Investigation of the Relationship between Competition, Quality, Price, Market Share and Financial Efficiency in the Poultry Industry

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Abstract

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Competition, a recognized catalyst for improving company performance, has led policymakers to endorse competitive business strategies. However, implementing these strategies without compromising efficiency is crucial. In manufacturing, a known trade-off exists between competition and key business behaviours, such as market share, price, and quality, which impact financial efficiency. This research, unique in its approach, investigates the influence of competition on business conduct and performance, employing a novel model to simulate these effects.

The quantitative method, involving surveys from 382 participants across 115 companies in 23 countries, has provided profound insights into the dynamics of competition and performance on a global scale. These findings support and challenge existing theories, offering a fresh perspective. For instance, it was discovered that competition has a differential impact on various aspects such as pricing, market share, sensory and nutritional quality, and financial efficiency. This nuanced understanding of competition's effects can guide businesses' strategic decision-making.

This research introduces a model that assesses the relationship between competition and combined business factors, allowing for adjustable factor weights. This model reveals that intense competition generally

enhances overall business performance when weights are equally distributed, although outcomes vary with weight assignments. These theoretical insights have practical implications, empowering manufacturers and policymakers to make informed decisions about competition-related trade-offs confidently.

Additionally, this study examines various counter-competition strategies and their effectiveness in enhancing managerial and policy decision-making. The findings align with and challenge aspects of the Structure-Conduct-Performance (SCP) theory, which posits that market structure influences business conduct and, through conduct, affects business performance. Notably, financial efficiency appears more influenced by mediator factors like market share, price, and quality rather than direct competition.

Overall, the research supports SCP theory, particularly in the poultry market, and underscores the importance of strategic weight allocation in policy development. With its practical implications, this study offers valuable guidance for designing effective counter-competition strategies and managing trade-offs, thereby aiding managers and policymakers in making informed decisions.

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Chapter 1

Introduction

1.1. Introduction

The chapter initiates by providing a thorough overview of the research context, encompassing an extensive introduction. Subsequently, it outlines the research prerequisites, objectives, inquiries, scope, and sample, followed by a detailed explanation of the expected contribution. Ultimately, the chapter concludes by presenting a well-organized outline of the thesis.

1.2. Research Background

The exploration of the effects of competition on various aspects of firms' performance in the poultry meat supply chains, such as financial efficiency, product quality, pricing strategy, and market share, has been limited. However, the significance of this topic becomes more pronounced when considering the direct and indirect impact of competition on meat quality, which is closely linked to public health. Research conducted by Feigen et al. (2016) highlights that deficiencies in global food supply chains contribute to an estimated thirty-five million premature deaths annually.

Concerns regarding food safety, including the outbreak of diseases such as Bovine spongiform encephalopathy (BSE) and E. coli, as well as issues related to the overuse of hormones, antibiotics, and genetically modified foods, have eroded consumer trust in food supply chains (Bromley, 2001). While food fraud and adulterated products are primarily driven by financial and economic motivations within the food industry, their impact on public health raises significant concerns (Spink & Moyer, 2011). The prevailing belief is that competition leads to societal benefits such as increased innovation, lower prices, and improved quality and services. Consequently, authorities recognize the importance of quality competition, which is considered equally important, if not more so, than price competition (Prod, 2016). Competition authorities rely on two main heuristic competition rules: firstly, increased competition leads to lower prices for a given level of quality, and secondly, when quality and prices vary, consumers evaluate the offerings using an internal quality-price metric (Noone & McGuire, 2013).

The impact of competition on firms' performance remains a subject of ongoing debate among researchers (Livio & Padula, 2018; Chen & Kim, 2021). Due to the scarcity of studies on this issue, there is no consensus on the optimal level of competition, how competition impacts performance factors, and how some performance factors, such as price, market share, and quality, mediate the relationship between competition and financial efficiency. Most of the reviewed literature suggests a positive correlation between competition and quality. Additionally, various models, including Reinga Num, Spatial Competition, Bertrand Competition, and Imperfect Competition, predict competition due to the level of petition and market participants. These models suggest that competition reduces market share while improving efficiency (Planer-Friedrich & Sahm, 2020; Ebina & Matsushima, 2017; Andrés & Burriel, 2018). However, in some cases, the relationships between competition and performance factors may not align with these heuristics due to the higher

complexity of the market. Sometimes, increased competition does not lead to the expected improvement in quality. Suppliers can compromise product quality under intense price pressure and fierce competition (Ezrachi & Jong, 2012; Sujuan et al., 2017; Brekke et al., 2020). Therefore, the findings from literature reviews suggest the existence of an optimal point in the relationship between competition and firms' performance factors, where all these factors converge in an optimal position.

