2	Designing a marketing system for the company's products (making ads, promoting)	5.31	.82	.15
Company Capabilities 4.3	Continuous research to reduce production costs	5.47	.77	.14
Company Capabilities 4.4	Reducing production costs through creativity and innovation	5.05	1.07	.21
Company Capabilities 4.5	Reduce raw material costs.	5.52	.61	.11
Company	Increasing productivity by employing	5.05	1.07	.21

Capabilities 4.6	skilled manpower			
	Total	5.32	.82	.15

As the above table indicated, it is clear that the total degree of Foundational or commodity capabilities is very high (5.32) with a small variation coefficient of (0.15).

The statement “Providing high quality and competitive products and reducing raw material costs ” has the highest mean (5.52) with the smallest C.V of (0.11). However, the statement “Reducing production costs through creativity and innovation and Increasing productivity by employing skilled manpower ” has the smallest mean (5.05) with the smallest C.V of (0.21).

The previous results show that Palestinian dairy companies have institutional and commodity capabilities. This is because it seeks to produce high-quality and competitive products, the ability to bring low-cost raw materials, and the ability to be creative and innovate new products.

5.3 One-way ANOVA test

Table 5.14: One-way ANOVA test to test inner differences between Factors and Questionnaire Dimensions.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.770	19	1.672	1.699	.034
Within Groups	354.220	360	.984		
Total	385.989	379			

The above table shows that there is no statistically significant difference in the averages related to the questionnaire questions because of that significance to P. Value less than 5%.

This indicates no discrepancy, but the other result of the Tukey test appeared, so we can know if there is a relationship between the questions. We found that all the questions were directed in the same field; there were no statistically significant differences. The Tukey test can be found in Table number (6) in the appendix.

This result is the opposite of the result of the open questions because, based on the questionnaire's answers to the available questions, it turns out that there is no correct understanding of big data. In reality, they do not have the technology to use big data.

5.4 VRIO analysis of open-ended questions and interviews

The open questions in the questionnaire and questions related to qualitative interviews with Palestinian dairy companies were analyzed using the VRIO model as shown in the figure.

5.4.1 VRIO analysis of qualitative interviews with Palestinian dairy companies

Interviews with Palestinian dairy companies of a qualitative nature were analyzed using the VRIO model. It is a strategic analysis tool to detect resources and capabilities in organizations to develop competitiveness, and it is considered one of the models that help analyze the organization's internal environment by focusing on its strengths. It is examined through 4 dimensions: value, scarcity, difficulty in imitation, and organization. The results were as in the following table, where it is clear that the average of the paragraphs related to the performance of the Palestinian dairy companies has a competitive advantage in part.

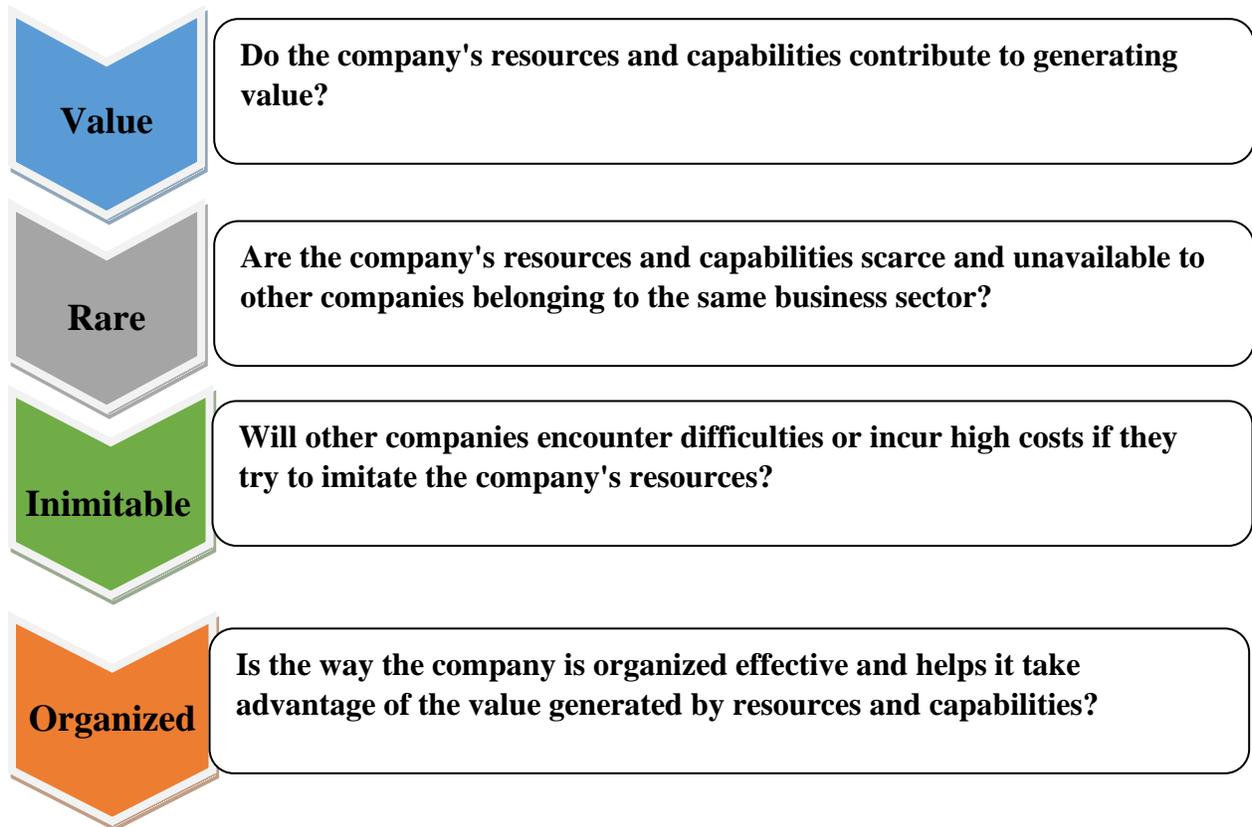


Figure 5.1: Interpretation of the VRIO model

Table 5.15: Analyzing interview questions with Palestinian dairy companies using the VRIO model

NO.	Question	Value	Rare	Inimitable	Organized	Aadvantage to compete
Section one: Information about the company's position						
Q1	Is there continuous development in the number of employees working in	Yes	No	No	Yes	Partially

	the company in the marketing, production, and sales departments, and what about the turnover rate and why?					
Q2	What is the growth of the number of dairy products offered by the company during the past five years?	Yes	Yes	Yes	Yes	Fully
Q3	What is the company's product sales growth rate monthly/yearly?	Yes	No	No	Yes	Partially
Q4	What are the company's favorite products for customers with more sales than other products?	Yes	No	No	Yes	Partially
Q5	How can the company compete with Palestinian products, and does it face difficulties and problems due to competition?	Yes	No	No	Yes	Partially
Q6	Does the company export its products to Israel and foreign countries?	No	No	No	No	Nothing
Q7	What are the company's plans to compete with local products?	Yes	No	Yes	Yes	Partially
Q8	How can the company's products compete with similar Israeli and foreign products?	Yes	No	No	Yes	Partially

Q9	Which of your adopted policies: lower price and better design? Instant customer satisfaction, or any other features added to their products?	Yes	Yes	Yes	Yes	Fully
Q10	How does the company conduct the marketing process of its products efficiently and effectively, by identifying the exact customers who have a need or desire for the products?	Yes	No	No	Yes	Partially
Section Two: Information about the company's products and customers						
Q1	How does the company develop and innovate new products through food processing experts?	Yes	No	No	Yes	Partially
Q2	The company imitates the products of other companies while adding some modifications to them?	Yes	No	No	No	Partially
Q3	Do The determinants of product development depend on the customer's attitude and behavior, or the	Yes	No	No	Yes	Partially

	customer's awareness?					
Q4	How is the product developed through the production department with the help of nutrition experts?	Yes	No	No	No	Partially
Q5	How is the product developed, through the marketing department, with the help of the company's distributors and retailers?	Yes	No	No	No	Partially
Q6	What data does the Company collect about the customer?	Yes	No	No	Yes	Partially
Q7	How does the company measure and meet customer expectations?	Yes	No	No	No	Partially
Q8	How do you get information about: <ul style="list-style-type: none"> • The company's products in the market • Products of competing companies in the market • The company's customer 	Yes	No	No	Yes	Partially
Q9	How does the information you collect help increase the company's sales? How?	Yes	No	No	No	Partially
Q10	In which region do the company's sales grow the most?	Yes	No	No	Yes	Partially
Q11	What are the areas that	Yes	No	No	Yes	Partially

	work to return the company's products?					
Q12	What are the areas that do not return the company's products?	Yes	No	No	Yes	Partially
Section Three: Big Data						
Q1	Do you know big data technology before?	No	No	No	No	Nothing
Q2	Do you know the importance of using big data in food industry companies?	No	No	No	No	Nothing
Q3	What will the stakeholders (factories, distributors, retailers, consumers) benefit from when we use Big Data in the analysis, and what are the expected results for these parties?	No	No	No	No	Nothing

The previous table shows that the employees of the Palestinian dairy companies responded to 3 axes, and their interpretation was as follows:

1. The first field: Information on the company's status

The dairy factory in the Arab project in Jericho

Through an interview with members of the Committee, the General Authority for the Dairy Factory within the Arab Project in Jericho, information and data about the factory and its current status were disclosed.

The Arab Project was established in 1956 in the Jericho area and is considered the first non-profit association based in Palestine. The project is located on a site of 8,000 dunums in which there are many projects, including palm farms, cow's farms, fish farms, fodder farms, empty spaces, and a dairy factory. The dairy factory was established in 1986 and is the first dairy factory in Palestine. Its products included pasteurized milk in bags, white municipal cheese, labneh, and Rayeb milk.

Despite this dairy factory, the first factory established in Palestine, it did not develop. It maintained almost the same amount of production, as the monthly output does not exceed 25 tons currently, and there is no great variety in products.

The reasons why the factory did not develop during these years:

- Bad management is because project management is the same as factory management. That is, the one who controls and manages the factory is the same as managing the project. In other words, there is no independent management of the factory.
- Distribution is directly through the factory car; no agents or retailers exist.
- The factory's small size limits product diversification and prolongs development time.
- Turnover of employees is not as it should be, as some employees resign. But not much, and it can be said that there is some stability.
- The company lacks a marketing system, quality control, information analysis, and visibility.
- The competitive position of the factory is rather bad, whereas competition of the dairy factory in the Arab project with other dairy factories in Palestine is feeble, not at 10%.

Although the dairy factory of the Arab project has strengths, such as the milk used to produce the products from the cows they have and the fodder that is fed to the cows from their farms, that is, the raw materials are not imported from abroad but are available to them, this vital point has not been exploited in a way Full.

Therefore, the factory seeks to develop itself in the coming years, and among its plans are:

- They are developing new products. Currently, the factory is starting to produce milk with fruits.
- Work on developing a new factory containing new machinery and equipment.
- Increasing production, reaching more than 25 tons per day.
- Increasing nutrition experts and technicians, as the factory has only two nutritionists and two technicians

Al-Jebreni Company in the Hebron area

During an interview with the Director of Sales and the Marketing Director, they disclosed the company's current situation and developments. Al-Jebrini Dairy and Foodstuff Company is one of the largest dairy and food companies, and it had a significant role in developing the dairy and food sector. This is because the company has adopted a strategy to build its industries to raise the national industry level in this sector and to provide a national product match to similar foreign products. In addition, the company offers more than 130 brands to meet the local market's needs.

The reasons why the factory did develop during these years:

- In 2007, the company established a cow farm, considered one of the first model farms in the region, and can accommodate more than four thousand heads of milk-producing cows. This is to provide raw milk to meet the growing market need and to provide Palestinian raw milk with high quality.
- Al-Jabrini Company experiences permanent growth in the number of employees in the sales, marketing, production, and customer service departments. Each period, they introduce new production lines to meet market demands, requiring new workers to produce and distribute the new products. The new customer service department also requires a minimum of 10 employees to follow up on customers.

- Despite that, a few employees resign from the company and most of them are female due to personal circumstances such as marriage, engagement, and having a baby. However, it can be said that there is stability in the turnover rate of employees in the company. Still, the turnover rate is high only among workers in the production department.
- Working on the creation of new products.
- The company includes a department for research and development department, whose role is to search for all new items and the products required and desired by consumers and employees.
- The marketing process is carried out through all channels, promotion, store tastings, and distribution of free samples of new items, making advertisements, videos, and advertisements for the company's products on social media.
- The agents and distributors in Palestine distribute items according to regional demand and preferences. Each agent supervises three areas and must know which products are preferred in each region.
- The company has food processing experts and a product quality inspection system.
- The company follows the art of dealing with the reference of the goods by selecting a smart representative who works to take the goods from the stores that want to return their goods 10 days before their expiry date, and then sends these goods to stores where the goods fluctuate greatly, or to areas where there are customers Prefer this type of item. If the representative cannot do so, the reference is sent to the company, and it works to destroy the goods.

The company's competitive position is good. According to the sales manager and marketing manager of the Al-Jebrini Company, Al-Jebrini Company competes with the local dairy companies in Palestine with all its might. The company is considered stronger than Hamouda Company and the dairy factory located in the Arab project, while its local competitors are Al-Junaidi Company and Candia Company. In addition, the company deals with the competition of Israeli dairy products such as cheese and milk but considers that the effect that it could not compete with is Israeli shipment.

In addition, some products are not manufactured in the company, such as cream, triangles, cheese, and butter. This is due to the lack of raw materials sometimes, the lack of machines that manufacture such products, or their cost is higher than their benefit. This does not prevent the company from considering manufacturing these products during the coming periods.

Since the Al-Jibreni Company does not allow it to export its products to Israel, the company worked to buy a salad factory in Israel. The name of the factory was Mickey's Salat, but now its name has changed to Today's Salad Factory.

The company always strives to improve itself because Al-Jabrini has no ceiling on expectations and goals. They always strive to catch up on anything new in items, equipment, and machines.

Hammoudeh Company in the Jerusalem area

During an interview with the CEO of Hammoudeh Company, he explained that Hamouda Company consists of two divisions: a division for the dairy industry and a division for the manufacture of salads. Still, each division is entirely separate from the other. In terms of raw materials for products, until 2009, the dependence on raw materials for products, packaging, and packaging was from Israel; after 2009, the producers began to free themselves from dependence on Israel, and imports began from abroad, such as plastic imported from abroad, milk is obtained from farms in Hebron.

In terms of marketing, they follow the policy of promoting in stores, giving gifts, and making discounts on products or bounties. On the other hand, the company cannot reduce the price of its products because if the price is reduced, it cannot be raised again. This is due to the culture among consumers that if the price of a product goes down, it is not acceptable to raise the price again. The company constantly works to increase new varieties according to the consumer's desire by approximately 2% or 4%. In addition, the return rate of products from shops does not exceed 2%.

Hamouda Company considers its strongest competitor among the Palestinian dairy companies to be Al-Junaidi Company due to its significant presence in the market, its great spread in the Palestinian areas, and the export of its products to Israel. In addition, Candia Company is also

considered a competitor to Hammouda Company because it has worked on producing products of higher quality than Hamouda and products that Hammouda did not initially manufacture, such as 0% skim milk, 2% fat milk, 3% fat milk, and fortified milk. Candia is considered the best competitor in milk and seeks to create a substitute, meaning that the Palestinians prefer its products over Israeli products. Therefore, I worked on following several plans, including placing the image of the cow, designed by Tnuva 20 years ago, for people to remember this advertisement and buy its products. Regarding competition with Israeli dairy companies, the CEO considers competition with Tnuva and Strauss unfair and illegal. Clarified that Israeli companies cannot compete with Palestinian companies in milk, labneh, and cheese products, and Israeli companies do not produce these products to a large extent. That is why Israel competes in milk, chiment, and sweeteners. But Palestinian companies are trying to manufacture these products, such as the Candia Company, which started producing chiment, and consumers were impressed by its taste. This indicates that the Palestinian dairy companies can have milk, chiment, and sweeteners with good quality and price, but they need investors to invest in this direction.

The reason for the superiority of Israeli companies over Palestinian is that most of the input materials used in the Israeli and Palestinian companies are almost the same. This is due to two reasons:

1. Modern machines used in the production process: The use of advanced and modern machines that help produce larger quantities, higher quality, and in less time. Israeli companies rely on the original German machines of the Stefan Company, whose price exceeds 300,000 euros but carry approximately 200,000 kilos. In contrast, the Palestinian companies have non-original Copied machines for Stefan, whose price reaches 70,000 euros.
2. Package for products: Israeli companies are significantly superior in product packages over Palestinian companies. The shape of the cans is attractive to the eye and admired by consumers. Despite this, Al-Junaidi Company is seeking to make packages that attract the Palestinian consumer, as it now owns a factory that manufactures boxes for its products.

Price competition

When we look at Israeli dairy products, we find their prices are higher than Palestinian products. This is due to the culture of the Palestinian consumer. He believes Israeli products are of high quality, so their price is high. Therefore, we see that Palestinian dairy companies are afraid of raising the price because of the fear of the consumer. Still, Candia broke this rule by saying that the price of the chiment it produced is higher than that of the Israeli chiment. Despite this, Palestinian consumers liked it despite its high price. This indicates that the consumer prefers high-quality products, even with high prices.

2. The second field: Information on the company's products and customers

The dairy factory in the Arab project in Jericho

There is not much variety in the factory's products. This is due to the lack of diversity in its products, as it makes almost only four products, including yogurt, labneh, cheese, and Rayeb milk. In addition, the production volume is very small compared to the Palestinian dairy factories. For example, the daily production volume of the Al-Jundi Company is approximately 75 tons per day. In comparison, the dairy factory of the Arab project produces less than 25 tons per month, which is a big difference.

Factory sales decrease, or we can say that they are constant over 20 years. That is, they do not increase or decrease. Also, the factory cannot compete in price, in diversifying and forming products, nor can it reach all consumers.

Despite this, the customer who knows the factory's products and is familiar with them prefers it over similar products in other factories. For example, the labneh that the factory produces is preferred by many customers and has a market share.

Al-Jebreni Company in the Hebron area

The company strives to work on creating new products and the permanent diversity in the number and assortments of products. This is because, almost every year, the company works to

introduce two new types of products to the market based on the demand and needs of consumers and the market. The number of groups of items reached 18 groups, while the number of all items according to flavors and formations reached more than 130 items.

In addition, the company's main objective is to provide products to the consumer at the best price and quality. Therefore, the company has a particular strategy to satisfy its customers, such as:

- Always working on the issue of quality. That is, providing high-quality dairy products.
- Manufacture of product types according to the consumer's demand and desire and the market's need.
- Work on the presence of the company's products in all Palestinian areas and stores and at all times.
- Creating new products with no competitors in Palestine, such as the cream caramel and shredded cheese products.
- Setting development plans for the company, such as creating a new department to serve the customer and always striving to bring advanced equipment and machines for production.

Hammoudeh Company in the Jerusalem area

Hammoudeh Company seeks to provide its customers with a wide range of food products, such as regular milk, laban, shinina, labneh, cheeses, and beverages such as natural and industrial juices. Its sales are estimated at 35 million US dollars.

3. The third field: Big data

The dairy factory in the Arab project in Jericho

There is no system for collecting and analyzing information. Also, they do not collect information extensively about customers, the market, and competitors because there are no agents and representatives for the factory. They only participate in workshops.

Al-Jebreni Company in the Hebron area

The company is interested in collecting information about the market, competitors, and customers through the sales representative, as it works on delegating him to collect information about:

- The new items offered in the market to competitors, their offers, and any new product.
- After the shop owner's approval, the representative is asked to photograph any new item for the competitors and send it to the services department and the company's consultancy office.
- He must ask the customers and the store owner about their satisfaction with the company's products and how much they like its offers.

The company resorts to making questionnaires about the company's types of items and presenting them in certain areas to customers to know the extent of their satisfaction with the company's products and any new product they want the company to produce. In addition, the company collects information about customers through social networking sites through their comments on the company's products and obtaining information through reports and research of university students.

Despite this, the company has no department or system for collecting and analyzing information. Instead, this information is sent to the services department and the consulting office for analysis.

The company emphasized the importance of information and analysis, as it helps them know the preferred customer types for each region, create new products, and understand consumers' preferences.

Hammoudeh Company in the Jerusalem area

Information and data about the market and competitors are collected through distributors and representatives. Data and information are not analyzed using analysis programs, but meetings are

held between a committee consisting of sales officials and marketing officials, and information is consulted between them. In addition, monthly meetings are kept for the staff responsible for the information in the company, and discussions with the general manager.

Currently, two administrative programs have been developed that help collect information about inside and outside the company, but they are not used at the moment:

1. Sales program: a particular program for the company's sales to monitor the representatives and distributors of the company's products. Through this program, the representative puts the information he obtained from shop owners, consumers, and competitors, and then it is analyzed.
2. Administrative Operations Program: The German program monitors and surrounds all the administrative processes within the company. That is, through this device, you can see all the information and managerial moves of the company.

5.4.2 "VRIO" analysis of the open questions in the questionnaire to the sixth section

Table 5.14: Analyzing the open questions of the questionnaire in the sixth section and using the VRIO model

NO.	Question	Value	Rare	Inimitable	Organized	Aadvantage to compete
Section one: Information about the company's position						
Q1	How do the experts analyze the data: manually / statistically / explain that?	Yes	No	No	No	Partially
Q2	Statistical methods used?	Yes	No	No	No	Partially
Q3	How is the data used or benefited from, and are the	Yes	No	No	Yes	Partially

	results of data analysis transformed into reliable policies and procedures?					
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It is clear from the previous table that the employees of the Palestinian dairy companies responded to the sixth section of the questionnaire, and its interpretation was as follows. Most Palestinian dairy companies deal with data. However, their data analysis methods are primarily manual; there are technological programs such as SPSS, GPG, and RPM, but most companies depend on manual analysis. This is due to the lack of capabilities and capabilities necessary to use modern analytical techniques such as big data technology.

5.5 The use of big data in foreign companies versus Palestinian dairy companies.

Based on the information obtained about Palestinian dairy companies through interviews, questionnaires distributed to employees and secondary data obtained from previous reports and research related to Palestinian dairy companies. We discovered that big data technology is not being used, and employees do not understand how to apply it. Accordingly, we will review how foreign countries use big data technology and how it helps food industry companies improve their competitive advantage and market share.

5.5.1 The application of big data in the food industry in foreign countries.

Big data offers food science a new scientific methodology. Big data provides a solution to the regulatory difficulties facing food industry companies to understand consumer demand better and uncover food industry trends through big data analysis.

Big data implementation for companies goes through five essential stages (Ding et al., 2021), where companies can extract value from the data collected.

Firstly, big data collection of the food industry. Food-related data is collected based on sensors, websites, etc.

Secondly, multi-source data processing and fusion. Collected data is sometimes redundant and may contain false data and unethical data. Therefore, this data must be processed to clean and format it. In addition, data integration should be done after processing using logical probability

statistics and machine learning. For proper data processing, there are four main techniques for processing big data, namely:

- **Extraction:** Because the data collected has many structures and types, the data mining process helps transform complex data into a single, easy-to-process configuration. This helps achieve the purpose of rapid analysis and processing.
- **Cleaning:** Not all big data has value or importance, and some data are completely wrong, overlapping elements. So the data must be filtered and cleaned to extract valid data.
- **Big data storage and management technology:** The storage and management of big data must use memory to store the data collected, create a corresponding database, and manage and communicate. In addition, the presence of structured, semi-structured, and unstructured complex data management and processing techniques should be emphasized. This solves major problems such as transporting processable, reliable, and efficient, storable data. Accordingly, to deal with big data, one must develop a reliable distributed file system (DFS), energy efficiency optimized storage, computing integrity storage, big data deduplication, high efficiency, and technology to prevent massive data breaches, protect privacy, and back up data.
- **Big data analysis and mining technology:** For big data analytics technology to be effective, existing data mining and machine learning technology must be improved by developing new data mining techniques, such as data network mining and graph mining, and being able to penetrate domain-oriented big data mining techniques such as customer interest analysis, behavior analysis, and sentiment analysis. Improving machine learning technology is done through learning regression analysis, discriminatory analysis, cluster analysis, and exploratory analysis (fundamental analysis, correlation analysis) (Ding et al, 2021).

Third, big data mining and analysis. The mining method works to discover valuable data from big data that can accurately predict activities through measured data. There are some big data techniques used, like SVM (Support Vector Machine), Random Forest, and Naive Bayes, to help analyze the data that has been combined and processed.

Fourthly, big data view. Since data is complex and multidimensional and cannot be easily understood by anyone, it is essential to create a data presentation that is easily expressed and

understood by users. Like work parallel coordinate, scatter graph, and scatter graph matrix methods.

Fifth, big data security. In the lifecycle of big data about food, there are security risks at all stages of processing and mining. Accordingly, researching big data security technology has become an important topic, and providing security technical support for data processing, ensures data integrity, reliability and controllability.