1.3. Areas for Further Investigation

The poultry industry, like many other sectors, has experienced a trend towards increased competition (Zengeni, 2014). However, simply increasing competition can negatively affect certain performance factors of companies. Therefore, effectively managing business functions and implementing strategies to counter intense competition are crucial (Hoffmann et al., 2018). Along with determining appropriate approaches and strategies for management and policy-maker authorities responsible for competition regulations in the poultry market, firms need to understand the potential impact of competition on business function performance. Previous research has examined the effects of competition on different business functions individually (e.g., Flammer, 2018; Haseeb et al., 2019; Abbas et al., 2019). However, there is a need to investigate the relative impact of competition on overall business function performance. This thesis addresses the gap and proposes a conceptual approach to simulate the relationship between competition and cumulative companies' functional performance, with the help of structural equation modelling (SEM) and MATLAB, aiding decision-makers in managing the trade-offs between competition and performance factors.

Existing studies in the operations and supply chain literature have focused on providing theoretical frameworks for managing competition in the supply chain (Min et al., 2019; Craighead et al., 2020; Shibin et al., 2020) or examining the impact of competition on companies' performance (Lee et al., 2018; Ramadani et al., 2019; Clauss et al., 2019). However, these studies have yet to identify procedures to approach a trade-off between competition and companies' performance through fundamental competition control strategies. Empirical research on the impact of competition control strategies on companies' performance, particularly considering the trade-off concept, is limited. Furthermore, it remains to be seen whether pricing, quality management, and financial management strategies would influence companies' performance and whether these strategies and performance outcomes would differ based on varying levels of competition in natural industry settings. Therefore, empirical research is essential to bridge the gap between theory and practice. Additionally, empirical research can shed light on the effectiveness of competition control strategies and their varying impacts on companies' performance. Ultimately, this study seeks to contribute to understanding competition dynamics and performance management in the poultry industry.

1.4. Research Aims

This research tackles three critical challenges in light of the background mentioned above. The specific objectives of this research are as follows: firstly, it is clear from the literature review that competition significantly shapes businesses' behaviour and performance. However, the impact of increased competition can vary across different factors, closely tied to the desired or required level of competition. Therefore, by delving into the theoretical perspective of structural conduct performance (SCP), a crucial tool in understanding competition dynamics, this study investigates

the influence of competition on the behaviour and performance of businesses within the poultry industry.

- To delve into the effects of market structure on companies' conduct, including price, market share, sensory quality, and nutritional quality.

- To examine companies' financial performance based on firms' conduct.

The second challenge pertains to decision-makers and how they can effectively manage the impact of competition on companies. This research proposes and tests a model that facilitates the analysis of the relationship between competition and companies' conduct and performance. While previous studies have highlighted the effectiveness and positive role of competition in companies' performance and supply chain management, empirical investigations into the relationship between competition, behaviour and performance, and the interrelationships of conducts have yet to be limited. The key objectives of this second challenge are as follows:

- To explore the interrelationships among companies' conducts.

- To examine how market structure intensity varies these interrelationships.

Finally, the findings of this research are leveraged to develop a model that compares the impact of competition on cumulative companies' factors. By assigning different weights to the conduct and performance factors, this model provides a practical tool for managers and policymakers, aiding them in making informed decisions. A comparative study is conducted to validate the thesis' findings regarding the existence of a trade-off between competition, conduct and performance. The objectives associated with this challenge are as follows:

- To provide a model that substantiates the findings by comparing different scenarios resulting from varying weights assigned to each factor.

- To offer suggestions to managers and policymakers by highlighting the differences observed in the market structure

1.5. Research Questions

To fulfil the identified research needs and objectives, the following research questions were formulated after an extensive review of the literature:

Q.1.1. How does increasing competition (market structure) affect companies' financial efficiency?

Q.1.2. How can companies' conduct (price, market share, and quality) mediate the relationship between market structure and financial efficiency?

Q.2. How does market structure impact companies' conduct?

Q.3.1. Is there an optimum point of competition for the best trade-off between price, quality, market share, and financial efficiency?

Q.3.2. How does market structure affect the firm's accumulative performance factor (considering combining all studied conduct and performance factors as a single item)?

1.6. Research Scope and Sample

This study examines the interrelationships among competition, market share, price, sensory quality, nutritional quality, and financial efficiency. It proposes a model that facilitates the

management of competition's impact on the overall performance of companies by simulating these relationships and highlighting potential trade-offs. The extent to which market structure affects firms' financial performance can vary depending on various factors, including market share, price, sensory quality, and nutritional quality, which act as mediators. A comparative analysis analyzes the relationship between competition and cumulative performance factors, considering different weights assigned to factors. For the empirical study, a sample of 115 manufacturing units, comprising 382 participants, was selected from the poultry industry. Survey questionnaires were distributed to directors and managers of each manufacturer. The final sample represents a diverse range of manufacturers from twenty-three countries across five continents. The wide geographic dispersion of participating firms allows for generalizing the findings (Gatignon & Xuereb, 1997).

1.7. Research Contributions

The SCP (Structure-Conduct-Performance) is a theoretical framework used in this research to analyze the relationship between competition and firms' conduct and performance (Weiss, 1978). According to SCP theory, market structure refers to the characteristics of a market, such as the number and size of firms, barriers to entry, product differentiation, and information asymmetry. Conduct refers to firms' actions and strategies, including pricing decisions, advertising, product quality, and research and development investments. Performance relates to the outcomes firms achieve regarding financial performance, profitability, efficiency, and innovation (Lelissa & Kuhil, 2018). The SCP framework suggests that increased competition in a market leads to more efficient firm conduct and improved financial efficiency. Intense competition incentivizes firms to operate efficiently, reduce costs, enhance productivity, and innovate to gain a competitive advantage, resulting in higher levels of conduct (Uzunidis, 2016). In highly competitive markets,

firms face pressure to improve quality to attract customers, while in less competitive markets, there is less incentive to invest in product quality (Lelissa & Kuhil, 2018). SCP theory posits that market structure and firm conduct ultimately impact financial performance outcomes. Higher product quality can increase customer satisfaction, brand loyalty, and market share in competitive markets. Firms offering high-quality products are more likely to thrive. In contrast, lower product quality in less competitive markets can diminish customer satisfaction (Ralston et al., 2015).

While SCP theory offers valuable insights into how market structure and firm behaviour can impact firms' financial performance (Athanasoglou et al., 2008), it is important to acknowledge its limitations. SCP theory provides a general framework and does not account for all complexities of real-world markets. It is just one of many theories explaining the relationship between competition and performance functions. The Resource-Based View (RBV), Dynamic Capabilities Theory and game theory provide alternative perspectives on how firms' resources, capabilities, and strategic choices affect firms' performance in competitive markets (Fudenberg & Tirole, 1991; Lockett et al., 2009; Teece, 2014). These theories, in conjunction with SCP theory, enrich our understanding of the complex dynamics of competition and performance in real-world markets, broadening our perspective and enhancing our analytical capabilities.

This research makes a unique contribution to the operations and supply chain literature by deepening our understanding of the impact of competition on overall business performance and the interactions between mediator factors. The findings propose a cumulative performance model that offers a structured approach to manage the trade-off between competition and firms' conduct and performance by assigning ideal weights to each factor. This model provides a novel tool for researchers to study strategies to counter intense competition and achieve higher performance. Moreover, the research provides practical insights for the manufacturing industry on managing the

impact of competition on firms' performance based on firms' desired weight for each factor, empowering them to make informed decisions. The findings also guide governmental and private competition regulators authorities in the market.