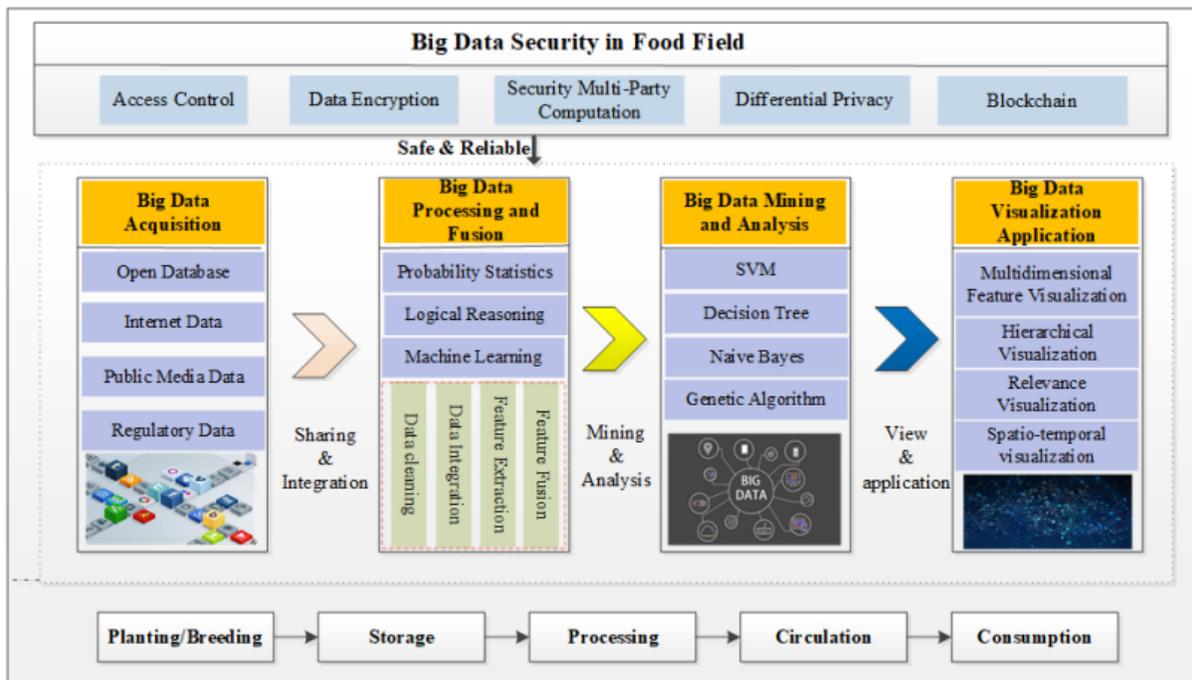


Figure 5.2: Big data application

Implementation of big data requires exceptional techniques to process large amounts of data efficiently and timely. These technologies include validation rule learning, classification, data fusion and integration, cluster analysis, genetic algorithms, machine learning, neural networks, natural language processing, pattern recognition, Anomaly detection, predictive modeling, regression, perspective analysis, signal processing, controlled and unsupervised learning, simulation, time series analysis, and visualization. Additional technologies being applied to big data include massive parallel processing databases (MPP), search-based applications, data and mining networks, distributed databases, cloud-based infrastructure (applications, storage, and computing resources), and the internet.

5.5.2 Harnessing the use of big data in food processing companies

Big data has become a focus for researchers interested in the potential value of big data on food. Therefore, the focus is IoT-based data collection and its application to smart agriculture, nutrition chain management, new product development, and sustainability. Sources of big data for food mainly include regulatory institutions and food (including data generated at every link in the industrial chain from agriculture to restaurants). Big data must be of high quality for its analysis to help develop the food industry. The analytics from low-quality data negatively affect managers' expectations of market demand and the company.

In addition, big data has recently played an important role in developing new products (NPD) in various sectors, contributing to value creation, generating ideas, and competitive advantage. Accordingly, the food industry has resorted to exploiting big data to improve the processes involved within NPD. To develop New Food Products (NFPD), search and find relevant data, and incorporate sustainability into the early stages of the NPD process in the food industry. This is done through the use of big data analytics in the NFPD. Companies that successfully enjoy using big data technology and extract value from their data with a clear advantage over their peers and change how they deal with and compete with them achieve success for the company. For example, three Chinese companies have successfully used big data, namely (Xiaomi Inc., Lenovo Group Ltd., and Dididache Inc.). Successfully integrate big data to support new product development activities (Jagtap & Duong, 2019).

To take advantage and enhance the use of big data in food industry companies, develop new products, and continuously change food markets. Four basic principles of BD must be adhered to (Jagtap & Duong, 2019).

Business insight. Business insights are categorized into four areas: Technology, Manufacturing, Market, and Customer. Companies must invest in the collected and extracted data and work on analyzing it. Accordingly, companies should take a realistic approach to technology investments and gain as much value as possible from the big data system, being able to handle technical issues in big data, especially concerns about storage and data cleaning. Therefore, sophisticated tools such as advanced systems must be used to improve the performance of basic operations in

the system. In addition, companies should pay attention to manufacturing by using new methods and methods to improve manufacturing. Through big data analytics, companies can gain real-time insights into the performance at the manufacturing site. Big data supports companies by collecting data on customer requirements and market trends, from food business news to scientific and academic research papers related to food, social media, e-commerce, etc.

Actionable insight: Big data can support and improve a company's operations, including the development of new products, only if it results in actionable plans. Therefore, companies should aim to be data-driven and connect data analytics to their business plans. This is because, in the food industry context, identifying the necessary insights helps identify and resolve critical phases. This is done by producing high-quality information that supports timely decision-making.

Agility: Agility is one of the most essential modern capabilities, and it works to develop the cooperation mechanism between suppliers, manufacturers, and departments. This mechanism requires a system through which information can be shared quickly and transparently using big data. That is because processing data into meaningful information, sharing and analyzing market trends in real-time, and making appropriate decisions helps companies develop products.

Real-time: An extensive data system allows companies to access data from multiple sources (such as smartphones, the web, sensors, etc.) to meet real-time requirements in decision-making. Real-time company awareness leads to the integration and facilitation of decision-making processes and the development of trust.

5.5.3 Global food-related companies have used big data technology.

Company Soft Drinks Industry Levy (SDIL)

A food factory in the United Kingdom, working in the beverage industry was targeting obese children, so they were working on producing low-calorie drinks. The company is considered one of the highest beverage manufacturers with a turnover of approximately 750, employs more than

1,000 people, and is committed to innovation and development of new products (NPD). This company worked on using big data to develop new products for the company.

In 2018, the UK government introduced a tax on sugary drinks to address the rising rate of obesity and diabetes. So, it will tax the beverage industry for any product they make that contains more than 5g of sugar per 100ml. Accordingly, the company's strategy was to develop soft drinks with less sugar, and the NPD team's goal was to create a Lemonade drink with less than 5g per 100ml.

The NPD team used a big data system to help them develop a lemonade with less sugar. This was done by collecting, synthesizing, and using data, and the company aims to integrate sustainability during the product development phase. The company has collected and manufactured big data to extract useful information. The focus was placed on five new product principles, and the big data system was exploited to extract useful information about them: quality, environmental impacts, performance, cost, and social impacts.



Figure 5.3: Application of big data in the development of new products

How to exploit big data technology in issuing a new low-sugar lemonade product (Jagtap & Duong, 2019).

Data were collected on seven brands of lemonade juice in the market and analyzed using the data. These seven brands have been selected and identified by the NPD team.

Product Pricing: The product has been priced by the NPD team, given that the product will be produced for one of the major UK retailers. Therefore, they collected data about product prices for competitors in the market, and based on their analysis, the price was set at £1.

Quality: In terms of quality, they collected consumer feedback on the company's new product. Consumer feedback was obtained about the lemonade drink and how much they cared about a new lemonade with less sugar. Data on consumers' opinions about lemonade for other brands were collected and analyzed using big data.

Production performance and cost: The cost of production was determined by collecting data about the lemonade products of other brands and the raw materials that enter their products. After analysis using big data technology, it was found that sucralose was added. It does not affect the current operations or add any other expenses to the product.

The company confirmed that thanks to the use of big data technology, the annual costs related to the NPD team were reduced by 33.43%. Moreover, the development time has been reduced from 30 weeks to 27 weeks.

Developed countries' realization of the importance of big data led them to succeed in accelerating the pace of progress. This helped them create new opportunities, know customer requirements, increase corporate competitiveness, manage crises and risks, and create new products.

5.5.4 The reality of Palestinian dairy companies using big data technology

In general, the Arab countries, as a whole, are still not adopting big data, despite its importance and the extent of its ability to bring about positive change for companies due to its lack of basic building blocks for local data. However, big data has been increasing rapidly and can be obtained from the Internet, social media, etc. In addition, governments face several problems in implementing big data projects. They cannot absorb them due to their lack of human and

technical capabilities, inability to deal with a bloated data landscape, lack of skills and resources, incomplete Internet connections, intermittent power supplies, and limited conductivity in high-capacity cables (Arab Economists, 2021).

Through interviews with some dairy companies in Palestine, it was found that big data technology is not used, and they resort to manual methods to collect and analyze the data collected about the market, customers, and competitors.

5.5.4.1 Reasons for not Using Big Data in dairy companies in Palestine

Many challenges and obstacles prevent the use of big data technology, including lack of government support, limited access to data, lack of skilled human resources, high costs of using big data technology, lack of technological tools, lack of statistical experts for big data, lack To adequate investment of these potentials.

How do dairy companies analyze data collected about customers, competitors, and the market?

First, the data is collected from delegates who collect information when distributing the company's products in shops in the market. **Secondly**, a team of employees in the company is identified, whether from the sales or marketing department, who discuss the data and information obtained from the representative and work on exploring and analyzing it.

The analysis method can be summarized in four points:

- All data is in random ways but not in an organized manner.
- The method of tabulating data is not clear and understandable.
- Managers are the ones who discuss and analyze the data.
- Recommendations are taken based on data analysis regarding products from the (production/marketing/sales) departments.

5.5.4.2 A model to summarize the difference between foreign companies and Palestinian dairy companies in using big data technology.

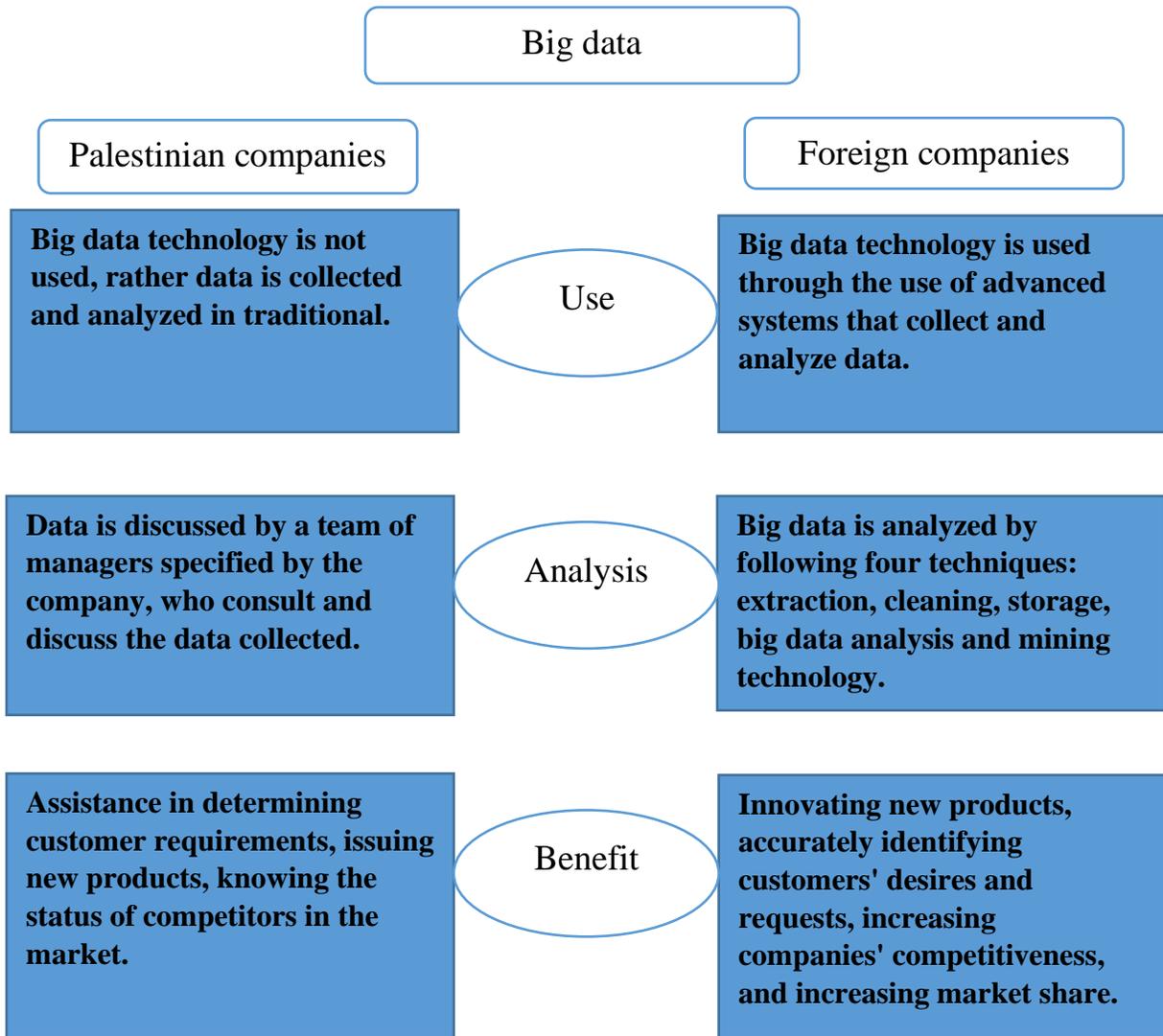


Figure 5.4: A model showing the difference in the use of big data between foreign and Arab countries Application of big data in the development of new products

5.5.5 How should Palestinian dairy companies analyze the data collected by using big data technology?

In order to use big data technology, there must be technological maturity that helps in using it, analyzing data by specific basic operations, identifying the parties to the big data system, defining the benefits and advantages of using it, and facing the challenges that limit its use. You can view Form No. (), as it summarizes the appropriate steps that help companies use big data technology.