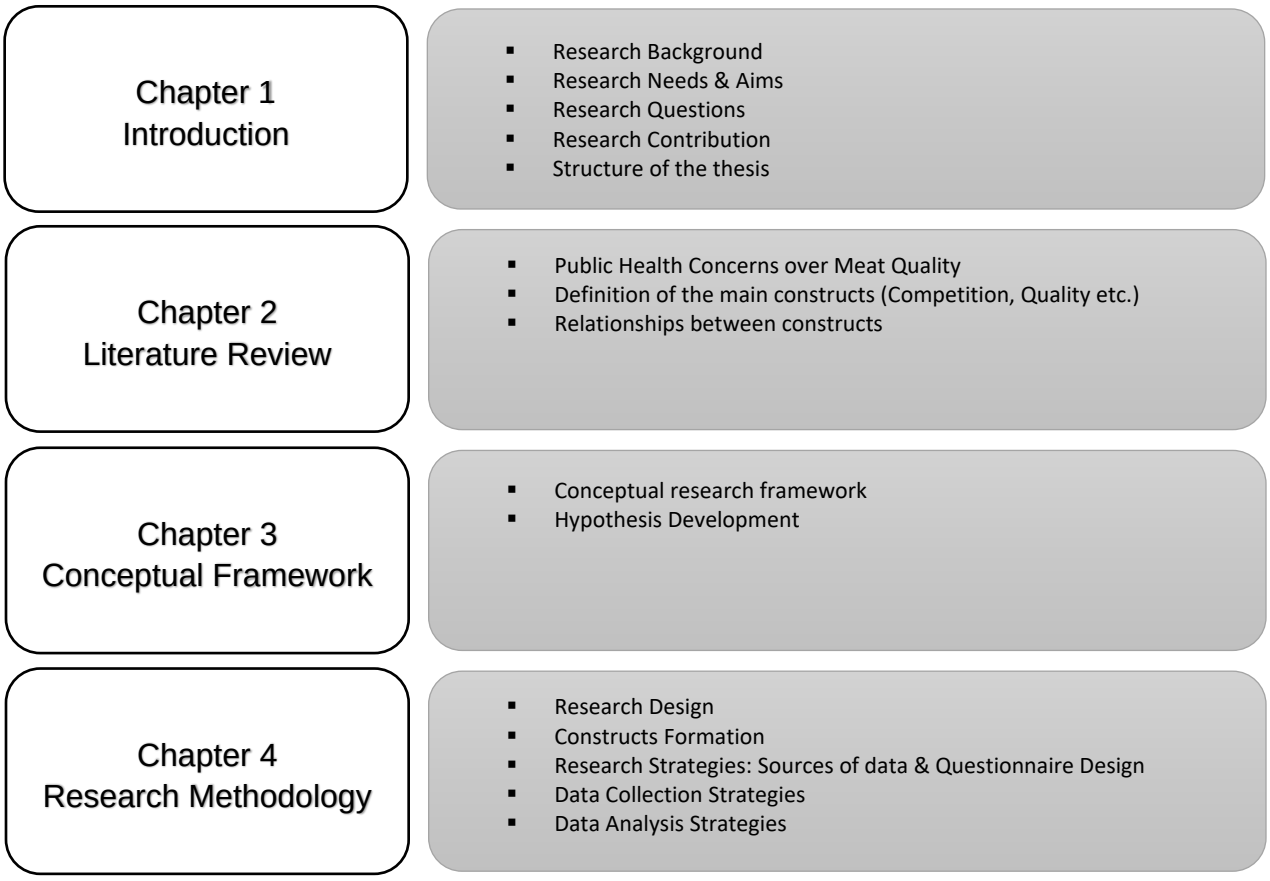
1.8. Structure of the Thesis

Figure 1-1 depicts the structure of this thesis, which consists of eight chapters. Chapter One serves as an introduction, providing a background to the research and identifying gaps and limitations in the existing literature. It also outlines the research objectives, research questions, and the anticipated contribution of this study to knowledge in the field. Chapter Two offers an extensive literature review, focusing on the impact of competition on firms' conduct and performance and strategies for managing the trade-offs. Chapter Three presents the conceptual framework of the research and develops hypotheses that explore the relationships between competition, market share, price, sensory quality, nutritional quality, and financial efficiency. Chapter Four details the research design, including the research strategy, data sources, construct measurements, and questionnaire development. It also covers data collection, sampling techniques, and statistical analysis methods. Chapter Five is dedicated to data analysis. It begins with an overview of descriptive statistics, including demographic statistics and response rates. The chapter then addresses concerns related to survey research, such as normality, missing data, and bias. Specific analyses include examining the impact of competition on businesses using structural equation modelling (SEM), testing the influence of competition through confirmatory factor analysis (CFA) and SEM, and analyzing differences in counter-competition strategies using a T-test. The chapter concludes with a detailed discussion of the results. Chapter Six provides a complementary analysis to Chapter Five and thoroughly discusses hypothesis analysis. Chapter Seven presents a

comprehensive discussion of the empirical results obtained in this research. Finally, Chapter Eight concludes the thesis by summarizing the research findings and highlighting the theoretical and managerial contributions of the study. It also discusses the research's limitations and suggests future research directions.