5.5.5.1 Technological maturity

Big data requires cutting-edge technologies like Hadoop, Spark, and Azure Data Factory. Therefore, dealing with these technologies requires high skills because big data technologies are highly specialized and use languages that are not typical. In addition, it is developing new programming interfaces based on more established languages such as U-SQL (Application Architecture Guide, 2021).

Accordingly, there must be complexity in dealing with big data because it is difficult to ingest data from multiple data sources and work on analyzing, testing, and troubleshooting it is very difficult, and this requires a large number of configuration settings across multiple systems that must be used To facilitate the process of using big data technology.

Palestinian dairy companies must have technological maturity to help them use big data technology. Several things are required to provide technical maturity, including the Availability of highly skilled employees to deal with data analysis, the Availability of an excellent technological infrastructure that contains sensors and a large number of computers, and Greater collection a quantity of data about customers, competitors, and the market.

5.5.5.2 Basic Operations for Using Big Data Technology

The main goal of data analysis is to extract insights and meaningful information to help make sound decisions. Therefore, data analysis must be carried out based on modern techniques and specific steps, including (Thaqafati, 2022):

Data identification: The first step is to define the objective of the analysis, which is called the "problem statement," i.e., the aim is to solve a problem the company suffers from. Accordingly,

the data that needs to be collected to solve the problem, such as creating a new product, can be identified.

Data collection: After defining the goal, a strategy is prepared to collect appropriate data on customers, competitors, and the market. This is done by conducting questionnaires about the company's products to be distributed to customers, interviews with shop owners, data collection through social networking sites, and so on.

Data cleaning: The collected data is usually not ready for analysis automatically, so it must be cleaned first. This process requires a long time to remove unwanted data, so it requires modern technologies to facilitate the data cleaning process.

Data analysis: Data analysis requires modern techniques that help analyze it properly to benefit from it and extract meaningful information, like using big data technology.

5.5.5.3 Parties in the Big Data System

Big data technology consists of several parties that interact with each other, and these parties can be explained as follows (Albar, 2018):

First: Big Data Provider

The big data provider provides data from different sources to the service provider. The activities of data providers include creating data, creating metadata that describes data sources, and finding open data sources on the Internet.

Second: Big Data Service Provider

The service provider analyzes big data and provides the necessary infrastructure for it. The service provider's activities include collecting, storing, and integrating data, providing tools for exploring it and supporting its management, such as data privacy, security, and ownership.

Third: Big Data Service Client

The end user uses the results to make the right decisions based on the results of big data analysis.

5.5.5.4 Challenges faced by Palestinian dairy companies that prevent them from using big data technology and how to solve them

Big data refers to vast amounts of information that are difficult to collect and evaluate via traditional technologies and need to be quickly processed. Accordingly, many challenges make it difficult for companies in general to use this technology, such as:

- Big data requires specialized software to handle large amounts of data collected from various sources.
- A single machine cannot process big data, hence the need for a software and machine system.
- Big data amounts to several terabytes and zettabytes, which makes it too large for calculations by a single program.
- Big data is unstructured and unpredictable. Statistics show that 2020, there were about 44 trillion gigabytes of data.

The main challenges facing dairy companies that prevent them from using big data technology

The first challenge is a lack of understanding of big data technology and its importance.

Palestinian companies fail to understand the basics of big data technology, its benefits, and the necessary infrastructure to adopt it. It also does not train employees to use this technology, and this is due to the companies' unwillingness to change the current operations methodology.

The solution: Since big data represents a significant change for dairy companies, management must accept and adopt it first and then explain its importance to employees. In addition, data technology departments should organize training courses and workshops to teach employees to use big data technology.

The second challenge is data quality.

Since the data that needs to be analyzed comes from various sources of different formats, it is inaccurate and unreliable, as big data is sometimes inaccurate. This is because they may contain false information, be repetitive, and contain contradictions. Note that low-quality and unreliable data does not provide any helpful information. Inaccurate information may increase the risk of making wrong business decisions that harm the company.

The solution: Design a full suite of technologies to scan for malicious data at the start of collection, clean it, prepare it, and take the necessary measures to ensure data quality is maintained over the long term.

The third challenge is spending a lot of money.

Big data technology requires a lot of expenses, as it requires new devices and hiring new employees to deal with them, such as system managers and technology developers. In addition, you need to pay the costs of new software development, setup, and maintenance.

The solution: The appropriate answer is partially relying on big data technology. For example, the company must identify the technological needs specific to its goals and specify the data necessary to store it, meaning that the company does not hold all the data but rather identifies the data required only and works to store and analyze it. Also, improved algorithms can reduce computing power consumption by 5 to 100 times.

The fourth challenge: Upgrade and integration problems

The main advantage of big data is its ability to grow exponentially and the need to integrate data from different departments, so it constantly needs development and upgrades. Accordingly, it always needs to introduce advanced processing capabilities and new storage methods, so the complexity lies in how the company can permanently expand data while maintaining systemic performance and keeping the matter within the company's budget.

Solution: Design a decent architecture to solve big data and design big data algorithms with future upgrades in mind. In addition, planning for system maintenance and support so that it can adequately follow any changes related to data growth and conduct regular audits helps identify weaknesses and address them promptly.

Security problems

Electronic security is very important, but big data technologies suffer from neglect of security matters.

Solution: Take the necessary measures to meet data security challenges. This is done through developing a system that helps maintain the confidentiality and security of data.

5.6 Using the data cloud as an alternative to big data

Big data projects require advanced technological infrastructure and companies to strengthen local systems. Through interviews conducted with dairy companies, it was found that their technological infrastructure cannot keep pace with big data technology. Based on this, it may be possible to use the data cloud as an alternative, as it is more convenient and less expensive.

5.6.1 What does data cloud mean?

A data cloud is an integrated data management system that unites all data sources, data stores, and supporting data infrastructure in any company. Its use is less expensive than using big data technology.

The data cloud helps the company develop a unified system that allows processing, storing, and analyzing data, ensuring better governance and control over the permissions scanned for employees and cloud applications that access the stored data. Rather than having access to multiple sites, this helps the company regulate its data usage policies from a unified control point.

5.6.1 Advantages of using data cloud as an alternative to big data technology

First, it requires zero CAPEX: using data clouds reduces company IT infrastructure spending. As mentioned earlier, big data technology implementation projects require enormous infrastructure resources, requiring high capital investments in the company's headquarters

(CAPEX). In contrast, the data cloud infrastructure is less expensive because it depends on operating expenses (OPEX). Therefore, you don't need to invest considerably when you need database servers or data warehouses. This is one of the most compelling benefits for companies that have convinced companies to move to the data cloud.

Secondly, reducing the cost of data analysis: Data analysis processes are less expensive for the data puller than big data. In addition, costs related to system maintenance, upgrades, energy consumption, etc., can be saved, and worries about technical aspects of data processing can be reduced.

Third, encouraging an agile and innovative culture: the use of the data cloud within the company can lead to the use of big data technology to gain a competitive advantage, and the use of the data cloud helps create the appropriate infrastructure for big data.

In addition, using the data cloud helps focus the employees in the company on analyzing the data rather than managing the servers and databases. This allows the work team to innovate and discover ideas that help increase production lines, enhance operational efficiency, and improve customer service.

Fourth, better business continuity: The center of big data replication, redundant storage, servers, networking equipment, and infrastructure is complicated and expensive, and systems take a long time to perform backups and restore. On the other hand, the data cloud is characterized by blockage and recovery, as it includes an effective mechanism for copying and restoring to ensure continuity of operation and allows storing data in the cloud infrastructure to recover from disasters faster, thus providing continuous access to information in the event of any malfunction in the systems.

Chapter Six: Summary, Conclusions, Policy implications, and further research.

6.1 Introduction

This chapter discusses the study's primary results, the conclusions after data analysis, policy, and practical implications. Finally, this chapter will present future studies relative to the subject.

6.2 Summary and Discussion of Results

6.2.1 Summary and discussion of the results related to study questions

Main question:

How will the utilization of big data lead to building a competitive strategy for the dairy products industry in Palestine?

The results showed that using big data technology correctly helps in building a competitive strategy for dairy companies. This is because its use helps in developing new products and enhancing the process of innovation and renewal, avoiding mistakes for decision-makers, accurately determining customers' desires and preferences, controlling food quality, and this is done by monitoring the supply chain and collecting information about it, collecting information about competitors and the products they offer. In addition to Thus, big data would enable dairy companies to keep updating their competitors on growth rates, quality control, evaluation of purchasing decisions, and price stability.

Accordingly, this study has proven the great importance of using big data technology, and that exploiting it correctly helps in building a competitive strategy for all companies in general and dairy companies in particular.

Specific questions:

- **How is big data used, and how does it help to gain a competitive advantage?**

The results showed that using big data technology for Palestinian dairy companies is difficult. This is because its use requires specialized programs that can handle large amounts

of data, and data analysis needs modern, sophisticated, and expensive programs. This thesis presents the challenges that make it difficult to use big data in Section Five in Part 5.5.5.4.

On the other hand, this does not prevent companies from trying to work on facing challenges in order to be able to use them. This is because big data provides a high competitive advantage for companies if they can benefit from and exploit it. It works to develop marketing processes, reduce costs, provide new products and services, and help in making timely decisions.

- **How could the current competitive position of dairy industry companies be improved?**

The results showed that the dairy sector in Palestine seeks to improve and increase its market share in the market. But, when looking at the shops, we see that many customers prefer to buy Israeli dairy products and sometimes foreign ones. This is due to several reasons, including Israeli products have a longer turnover rate than Palestinian products, For example, the Israeli milk of the Tnufa company, its validity period is 7 days, while the milk of the Al-Jabrini company 3 days, the variety of Palestinian dairy products compared to Israeli products whereas Palestinian dairy companies do not manufacture butter, cream, or condensed milk. In addition, some customers consider that the quality of Israeli products is better, as Israeli companies know customers' preferences and desires accurately, due to collecting data and information that helps them know their customers' requirements.

Accordingly, dairy companies Palestinian can increase market share and competitive advantage by increasing product quality, and greater product diversity, collecting data about customers, and analyzing them to find out their requirements and desires.

- **To what extent does big data, i.e., volume, variety, velocity, veracity, and value, affect the value proposition for dairy industry companies?**

The results showed that big data positively affects the value proposition of companies. This is because the main goal of the value proposition is to collect data about customers' opinions about the company's products and their satisfaction with the value provided. Therefore, the role of big data is to collect and analyze this data to help companies know the needs and desires of target customers, and thus help achieve customer satisfaction with the value provided by the company.

- **How the effects of big data could improve competency for dairy industry companies?**

The results showed that using modern data analysis methods such as big data technology instead of old methods helps the company enhance core efficiency. This is because using it makes it easier for the company to know the needs of customers and provide them with the greatest amount of benefits and advantages. In addition, collecting information about competitors and the products they offer gives the company the ability to introduce new products that are difficult for competitors to imitate. This indicates that big data helps meet the basic efficiency standards for companies presented in this thesis.