1.9. Chapter Summary

This chapter provides a comprehensive overview of the research background, emphasizing existing literature and knowledge in the field. It also outlines the research objectives and questions from identified relevant literature gaps. Additionally, it briefly discusses the anticipated contribution of this research. The chapter concludes by presenting an outline of the thesis structure, highlighting the organization and flow of the subsequent chapters.



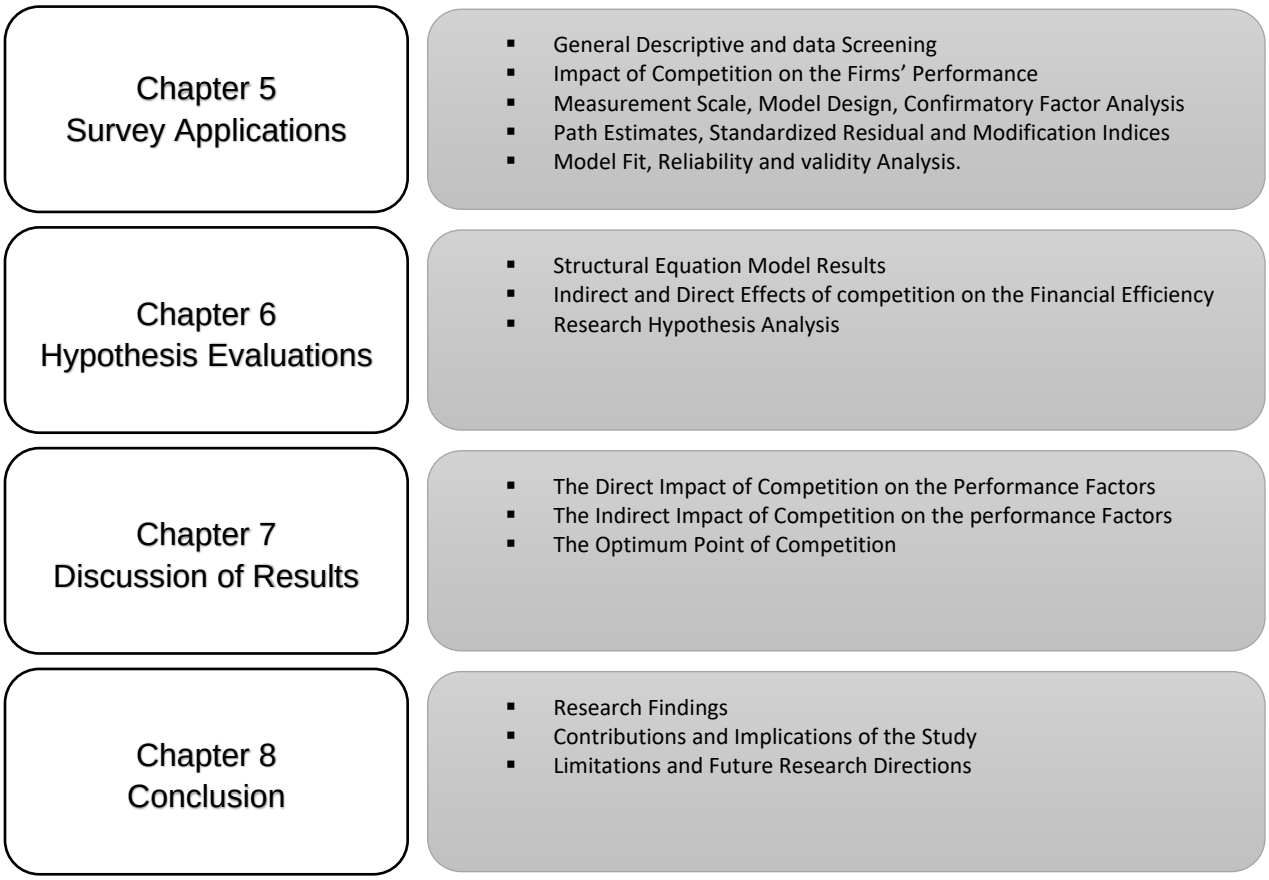


Figure 1.1: Outline of Thesis

Chapter 2

Literature Review

2.1. Introduction

The purpose of this chapter is to provide a comprehensive overview of the research conducted, focusing on background information. Therefore, a significant portion of the chapter is dedicated to reviewing and analyzing a wide range of literature on competition, firms' performance, and management strategies to address intense competition. The chapter begins with section 2.2, which brings up some examples to emphasize the significance of the research title and how fierce competition in the food industry can impact public health by influencing product quality and adulteration. Section 2.3 explores the grand theory and literature gaps. Subsequently, 2.4 outlines the definition of competition and the other factors examined in this research. Moving forward, section 2.5 delves into reviewing the impact of competition on various aspects of firms' conduct and performance. Section 2.6 explores the interrelationship between conduct and performance, including price, market share, quality, and financial efficiency. Finally, chapter 2.7 provides an overview of the whole chapter.

2.2. Public Health Concerns

Food fraud, primarily driven by financial motives, poses a significant threat to public safety within the food industry (Spink & Moyer, 2011). It encompasses various issues such as the outbreak of diseases like Bovine spongiform encephalopathy (BSE) and E. coli, concerns about genetically modified foods (GM), animal welfare, environmental impacts of food production, and the use of hormones and antibiotics. These factors have eroded consumer trust in scientific institutions and official bodies responsible for setting food standards (Bromley, 2001). Shockingly, research from Feigin et al. (2016) indicates that approximately 35 million premature deaths occur globally each year due to deficiencies in the food supply chain. One example of food adulteration is the KFC chicken scandal in China, where 18 illegal antibiotics were found in the chickens served by KFC in 2012 (Levi et al., 2020). Economically motivated adulteration (EMA) is defined by the Food and Drug Administration (2009, p. 15498) as '…the fraudulent, intentional substitution or addition of a substance in a product to increase the apparent value of the product or reduce the cost of its production'. The vulnerability of a product to adulteration can change based on market demand, use in different industries, and fluctuations in market prices. Milk, meat, and poultry production are particularly vulnerable to adulteration. For instance, adding various substances can mimic milk's protein and fat content, making it susceptible to impurity (Cavin et al., 2016). The European horse meat crisis in 2013 highlighted the loss of consumer trust in the meat industry due to meat substitution, where giraffe and fox meat were sold as beef in South Africa and China (Stoyke et al., 2015).

Adulteration techniques have evolved, from diluting products with water to using Melamine and urea to increase protein content (Chen et al., 2017). Adulteration affects the quality and safety of food and poses significant health risks. The profit from adulteration often outweighs the risk of

getting caught, making supply chains vulnerable to EMA and leading to public health disasters (He et al., 2020). Product quality uncertainty can lead to pre-emptive and reactive EMA in markets where pricing is based on quality. Pre-emptive EMA involves crossing standard limitations, while reactive EMA occurs after quality uncertainty to create the illusion of a high-quality product (Levi et al., 2020). Examples include the overuse of antibiotics in poultry, pork, and seafood farming as a pre-emptive EMA (Doyle et al., 2013) and the addition of Melamine to milk in China to increase its protein content as a reactive EMA (Everstine et al., 2013).

Wieseke, Alavi and Habel (2014) note that consumers' emphasis on lower prices rather than higher quality raises concerns about welfare, health, and safety. Adulteration practices extend beyond individual products. They can occur in extended supply chains, leading to the detachment of the source of products from end consumers (Spink et al., 2010). The horsemeat scandal in the UK in 2013, where many prepared foods across the EU contained horse meat despite being advertised as 100% beef, is a prominent example of such practices (Tse et al., 2016). As food supply chains continue to grow and become more complex, addressing the effects of EMA becomes increasingly essential. Traditional food safety regulations focus on known contaminants and physical hazards, while fraudsters constantly adapt and employ new adulteration techniques that existing regulations may not cover. The case of Melamine, noted by Roth and others (2007), which was not initially listed as a harmful chemical by the FDA, demonstrates the need for a new approach to detecting and preventing adulteration.

Food fraud severely threatens public safety and consumer trust within the food industry. Adulteration practices have evolved, and supply chains have become more vulnerable to EMA. Addressing these challenges requires a comprehensive understanding of how competition can impact food quality.