- **How could big data enhance affects the capabilities of dairy industry companies?**

The results showed that dairy companies adopting big data technology, putting it into practice, and working with it helps them possess enormous capabilities, such as determining how to access and protect information, knowing how to deal with consumers who have vital data, serving customers better, and improving the company's competitive capabilities.

6.2.2 Summary of the main results of this study

This study aimed to clarify the importance of using big data technology for Palestinian dairy companies to achieve a competitive advantage and increase their market share. Accordingly, the researcher reached the following results and conclusions:

- The results based on the secondary data showed that the use of big data technology helps increase the companies' value proposition, capabilities, and core competency.
- The results showed that Palestinian dairy companies use traditional data collection methods.
- The results showed that there is not enough and correct understanding among the employees of dairy companies about the importance of big data technology and its role in helping companies increase their competitive advantage and market share.
- The results showed that no Palestinian dairy company adopts a department dedicated to data collection and analysis using modern methods.

- The results showed that Palestinian companies lack the basic building blocks of local data, as they face many problems that prevent them from using big data technology, such as their lack of human and technical capabilities, their inability to deal with a huge volume of data, lack of skills and resources, and others.
- The results showed that many challenges and obstacles prevent the use of big data technology, such as lack of government support, limited access to data, high costs of using big data technology, lack of statistical experts for big data, lack of technological tools, and lack of sufficient investment for these capabilities.

6.2.3 Summary and discussion of what distinguishes this study from previous studies

After careful research, the results showed that there are no previous studies related to the topic of big data and how to exploit it to increase the competitive advantage of Palestinian dairy companies. Accordingly, to the best of the researcher's knowledge, this study is one of the rare studies that examine the role of using big data in enhancing the competitive strategy of the Palestinian dairy industry.

On the other hand, foreign studies presented in this study document the importance of using big data in increasing the competitive advantage and market share of all companies in general and food companies in particular. Therefore, this study is considered an extension of what was recommended by previous studies and was applied to the dairy industry sector in the State of Palestine.

6.3 Conclusions

The results of the study showed that big data technology helps enhance the competitive strategy of dairy companies and increase their market share, so we conclude that:

It is continuing to modernize and develop the technological infrastructure of companies and work to provide devices, equipment, software, networks, and modern databases in a way that keeps pace with continuous changes.

- Dairy companies allocate part of the company budget to establish a department specialized in managing and analyzing big data and providing everything needed to deal with big data.
- Develop plans to educate employees about the importance of big data and how to benefit from it in the company.
- They hold training courses and workshops to train employees to use specialized programs to analyze big data and extract the required results.
- There is a need for dairy companies to attract and employ specialists in information management and information technology who have expertise in analyzing and processing big data.
- Dairy companies develop a strategic plan to manage big data, absorb the continuous increase in data, and work on analyzing it and benefiting from it in making the right decisions.
- Trying to remove the challenges and obstacles that prevent using big data technology and modern technologies that analyze and process data.

6.4 Proposed challenges and policies:

When reviewing Chapter Five, Section 5.5.5.4, explains in detail the challenges that prevent Palestinian companies from using big data technology, and through this study, solutions were developed that could contribute to meeting the challenges.

According to the results and conclusions reached from the statistical analysis of the data, the proposed challenges and policies were formulated according to the following model:

Challenges facing and preventing Palestinian dairy companies from using big data

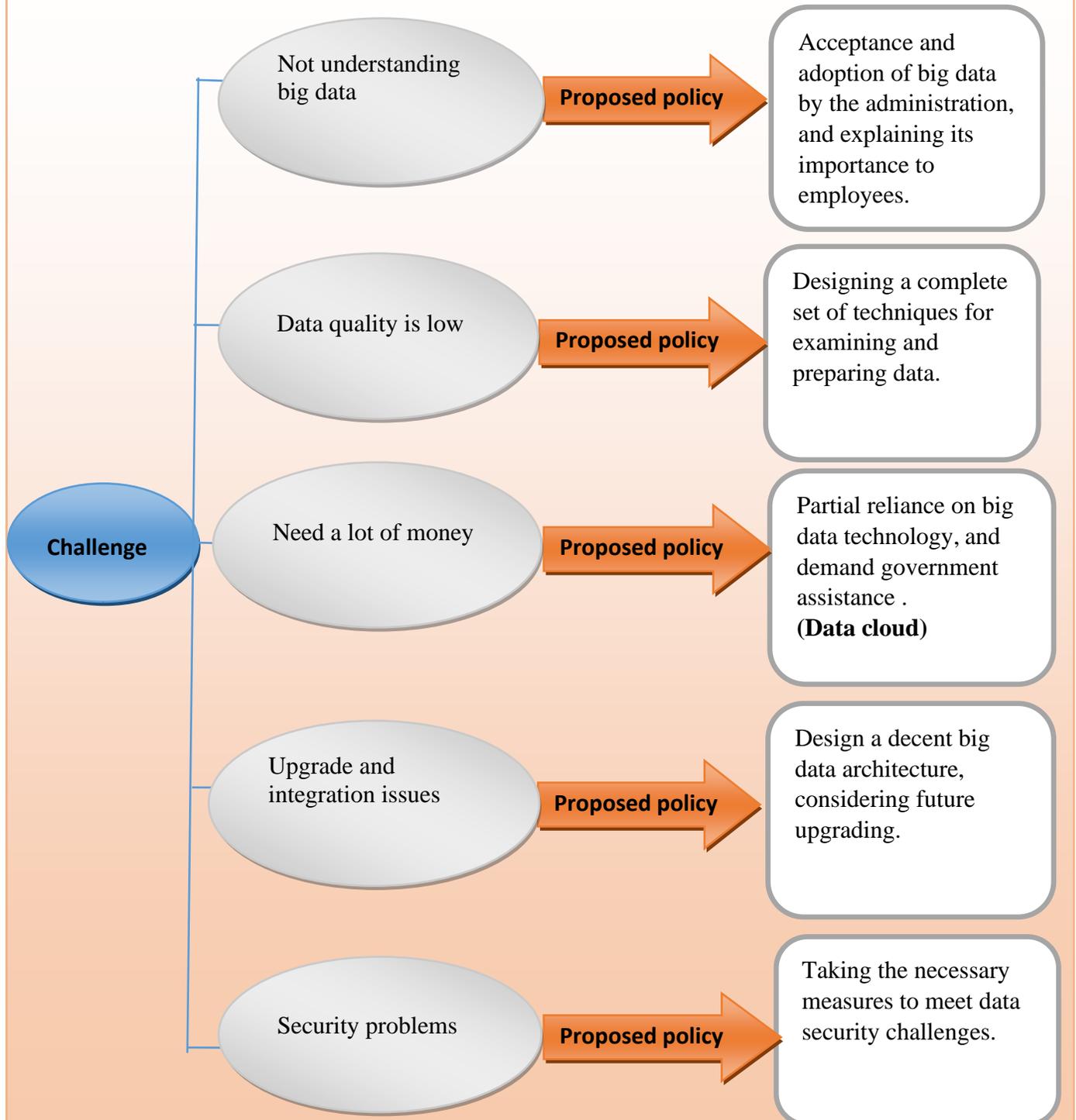


Figure 6.1: A model showing Challenges facing and preventing Palestinian dairy companies from using big data

6.4 Future studies

- The impact of the availability of big data technology requirements in achieving competitive advantage
- The Impact of big data analysis technology on the Financial and operational performance of dairy companies
- Challenges that Limit the Use of Big Data Technology in Palestinian Companies

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Appendices

Appendix 1: Arabic Questionnaire



جامعة القدس

عمادة الدراسات العليا

كلية ادارة الاعمال

"استبانة"

الاخ الفاضل/الاخت الفاضلة

تحية طيبة وبعد،

تقوم الباحثة بإجراء دراسة بعنوان

" استخدام البيانات الضخمة لتعزيز الاستراتيجية التنافسية: حالة دراسة شركات الألبان في فلسطين"

كمتطلب لنيل درجة الماجستير في ادارة الأعمال من كلية ادارة الاعمال - جامعة القدس. قامت الباحثة باعداد الاستبانة المرفقة بهدف جمع المعلومات، حيث ان استكمال الاجابة على كافة الفقرات والدقة في الاجابة ينعكس على صحة النتائج الي ستتوصل اليها الدراسة. علما ان اجاباتكم ستحاط بالسرية التامة وستستخدم لأغراض البحث العلمي فقط.

شكرا لحسن تعاونكم

الباحثة : الاء ابراهيم عوض

القسم الاول : البيانات الشخصية

يرجى وضع اشارة (x) على الحالة التي تنطبق عليك/ي

1. الجنس
 ذكر انثى
2. التخصص
 إدارة أعمال تسويق محاسب تكنولوجيا المعلومات تخصص آخر، رجاءا حدد -----
3. صنف العمل
 موظف مدير نائب مدير
4. العمر
 اقل من 30 من 30-40 عام من 41-50 عام من 51-60 عام أكثر من 60 عام
5. المؤهل العلمي
 اقل من ثانوي ثانوية عامة دبلوم بكالوريوس دراسات عليا
6. الخبرات العملية
 اقل من 3 سنوات من 3-6 سنوات من 6-9 سنوات أكثر من 9 سنوات
7. مكان العمل المصنع
رجاءا حدد -----

القسم الثاني: البيانات الضخمة

البيانات الضخمة : تعرف البيانات الضخمة على أنها عبارة عن مجموعة من البيانات التي لا يمكن تخزينها أو معالجتها باستخدام تطبيقات معالجة البيانات التقليدية ، نظراً لحجمها أو تعقيدها. تتضمن البيانات الضخمة جمع البيانات من كل مكان ويتم الحصول

عليها من مصادر متعددة مثل: تقارير الجهاز المركزي للإحصاء الفلسطيني، تقارير سنوية، تقارير دورية، المقابلا مع المستهلكين، معلومات من الموزعين مثل تجار التجزئة، الرسائل التي نرسلها لبعضنا البعض ، ومقاطع الفيديو التي ننشرها ، ومعلومات الطقس ، وإشارات GPS ، وما إلى ذلك. وتتمتع البيانات الضخمة بالخصائص التالية: الحجم، التنوع، السرعة في تغيير البيانات واستخدامها، الصدق، القيمة من حيث استخدام المعلومات والاستفادة منها. علما أن يتم التعامل مع البيانات الضخمة جزئيا وبطرق وأساليب مختلفة.

يرجى الاجابة على الاسئلة التالية بوضع اشارة (√) في المربع الصحيح بناء على وجهة نظرك:

الرقم	الفقرة	اتفق بقوة	اتفق الى حد ما	اتفق قليلا	لا اتفق قليلا	ما	لا اتفق بقوة
البيانات الضخمة : تطبيق تقنية البيانات الضخمة في الشركة .							
1	تستخدم شركتكم تقنية البيانات الضخمة						
2	تتبنى الشركة سياسة تحليل البيانات ضخمة						
3	تتوفر بنية تحتية وبرمجيات تكنولوجيا المعلومات للقيام بتحليل البيانات المتعلقة بلسوق والمنافسين						
4	توجد بنية تحتية تقنية كافية لتبادل البيانات بشكل فعال وامن بين الموظفين						
5	تساعد البيانات على تلبية احتياجات الزبائن						
6	تساعد تحليل البيانات على ابتكار منتجات جديدة						
خاصية الحجم : تعتمد على مقدار وحجم البيانات التي يتم جمعها، إذا كانت البيانات كبيرة بما يكفي يمكن اعتبارها بيانات ضخمة .							
1	تحليل كميات كبيرة من البيانات						
2	استكشاف مقدار كبير من البيانات						
3	استخدام كميات كبيرة من البيانات						
4	فحص كميات كبيرة من البيانات						
خاصية التنوع : يعتمد التنوع إلى تنوع أنواع البيانات، وقد تكون بيانات مهيكله وبيانات غير مهيكله .							

						الحصول على بيانات من مصادر متعددة	1
						تحليل أنواع عديدة من البيانات	2
						تدفق البيانات الى الشركة من مصادر متنوعة	3
خاصية السرعة: مدى سرعة إنشاء البيانات ومدى سرعة تحركها، وتحليلها في الوقت المناسب .							
						تحليل البيانات بعد استلامها مباشرة	1
						لا توجد فترة الزمنية بين الحصول على البيانات وتحليلها	2
						تحليل البيانات التي تحصل عليها الشركة بأسرع ما يمكن	3
خاصية القيمة: القيمة التي يمكن أن توفرها البيانات للشركة، مثل اتخاذ القرارات الصحيحة وتحقيق الربح .							
						تقوم الشركة بتحليل البيانات والاستفادة منها وتحويلها إلى نتائج يمكن الاعتماد عليها	1
						تكمن قوة قرارات الشركة في دقة البيانات التي تحصل عليها وتحليلها في الوقت المناسب	2
						تقوم الشركة بتحليل البيانات التي تحصل عليها لزيادة كفاءتها الانتاجية	3
						تقوم الشركة بتحليل البيانات لمساعدتها في زيادة حصتها السوقية	4

القسم الثالث: عرض القيمة

عرض القيمة: هو بيان تجاري أو تسويقي تستخدمه الشركة لتلخيص سبب شراء المستهلك لمنتج الشركة، ويمكن إعتبره جميع

الادوات التي تستخدمها الشركة لكي تصل إلى أهدافها.