2.2.1. Intensive Competition

When influential buyers exert measures to depress prices, producers resort to quality erosion as a risky solution to protect their present or future profitability. The EU and US competition authorities acknowledge that increased market power can impact quality and prices (USDJF, 2010). The power that supermarkets hold over suppliers has been categorized into four main types by Nicholson and Young (2012): instrumental power, structural power, discursive power, and political power. Instrumental power stems from supermarkets providing sponsorship, research funding, building relationships with experts and policymakers, offering financial incentives, contributing to public-private partnerships, accessing technology and knowledge, and setting trade terms for consumers, suppliers, and property leases. Among these, the ability to set trade terms is often reported as the most significant source of instrumental power (Glanz et al., 2012). As Hawkes (2008) defined, structural power involves limiting the choices available to other actors through rule-setting and agenda-setting activities. Dixon and Barnwell (2016) identify four main aspects of structural power: high market concentration levels, high market share, expansion into new markets, and buyer power or monopsony, which occurs when a small number of retailers deal with a large number of sellers, as is the case in the current food industry. According to Keith (2012), supermarkets obtain discourse power through communication practices that influence social values and norms. Fuchs and Kalfagianni (2009) support this view, stating that discursive power encompasses social values, framing issues related to health and diet, community involvement, celebrity endorsement, building relationships with media, advertising or paid media, and communication practices through public relations. The last type of power is political power, which can be obtained democratically through participation, transparency, and accountability.

Supermarkets also gain political legitimacy through fairness, trust, authority, and their role in policy regulation and formation within the neoliberal framework. In contrast, free trade minimizes the government's policy role (Fuchs et al., 2009).

These studies highlight the potential for these powers to be exploited to the detriment of consumers and suppliers, raising significant concerns. To illustrate this issue, Mahmoudi and Barzoki (2018) present a case where the dominance of power has a direct and negative impact on consumers' welfare. In a market with several smaller suppliers and a limited number of retailers, one supplier decides to covertly lower the quality of its product slightly to meet the retailers' pressure and reduce the price. This action forces other suppliers to follow suit and degrade the quality of their products. This quality erosion sets off a race to the bottom, with prices falling below optimal levels and efficient sellers being compelled to lower their bids below prevailing cost levels. Schutter (2010) presents another scenario involving an upstream producer of private-label pasta sauce dealing with a leading supermarket chain. The powerful buyer seeks a cost reduction for the pasta sauce, leading the producer to lower its bid for the subsequent year to secure the contract. However, this price reduction leaves the producer vulnerable to market changes, such as increases in raw material prices and labour costs, while the contract price remains fixed. In such situations, the producer may resort to lowering the quality of the pasta sauce to cope with cost fluctuations. This erosion of quality can be done gradually to a point where the supermarket and its customers cannot detect it and penalize the private label producer. Given these circumstances, their study aims to explore situations where competition is inversely correlated with quality, where suppliers actively erode the quality of goods due to downward price pressure and intense competition. This situation breaks down the positive correlation between quality and competition, leading to welfare loss and a negative correlation (Ezrachi & Jong, 2012).

2.3. Ground Theory and Research Gaps

Investigating how competition, market share, price, quality, and financial efficiency interact within the poultry meat market is essential to understanding the dynamics of this specific industry. This study analyzes this intricate web of relationships and their impact on firms' financial efficiency. By employing the Structure Conduct Performance (SCP) theory, which explores how the structure of a market influences the conduct of firms within that market and, consequently, their performance (Weiss, 1978), this research aims to bridge existing gaps in the literature and contribute to a better understanding of the poultry meat market.

Like many other sectors, the poultry meat market is characterized by intense competition. The extent and nature of competition can significantly affect how firms operate and perform within this market. However, the literature on competition within the poultry meat market must be more extensive. While various studies have explored competition within the broader food industry (e.g., Haskel & Heden, 2003; Griffith et al., 2005; Gaspar & Massa, 2006; Lordkipanidze, 2019), few have delved deeply into the nuances of competition specific to the poultry meat sector. This gap highlights the need for a more focused investigation into the competitive landscape of this market. Understanding the dynamics of competition, such as the level of rivalry, entry barriers, and the behaviour of firms, is crucial for comprehending how these factors influence market share, pricing strategies, and, ultimately, firms' financial efficiency. As an intermediate construct, market share is pivotal in the SCP framework (Weiss, 1978). It is a critical indicator of a firm's competitive standing and ability to control a portion of the market (Edeling & Himme, 2018). However, more research has yet to explore the precise relationship between competition and market share in the context of the poultry meat industry. While some studies have examined market share determinants in broader terms (e.g., Mirabi et al., 2015; Davcik & Sharma, 2015; Faith, 2018), specific insights