يرجى الاجابة على الاسئلة التالية بوضع اشارة (√) في المربع الصحيح بناء على وجهة نظرك:

الرقم	الفقرة	اتفق بقوة	اتفق الى حد ما	اتفق قليلا	لا اتفق قليلا	لا اتفق الى حد ما	لا اتفق بقوة
1	يعتمد على البيانات لتقييم آراء وموقف المستهلكين حول منتجات الشركة						

						2	هناك أهمية للبيانات حول كل منتج جديد تطرحه الشركة في السوق
						3	الاستفادة من البيانات في معرفة احتياجات ورغبات المستهلكين
						4	تقدم البيانات مضامين وفوائد حول منتجات الشركة مقارنة مع المنتجات المنافسة
						5	تحديد الزبائن المستهدفين بشكل دقيق
						6	تحديد رضا الزبون بالنسبة لمنتجات الشركة
						7	نفيذ البيانات أن الزبون على حق دائما
						8	تسعى الشركة أن تجعل للزبون ولاء دائم
						9	تستثمر الشركة علاقاتها مع الزبائن من أجل الحصول على أفكار جديدة
						10	تتابع الشركة المشاكل التي يتم طرحها من قبل الزبائن
						11	تفيد البيانات أن اسعار منتجات الشركة تتناسب مع قدرات الزبائن

القسم الرابع: الكفاءة الأساسية

الكفاءة الأساسية : المهارات والخبرة التي تمتلكها الشركة وتتفوق بها على منافسيها وتحقيق حصة أكبر في السوق، ويتم تحقيقها عند الالتزام بثلاث معايير الوصول إلى السوق، توفير قيمة أعلى للزبائن، وتعزيز القدرة التنافسية التي تعتمد في الغالب على البيانات والمعلومات التي تحصل عليها الشركة.

يرجى الاجابة على الاسئلة التالية بوضع اشارة (√) في المربع الصحيح بناءا على وجهة نظرك:

الرقم	الفقرة	اتفق بقوة	اتفق الى حد ما	اتفق قليلا	لا اتفق قليلا	لا اتفق الى حد ما	لا اتفق بقوة
الوصول إلى السوق : الوصول إلى مجموعة متنوعة من الأسواق والمستهلكين .							
1	من السهل بيع المنتجات في الأسواق المحلية						
2	من السهل الوصول إلى الأسواق الخارجية						
3	يسهل الوصول والحصول على مدخلات الإنتاج لتصنيع المنتجات						

						يسهل منتجات الشركة إلى المحلات التجارية في غالبية المناطق	4
						التسهيلات الحكومية القانونية تساعد في منح الترخيص لتوزيع المنتجات في جميع المناطق	5
						يسهل الوصول إلى زبائن جدد	6
						يسهل الوصول إلى موردين جدد	7
توفير قيمة أعلل للعملاء : تقديم أكبر فائدة وقيمة للعملاء عن المنتج النهائي .							
						تقديم منتجات ذات جودة عالية	1
						اسعار منتجات الشركة تناسب جميع الزبائن	2
						تناسب جودة المنتجات مع اسعارها	3
						هنالك بنية تحتية وبرمجيات تكنولوجيا المعلومات لتحليل اراء الزبائن حول منتجات الشركة	4
						العمل على ابتكار منتجات جديدة حسب رغبة وطلب الزبائن	5
القدرة التنافسية: منافسة الشركات المماثلة، وتقديم منتجات جديدة تحتوي على مزايا وفوائد يصعب على المنافسين تقليدها .							
						يوجد تنوع في منتجات الشركة	1
						القدرة الدائمة على ابتكار منتجات جديدة وذات جودة عالية	2
						تنافس منتجات الشركة المنتجات المحلية من حيث السعر	3
						تنافس منتجات الشركة المنتجات الاسرائيلية من حيث السعر	4
						تنافس منتجات الشركة المنتجات التركية والاوربية من حيث السعر	5
						تنافس منتجات الشركة المنتجات المحلية من حيث الجودة	6
						تنافس منتجات الشركة المنتجات الاسرائيلية من حيث الجودة	7
						تنافس منتجات الشركة المنتجات التركية والأوربية من حيث الجودة	8

القسم الخامس: قدرات الشركة

قدرات الشركة : هي القدرات الأساسية التي تشكل جوهر أعمال الشركة، لتحقيق الهدف الاستراتيجي وتحقيق نتائج الأعمال.

وتصنف قدرات الشركة الى: القدرات الإستراتيجية، القدرات الأساسية، قدرات السياق، القدرات التأسيسية أو السلعية .

يرجى الاجابة على الاسئلة التالية بوضع اشارة (√) في المربع الصحيح بناءا على وجهة نظرك:

الرقم	الفقرة	اتفق بقوة	اتفق الى حد ما	اتفق قليلا	لا اتفق قليلا	لا اتفق الى حد ما	لا اتفق بقوة
القدرات الإستراتيجية : هي القدرات التي تمنح الشركة تمايزا تنافسيا .							
1	تصيغ الشركة استراتيجية لتحقيق أهدافها						
2	رؤية الشركة واضحة لموظفيها						
3	استراتيجية الشركة شاملة ومرنة						
4	تمتلك الشركة مورد مادي وتنظيمي يمكنها من تقديم منتجات مميزة لريائتها						
5	تسعى الادارة العليا في الشركة الى تنظيم قدراتها المادية للحفاظ على موقعها التنافسي						
6	تمتلك الشركة تكنولوجيا معلومات متطورة تساعدها في ابتكار أفضل المنتجات						
7	تسعى لزيادة الحصة السوقية						
القدرات الأساسية : القدرات الكامنة في وجود الشركة وجوهر وجودها .							
1	تتحم الشركة في تطوير أعمالها عن طريق الاستثمار لخلق فرص جديدة						
2	تحفز ادارة الشركة جميع الأفراد العاملين على تقديم أفكار جديدة						
3	تحرص الشركة على توفير عمال مهرة						
4	تحرص الشركة على توظيف عمالة رخيصة الأجور						
5	استخدام تكنولوجيا حديثة						
6	تدريب العاملين لزيادة انتاجيتهم						
7	نحرص الشركة على توفر ورش تدريب لتعزيز مهارات العاملين						
7	نحرص الشركة على استخدام ماكينات حديثة في الإنتاج						

قدرات السياق : القدرات الأساسية لإنجاز أمور الشركة الهامة، مثل التمويل والتنظيم .

1	لدى الشركة معرفة كافية بالأهداف المالية					
2	لدى الشركة الموارد الكافية لتغطية النفقات التشغيلية					
3	تقوم الشركة بمتابعة دورية على المصاريف					
4	تسعى الشركة لزيادة مبيعاتها					
5	تسعى الشركة لاستثمار علاقاتها مع الجميع من اجل الحصول على أفكار جديدة					
6	تتبع الشركة استراتيجية لتنظيم مقدراتها المالية					
7	تمتلك الشركة قسم لتنظيم وادارة علاقاتها مع الزبائن					

القدرات التأسيسية أو السلعية: قدرات ضرورية لعمل الشركة تتمثل في الاستراتيجية الأساسية للقدرات السلعية .

1	تقديم منتجات ذات جودة عالية ومنافسة					
2	تصميم نظام تسويق لمنتجات الشركة (عمل اعلانات، الترويج)					
3	البحث المستمر لتقليل تكاليف الانتاج					
4	تقليل تكاليف الانتاج من خلال الابداع والابتكار					
5	تقليل تكاليف المواد الخام					
6	زيادة الانتاجية من خلال تشغيل الايدي العاملة الماهرة					

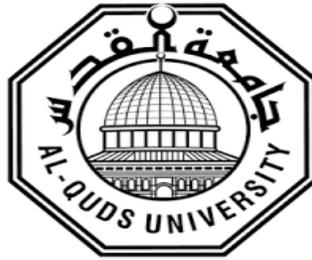
القسم السادس: كيفية التعامل مع البيانات الضخمة

1. كيف يتم تحليل البيانات: يدويا/ إحصائيا/ من خلال خبراء/ غير ذلك ؟

2. الأساليب الإحصائية المستخدمة ؟

3. كيف يتم استخدام البيانات والإستفادة منها، وهل تحول البيانات إلى سياسات وإجراءات ونتائج يمكن الاعتماد عليها؟

Appendix 2: English Questionnaire



Al-Quds University

Graduate Studies

Administration Business and Economics Faculty

Master of Business Administration

Dear Sir / Madam,

The researcher is conducting this study under the title of:

" Using Big Data to Enhance Competitive Strategy: A Case Study of Dairy Companies in Palestine ".

As a requirement for a master's degree in Business Administration. The attached questionnaire is prepared for data collection purposes, I hope that you will be able to participate in answering the sections of this questionnaire from your point of view accurately and objectively.

Kindly note that the data collected will be used for scientific research purposes only, and will be strictly confidential.

Thank you in advance

Researcher: Ala Ibrahim Awad

Supervisor: Prof. Dr. Mahmoud Al-Jaafari

First section: Personal Data

Kindly put an (X) next to the box that applies to you

1. Gender

Male

Female

2. Specialization

Business administration marketing Accountant Information technology

other major, please specify -----

3. Classwork

Officer Manager Deputy Director

4. Age

less than 30 years

from 30-40 years

from 41-50 years

from 51-60 years

above 60 years

5. Academic Qualification

Primary

Secondary

Diploma

B.A

M.A

6. Work Experience

- Less than 3 years
 from 3 to 6 years
 from 3 to 9 years
 more than 9 years

7. Factory workplace

Please select -----

Second section: Big data

Big data: Big data is defined as a collection of data that cannot be stored or processed using traditional data processing applications, due to its size or complexity. Big data includes collecting data from everywhere and obtained from multiple sources such as Palestinian Central Bureau of Statistics reports annual reports, periodic reports, interviews with consumers, information from distributors such as retailers, messages we send to each other, videos we publish, And weather information, GPS signals, etc. Big data has the following characteristics: volume, diversity, speed of changing and using data, honesty, and value in terms of using and benefiting from the information. Note that big data is dealt with partially and in different ways and methods.

Kindly answer the following questions by ticking (√) in the correct box that reflects your point of view:

NO.	Item	Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
Big data: the application of big data technology in the company							
1	Your company uses big data						

	technology						
2	The company adopts a huge data analysis policy						
3	IT infrastructure and software are available to perform data analysis regarding market and competitors						
4	There is sufficient technical infrastructure for effective and secure data exchange between employees						
5	Data helps meet customer needs						
6	Data analysis helps in creating new products						

Size property: depends on the amount and size of data collected, if the data is large enough it can be considered big data.

1	Analyze large amounts of data						
2	Explore a large amount of data						
3	Use of large amounts of data						
4	Examine large amounts of data						

Diversity property: Diversity depends on the diversity of data types, and it may be structured data and unstructured data.

1	Get data from multiple sources						
2	Analyze many types of data						
3	Data flows into the company						

	from a variety of sources						
Velocity property: How fast data is generated, how fast it moves, and analyzed in a timely manner.							
1	Analyze the data immediately after receiving it						
2	There is no time period between data acquisition and analysis						
3	Analyze the data obtained by the company as quickly as possible						
Value characteristic: The value that data can provide to a company, such as making the right decisions and making a profit.							
1	The company analyzes and makes use of the data and converts it into reliable results						
2	The strength of the company's decisions lies in the accuracy of the data it obtains and analyzes in a timely manner						
3	The company analyzes the data it obtains to increase its production efficiency						
4	The company analyzes data to help it increase its market share						

Third section: Value proposition

Value proposition: It is a commercial or marketing statement that the company uses to summarize why the consumer buys the company's product, and it can be considered as all the tools that the company uses to reach its goals.

Kindly answer the following questions by ticking (√) in the correct box that reflects your point of view:

NO.	Item	Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
1	It relies on data to evaluate consumers' opinions and attitudes about the company's products						
2	There is importance to data about every new product that a company brings to the market						
3	Utilizing data to know the needs and desires of consumers						
4	The data provides implications and benefits about the company's products compared to competing products						
5	Accurately identify target customers						
6	Determine customer satisfaction with the company's products						
7	The data says that the customer is						

	always right						
8	The company seeks to make the customer a permanent loyalty						
9	The company invests in its relationships with customers to obtain new ideas						
10	The company follows up on problems raised by customers						
11	The data indicate that the prices of the company's products are commensurate with the capabilities of customers						

Fourth section: Core competency

Core competence: The skills and experience that the company possesses and outperforms its competitors and achieves a greater share in the market, and is achieved when adhering to the three criteria of accessing the market, providing higher value to customers, and enhancing competitiveness, which mostly depends on the data and information obtained by the company.

Kindly answer the following questions by ticking (√) in the correct box that reflects your point of view:

NO.	Item	Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
Market Reach: Reach a variety of markets and consumers.							
1	The products are easy to sell in the local markets						
2	It is easy to access foreign markets						
3	Facilitates access and acquisition of production inputs to manufacture products						
4	Facilitates the company's products to shops in the majority of regions						
5	Legal government facilities help grant licenses to distribute products in all regions						
6	Easy to reach new customers						
7	Easy access to new suppliers						
Provide higher value to customers: Provide the greatest benefit and value to customers for the final product.							
1	Provide high quality products						
2	The prices of the company's products are suitable for all customers						
3	The quality of the products matches their prices						

4	There is an IT infrastructure and software to analyze customers' opinions about the company's products						
5	Work on creating new products according to the desire and demand of customers						
Competitiveness: Compete with similar companies, and introduce new products that contain advantages and benefits that competitors find difficult to imitate.							
1	There is a variety of products of the company						
2	The permanent ability to innovate new and high-quality products						
3	The company's products compete with local products in terms of price						
4	The company's products compete with Israeli products in terms of price						
5	The company's products compete with Turkish and European products in terms of price						
6	The company's products compete with local products in terms of quality						
7	The company's products compete with Israeli products in terms of quality						
10	The company's products compete with Turkish and European products in terms of quality						

Fifth section: Company Capabilities

Company capabilities: are the basic capabilities that form the core of the company's business to achieve the strategic goal and achieve business results. The company's capabilities are classified into strategic, basic, contextual, and foundational or commodity capabilities.

Kindly answer the following questions by ticking (√) in the correct box that reflects your point of view:

NO.	Item	Strongly agree	Somewhat agree	I agree a bit	I disagree a bit	Somewhat disagree	Strongly disagree
Strategic capabilities: are the capabilities that give the company a competitive advantage.							
1	The company formulates a strategy to achieve its objectives						
2	The company's vision is clear to its employees						
3	The company's strategy is comprehensive and flexible						
4	The company has material and organizational resource that enables it to provide distinctive products to its customers						
5	The company's senior management seeks to organize its material						

	capabilities to maintain its competitive position						
6	The company has advanced information technology that helps it create the best products						
7	Seeking to increase market share						
Basic capabilities: the capabilities inherent in the existence of the company and the essence of its existence.							
1	The company is interested in developing its business by investing to create new opportunities						
2	The company's management motivates all working individuals to provide new ideas						
3	The company is keen to provide skilled workers						
4	The company is keen on hiring cheap workers						
5	Using modern technology						
6	Training employees to increase their productivity						
7	The company is keen to provide training workshops to enhance the skills of workers						
8	The company is keen to use modern machines in production						

Context capabilities: Basic abilities to get things done for the company, such as finance and regulation.							
1	The company has sufficient knowledge of the financial objectives						
2	The company has sufficient resources to cover operating expenses						
3	The company carries out periodic follow-ups on expenses						
4	The company seeks to increase its sales						
5	The company seeks to invest its relations with everyone in order to obtain new ideas						
6	The company follows a strategy to regulate its financial capabilities						
7	The company has a department to organize and manage its relationships with customers						
Foundational or commodity capabilities: capabilities necessary for the company's work, represented in the basic strategy of commodity capabilities.							
1	Providing high quality and competitive products						
2	Designing a marketing system for the company's products (making ads, promoting)						
3	Continuous research to reduce production costs						

4	Reducing production costs through creativity and innovation						
5	Reduce raw material costs						
6	Increasing productivity by employing skilled manpower						

Sixth section: How to handle the collected data.

1. How do the experts analyze the data: manually / statistically // explain that?

2. Statistical methods used?

3. How is the data used or benefited from, and are the results of data analysis transformed into reliable policies and procedures?

Appendix 3: Interview Questions

NO.	Question
Section one: Information about the company's position	

Q1	Is there continuous development in the number of employees working in the company in the marketing, production, and sales departments, and what about the turnover rate and why?
Q2	What is the development in the growth of the number of dairy products offered by the company during the past five years?
Q3	What is the company's product sales growth rate monthly/yearly?
Q4	What are the company's favorite products for customers that have more sales than other products?
Q5	How can the company compete with Palestinian products, and does it face difficulties and problems due to competition?
Q6	Does the company export its products to Israel and foreign countries?
Q7	What are the company's plans to compete with local products?
Q8	How can the company's products compete with similar Israeli and foreign products?
Q9	Which of your adopted policies: lower price and better design? Instant customer satisfaction, or any other features added to their products?
Q10	How does the company conduct the marketing process of its products efficiently and effectively, by identifying the exact customers who have a need or desire for the products?
Section Two: Information about the company's products and customers	
Q1	How does the company develop and innovate new products through food processing experts?
Q2	The company imitates the products of other companies while adding some modifications to them?
Q3	Do The determinants of product development depend on the customer's attitude and behavior, or the customer's awareness?
Q4	How is the product developed through the production department with the help of nutrition experts?
Q5	How is the product developed, through the marketing department, with the help of the company's distributors and retailers?
Q6	What data does the Company collect about the customer?
Q7	How does the company measure and meet customer expectations?

Q8	How do you get information about: <ul style="list-style-type: none"> • The company's products in the market • Products of competing companies in the market • The company's customer
Q9	How does the information you collect help increase the company's sales? How?
Q10	In which region do the company's sales grow the most?
Q11	What are the areas that work to return the company's products?
Q12	What are the areas that do not return the company's products?
Section Three: Big Data	
Q1	Do you know big data technology before?
Q2	Do you know the importance of using big data in food industry companies?
Q3	What will the stakeholders (factories, distributors, retailers, consumers) benefit from when we use Big Data in the analysis, and what are the expected results for these parties?

Appendix 4: The validity of the tool

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1 Your company uses big data technology	398.0000	2050.333	.539	.974
Q2 The company adopts a huge data analysis policy	397.7895	2047.064	.603	.974
Q3 IT infrastructure and software are available to perform data analysis regarding market and competitors	397.6842	2024.117	.756	.974
Q4 There is sufficient technical infrastructure for effective and secure data exchange between employees	397.6842	2052.784	.349	.974
Q5 Data helps meet customer needs	397.6316	2032.023	.628	.974
Q6 Data analysis helps in creating new products	397.7368	2023.094	.727	.974
Q7 Analyze large amounts of data	397.8421	2017.474	.687	.974
Q8 Explore a large amount of data	397.7895	2023.064	.825	.974
Q9 Use of large amounts of data	398.0000	1987.111	.841	.974
Q10 Examine large amounts of data	398.2105	1978.842	.881	.974
Q11 Get data from multiple sources	397.6316	2036.912	.560	.974
Q12 Analyze many types of data	397.8947	2033.988	.651	.974

Q13 Data flows into the company from a variety of sources	397.8421	2039.251	.546	.974
Q14 Analyze the data immediately after receiving it	398.3684	1969.801	.891	.973
Q15 There is no time period between data acquisition and analysis	398.8421	2000.029	.512	.975
Q16 Analyze the data obtained by the company as quickly as possible	398.1053	1989.766	.826	.974
Q17 The company analyzes and makes use of the data and converts it into reliable results	397.7368	2002.538	.823	.974
Q18 The strength of the company's decisions lies in the accuracy of the data it obtains and analyzes in a timely manner	397.7368	2005.538	.790	.974
Q19 The company analyzes the data it obtains to increase its production efficiency	397.6842	2014.673	.715	.974
Q20 The company analyzes data to help it increase its market share	397.7895	2008.953	.691	.974
Q1 It relies on data to evaluate consumers' opinions and attitudes about the company's products	397.6316	2031.468	.700	.974
Q2 There is importance to data about every new product that a company brings to the market	397.4211	2031.813	.733	.974

Q3 Utilizing data to know the needs and desires of consumers	397.6842	2006.339	.812	.974
Q4 The data provides implications and benefits about the company's products compared to competing products	397.8947	2003.766	.822	.974
Q5 Accurately identify target customers	397.9474	2026.830	.617	.974
Q6 Determine customer satisfaction with the company's products	397.8421	2029.585	.759	.974
Q7 The data says that the customer is always right	398.3158	2007.450	.463	.975
Q8 The company seeks to make the customer a permanent loyalty	397.4737	2011.930	.716	.974
Q9 The company invests in its relationships with customers to obtain new ideas	397.7368	2027.094	.673	.974
Q10 The company follows up on problems raised by customers	397.4211	2040.591	.532	.974
Q11 The data indicate that the prices of the company's products are commensurate with the capabilities of customers	397.8421	2013.140	.787	.974
Q1 The products are easy to sell in the local markets	397.9474	2073.386	.038	.975
Q2 It is easy to access foreign markets	399.6316	2052.357	.177	.975

Q3 Facilitates access and acquisition of production inputs to manufacture products	398.5263	2052.485	.160	.975
Q4 Facilitates the company's products to shops in the majority of regions	397.5789	2057.702	.247	.975
Q5 Legal government facilities help grant licenses to distribute products in all regions	398.3684	2040.579	.317	.975
Q6 Easy to reach new customers	398.1579	2057.363	.189	.975
Q7 Easy access to new suppliers	398.4211	2046.924	.251	.975
Q8 Provide high quality products	397.3684	2044.023	.442	.974
Q9 The prices of the company's products are suitable for all customers	397.7368	2035.205	.616	.974
Q10 The quality of the products matches their prices	397.5789	2048.146	.367	.974
Q11 There is an IT infrastructure and software to analyze customers' opinions about the company's products	398.1053	1960.877	.882	.973
Q12 Work on creating new products according to the desire and demand of customers	397.5789	2033.813	.593	.974
Q13 There is a variety of products of the company	397.2105	2022.064	.651	.974
Q14 The permanent ability to innovate new and high-quality products	397.5263	2028.041	.725	.974

Q15 The company's products compete with local products in terms of price	397.7895	1991.175	.745	.974
Q16 The company's products compete with Israeli products in terms of price	397.6316	2051.468	.307	.975
Q17 The company's products compete with Turkish and European products in terms of price	397.8947	2010.099	.620	.974
Q18 The company's products compete with local products in terms of quality	397.4737	2009.596	.840	.974
Q19 The company's products compete with Israeli products in terms of quality	397.3684	2046.023	.505	.974
Q20 The company's products compete with Turkish and European products in terms of quality	397.4211	2042.035	.511	.974
Q1 The company formulates a strategy to achieve its objectives	397.5789	2025.702	.772	.974
Q2 The company's vision is clear to its employees	398.1579	1996.251	.656	.974
Q3 The company's strategy is comprehensive and flexible	398.0526	1985.497	.715	.974
Q4 The company has material and organizational resource that enables it to provide distinctive products to its customers	397.7368	2031.760	.667	.974

Q5 The company's senior management seeks to organize its material capabilities to maintain its competitive position	397.5263	2032.819	.730	.974
Q6 The company has advanced information technology that helps it create the best products	397.8947	2020.544	.632	.974
Q7 Seeking to increase market share	397.3684	2058.801	.414	.974
Q8 The company is interested in developing its business by investing to create new opportunities	397.4211	2038.368	.627	.974
Q9 The company's management motivates all working individuals to provide new ideas	398.0526	1987.275	.828	.974
Q10 The company is keen to provide skilled workers	397.9474	1984.386	.882	.974
Q11 The company is keen on hiring cheap workers	398.4211	2129.813	-.396	.977
Q12 Using modern technology	397.7368	2022.982	.728	.974
Q13 Training employees to increase their productivity	397.8947	1995.655	.756	.974
Q14 The company is keen to provide training workshops to enhance the skills of workers	398.1053	1987.099	.739	.974
Q15 The company is keen to use modern machines in production	397.5789	2033.924	.726	.974
Q16 The company has sufficient knowledge of the financial objectives	397.3684	2045.579	.585	.974

Q17 The company has sufficient resources to cover operating expenses	397.5789	2026.257	.764	.974
Q18 The company carries out periodic follow-ups on expenses	397.2105	2046.287	.602	.974
Q19 The company seeks to increase its sales	397.2105	2070.287	.180	.975
Q20 The company seeks to invest its relations with everyone in order to obtain new ideas	397.7368	2043.427	.496	.974
Q21 The company follows a strategy to regulate its financial capabilities	397.3158	2033.895	.704	.974
Q22 The company has a department to organize and manage its relationships with customers	397.9474	1988.275	.782	.974
Q23 Providing high quality and competitive products	397.3684	2040.912	.670	.974
Q24 Designing a marketing system for the company's products (making ads, promoting)	397.5789	2045.368	.435	.974
Q25 Continuous research to reduce production costs	397.4211	2074.702	.043	.975
Q26 Reducing production costs through creativity and innovation	397.8421	2044.696	.333	.975
Q27 Reduce raw material costs	397.3684	2037.912	.725	.974
Q28 Increasing productivity by employing skilled manpower	397.8421	2010.251	.692	.974

Appendix 5: The result of the validity of the tool by calculating the Pearson correlation coefficient

Second section: Big data	Correlations	Total phrases
Q1 Your company uses big data technology	Pearson Correlation	1
	Sig. (2-tailed)	.000
	N	19
Q2 The company adopts a huge data analysis policy	Pearson Correlation	.555*
	Sig. (2-tailed)	.014
	N	19
Q3 IT infrastructure and software are available to perform data analysis regarding market and competitors	Pearson Correlation	.301
	Sig. (2-tailed)	.210
	N	19
Q4 There is sufficient technical infrastructure for effective and secure data exchange between employees	Pearson Correlation	.426
	Sig. (2-tailed)	.069
	N	19
Q5 Data helps meet customer needs	Pearson Correlation	.429
	Sig. (2-tailed)	.067
	N	19
Q6 Data analysis helps in creating new products	Pearson Correlation	.389
	Sig. (2-tailed)	.099
	N	19
Q7 Analyze large amounts of data	Pearson Correlation	.515*
	Sig. (2-tailed)	.024
	N	19
Q8 Explore a large amount of data	Pearson Correlation	.559*
	Sig. (2-tailed)	.013
	N	19

Q9 Use of large amounts of data	Pearson Correlation	.637**
	Sig. (2-tailed)	.003
	N	19
Q10 Examine large amounts of data	Pearson Correlation	.578**
	Sig. (2-tailed)	.010
	N	19
Q11 Get data from multiple sources	Pearson Correlation	.307
	Sig. (2-tailed)	.201
	N	19
Q12 Analyze many types of data	Pearson Correlation	.263
	Sig. (2-tailed)	.277
	N	19
Q13 Data flows into the company from a variety of sources	Pearson Correlation	.390
	Sig. (2-tailed)	.099
	N	19
Q14 Analyze the data immediately after receiving it	Pearson Correlation	.658**
	Sig. (2-tailed)	.002
	N	19
Q15 There is no time period between data acquisition and analysis	Pearson Correlation	.125
	Sig. (2-tailed)	.610
	N	19
Q16 Analyze the data obtained by the company as quickly as possible	Pearson Correlation	.628**
	Sig. (2-tailed)	.004
	N	19
Q17 The company analyzes and makes use of the data and converts it into reliable results	Pearson Correlation	.610**
	Sig. (2-tailed)	.006
	N	19
Q18 The strength of the company's decisions lies in the	Pearson Correlation	.610**
	Sig. (2-tailed)	.006

accuracy of the data it obtains and analyzes in a timely manner	N	19
Q19 The company analyzes the data it obtains to increase its production efficiency	Pearson Correlation	.544*
	Sig. (2-tailed)	.016
	N	19
Q20 The company analyzes data to help it increase its market share	Pearson Correlation	.464*
	Sig. (2-tailed)	.045
	N	19
Third section: Value proposition	Correlations	Total phrases
Q1 It relies on data to evaluate consumers' opinions and attitudes about the company's products	Pearson Correlation	.471*
	Sig. (2-tailed)	.042
	N	19
Q2 There is importance to data about every new product that a company brings to the market	Pearson Correlation	.414
	Sig. (2-tailed)	.078
	N	19
Q3 Utilizing data to know the needs and desires of consumers	Pearson Correlation	.444
	Sig. (2-tailed)	.057
	N	19
Q4 The data provides implications and benefits about the company's products compared to competing products	Pearson Correlation	.490*
	Sig. (2-tailed)	.033
	N	19
Q5 Accurately identify target customers	Pearson Correlation	.096
	Sig. (2-tailed)	.695
	N	19

Q6 Determine customer satisfaction with the company's products	Pearson Correlation	.293
	Sig. (2-tailed)	.224
	N	19
Q7 The data says that the customer is always right	Pearson Correlation	-.110
	Sig. (2-tailed)	.655
	N	19
Q8 The company seeks to make the customer a permanent loyalty	Pearson Correlation	.466*
	Sig. (2-tailed)	.044
	N	19
Q9 The company invests in its relationships with customers to obtain new ideas	Pearson Correlation	.155
	Sig. (2-tailed)	.528
	N	19
Q10 The company follows up on problems raised by customers	Pearson Correlation	.247
	Sig. (2-tailed)	.308
	N	19
Q11 The data indicate that the prices of the company's products are commensurate with the capabilities of customers	Pearson Correlation	.334
	Sig. (2-tailed)	.163
	N	19
Fourth section: Core competency	Correlations	Total phrases
Q1 The products are easy to sell in the local markets	Pearson Correlation	.172
	Sig. (2-tailed)	.481
	N	19
Q2 It is easy to access foreign markets	Pearson Correlation	-.295
	Sig. (2-tailed)	.220
	N	19
Q3 Facilitates access and	Pearson Correlation	-.260

acquisition of production inputs to manufacture products	Sig. (2-tailed)	.282
	N	19
Q4 Facilitates the company's products to shops in the majority of regions	Pearson Correlation	.291
	Sig. (2-tailed)	.226
	N	19
Q5 Legal government facilities help grant licenses to distribute products in all regions	Pearson Correlation	.082
	Sig. (2-tailed)	.740
	N	19
Q6 Easy to reach new customers	Pearson Correlation	-.045
	Sig. (2-tailed)	.855
	N	19
Q7 Easy access to new suppliers	Pearson Correlation	-.004
	Sig. (2-tailed)	.987
	N	19
Q8 Provide high quality products	Pearson Correlation	.355
	Sig. (2-tailed)	.135
	N	19
Q9 The prices of the company's products are suitable for all customers	Pearson Correlation	.297
	Sig. (2-tailed)	.217
	N	19
Q10 The quality of the products matches their prices	Pearson Correlation	.402
	Sig. (2-tailed)	.088
	N	19
Q11 There is an IT infrastructure and software to analyze customers' opinions about the company's products	Pearson Correlation	.570*
	Sig. (2-tailed)	.011
	N	19
Q12 Work on creating new products according to the	Pearson Correlation	.434
	Sig. (2-tailed)	.064

desire and demand of customers	N	19
Q13 There is a variety of products of the company	Pearson Correlation	.349
	Sig. (2-tailed)	.143
	N	19
Q14 The permanent ability to innovate new and high-quality products	Pearson Correlation	.481*
	Sig. (2-tailed)	.037
	N	19
Q15 The company's products compete with local products in terms of price	Pearson Correlation	.397
	Sig. (2-tailed)	.093
	N	19
Q16 The company's products compete with Israeli products in terms of price	Pearson Correlation	.370
	Sig. (2-tailed)	.119
	N	19
Q17 The company's products compete with Turkish and European products in terms of price	Pearson Correlation	.489*
	Sig. (2-tailed)	.034
	N	19
Q18 The company's products compete with local products in terms of quality	Pearson Correlation	.417
	Sig. (2-tailed)	.075
	N	19
Q19 The company's products compete with Israeli products in terms of quality	Pearson Correlation	.148
	Sig. (2-tailed)	.545
	N	19
Q20 The company's products compete with Turkish and European products in terms of quality	Pearson Correlation	-.007
	Sig. (2-tailed)	.978
	N	19

Fifth section: Company Capabilities	Correlations	Total phrases
Q1 The company formulates a strategy to achieve its objectives	Pearson Correlation	.475*
	Sig. (2-tailed)	.040
	N	19
Q2 The company's vision is clear to its employees	Pearson Correlation	.249
	Sig. (2-tailed)	.304
	N	19
Q3 The company's strategy is comprehensive and flexible	Pearson Correlation	.322
	Sig. (2-tailed)	.179
	N	19
Q4 The company has material and organizational resource that enables it to provide distinctive products to its customers	Pearson Correlation	.425
	Sig. (2-tailed)	.070
	N	19
Q5 The company's senior management seeks to organize its material capabilities to maintain its competitive position	Pearson Correlation	.535*
	Sig. (2-tailed)	.018
	N	19
Q6 The company has advanced information technology that helps it create the best products	Pearson Correlation	.392
	Sig. (2-tailed)	.097
	N	19
Q7 Seeking to increase market share	Pearson Correlation	.392
	Sig. (2-tailed)	.097
	N	19
Q8 The company is interested in developing its business by	Pearson Correlation	.414
	Sig. (2-tailed)	.078

investing to create new opportunities	N	19
Q9 The company's management motivates all working individuals to provide new ideas	Pearson Correlation	.459*
	Sig. (2-tailed)	.048
	N	19
Q10 The company is keen to provide skilled workers	Pearson Correlation	.490*
	Sig. (2-tailed)	.033
	N	19
Q11 The company is keen on hiring cheap workers	Pearson Correlation	-.404
	Sig. (2-tailed)	.086
	N	19
Q12 Using modern technology	Pearson Correlation	.507*
	Sig. (2-tailed)	.027
	N	19
Q13 Training employees to increase their productivity	Pearson Correlation	.489*
	Sig. (2-tailed)	.034
	N	19
Q14 The company is keen to provide training workshops to enhance the skills of workers	Pearson Correlation	.330
	Sig. (2-tailed)	.167
	N	19
Q15 The company is keen to use modern machines in production	Pearson Correlation	.238
	Sig. (2-tailed)	.326
	N	19
Q16 The company has sufficient knowledge of the financial objectives	Pearson Correlation	.329
	Sig. (2-tailed)	.169
	N	19
Q17 The company has sufficient resources to cover operating expenses	Pearson Correlation	.475*
	Sig. (2-tailed)	.040
	N	19

Q18 The company carries out periodic follow-ups on expenses	Pearson Correlation	.398
	Sig. (2-tailed)	.091
	N	19
Q19 The company seeks to increase its sales	Pearson Correlation	.281
	Sig. (2-tailed)	.244
	N	19
Q20 The company seeks to invest its relations with everyone in order to obtain new ideas	Pearson Correlation	.297
	Sig. (2-tailed)	.217
	N	19
Q21 The company follows a strategy to regulate its financial capabilities	Pearson Correlation	.588**
	Sig. (2-tailed)	.008
	N	19
Q22 The company has a department to organize and manage its relationships with customers	Pearson Correlation	.533*
	Sig. (2-tailed)	.019
	N	19
Q23 Providing high quality and competitive products	Pearson Correlation	.489*
	Sig. (2-tailed)	.034
	N	19
Q24 Designing a marketing system for the company's products (making ads, promoting)	Pearson Correlation	.075
	Sig. (2-tailed)	.759
	N	19
Q25 Continuous research to reduce production costs	Pearson Correlation	.120
	Sig. (2-tailed)	.624
	N	19
Q26 Reducing production costs through creativity and innovation	Pearson Correlation	.191
	Sig. (2-tailed)	.433
	N	19

Q27 Reduce raw material costs	Pearson Correlation	.489*
	Sig. (2-tailed)	.034
	N	19
Q28 Increasing productivity by employing skilled manpower	Pearson Correlation	.373
	Sig. (2-tailed)	.116

Appendix 6: The Tukey test

Tukey HSD			
Factor	N	Subset for alpha = 0.05	
		1	2
15.00	19	4.0526	
14.00	19	4.5263	4.5263
10.00	20	4.7000	4.7000
16.00	19	4.7895	4.7895
9.00	18	4.8889	4.8889
1.00	19	4.8947	4.8947
12.00	19	5.0000	5.0000
13.00	19	5.0526	5.0526
7.00	17	5.0588	5.0588
2.00	19	5.1053	5.1053
8.00	19	5.1053	5.1053
20.00	19	5.1053	5.1053
6.00	21	5.1429	5.1429
4.00	19	5.1579	5.1579
17.00	19	5.1579	5.1579
18.00	19	5.1579	5.1579
19.00	19		5.2105
3.00	20		5.2500

11.00	19		5.2632
5.00	18		5.2778
Sig.		.077	.710