into the poultry meat sector must be explored more in the literature. This gap underscores the importance of examining how competition impacts the acquisition and maintenance of market share within this unique industry. The price-quality nexus is another critical aspect of the SCP framework. The literature on price and quality in the poultry meat market primarily revolves around consumer perceptions and the factors influencing their choices (Nyadzayo & Khajehzadeh, 2016); Ross, 2017; Rajapathirana & Hui, 2018). However, more research is needed to investigate how price, as a mediator construct, is influenced by market competition and affects the sensory and nutritional quality of poultry meat products. Understanding these intricate relationships is crucial for establishing the mechanisms by which competition indirectly influences the quality attributes of poultry meat products.

Furthermore, the research gap within the literature on how sensory and nutritional quality influences firms' financial efficiency is noteworthy. While there is a substantial body of work linking quality to consumer preferences and purchasing behaviour (e.g., Li et al., 2018; Connor-Crabb & Rigby, 2019; Lindemann et al., 2020), there is limited research investigating how quality attributes impact a firm's financial performance within the poultry meat market. This gap presents an opportunity to delve deeper into the connections between quality, financial efficiency, and market dynamics, thus providing valuable insights into how firms can leverage quality as a competitive advantage.

In summary, this study seeks to address these critical gaps in the literature by examining the intricate relationships between competition, market share, price, quality, and financial efficiency within the unique and intense poultry meat market. By focusing on this specific industry, this research aims to contribute to a more delicate understanding of how these constructs interact and, in turn, provide valuable insights for both academics and industry practitioners. This contribution

to knowledge not only enhances comprehension of the poultry meat market but also has the potential to inform and influence the study of competition and performance dynamic

2.4. Competition & Performance Factors

2.4.1. Competition

Despite the wide range of "competition" applications, no universally accepted measurement satisfies all perspectives. Each measurement method has limitations and can provide an inaccurate view of the market, potentially indicating a decrease in competition when it grows (Griffith et al., 2005). it is essential to consider various aspects such as profit, market share, corporate control, and survival to capture the essence of competition (Nickell, 1996). Disney, Haskel, and Heden (2003) argue that competition improves overall efficiency by driving capital and output from unproductive firms to productive ones. However, excessive competition can increase idiosyncratic risks and impact firms' profitability (Gaspar & Massa, 2006). Assessing the level of competition in markets is a crucial metric for policymakers to review regulations and steer the market toward a favourable position. These metrics are also essential for decision-makers in private industries to navigate firm strategies, such as entry/exit and differentiation/assimilation (Lordkipanidze, 2019).

Many indices have been developed to obtain more accurate and reliable measurements of market competition, offering a spectrum of methods from simple ones with low accuracy to more complex ones. These methods, including but are not limited to calculating the total number of competing firms, concentration ratios (CR), price-cost margin (Lerner index), profit elasticity, best-response measure (BRM), and Herfindahl-Hirschman Index (HHI) (Croes et al., 2018), are valuable tools in the hands of policymakers and decision-makers. Listen and others (2002) suggest that studying

the point at which products become substitutes provides valuable insights into market competition intensity. They propose using the best-response measure (BRM) based on overlapping characteristics or the substitution point. While market share, representing a firm's trade or production ratio to the total market, may not provide a clear view of market competition, it is still considered one of the primary measures of market concentration. According to Schmalensee (1989), the concentration ratio (CR) is an index used to measure market competition intensity. It is calculated as where is the share of the largest firm in the whole industry scale, measured by scale, assets, or employment, and n is the number of most prominent companies in the business (often 3, 4, 5, or 8). C4 is the most popular among the C types, considering the top 4 companies and disregarding the rest (Naldi & Flamini, 2014). A C4 index between 0 and 40 indicates a market with effective or monopolistic competition, while a range of 40 to 60 suggests loose oligopoly and monopolistic competition. A CR index indicates a tight oligopoly or dominant firm with a competitive fringe above a certain threshold. However, this index does not consider the distribution scale within the top N firms or the distribution scale of firms outside the top N firms. Additionally, it does not account for the impact of new firms entering the market or existing firms expanding on competitive intensity (João & Soares, 2018).

Another metric for market competition is the Herfindahl-Hirschman Index (HHI), which provides a clearer view of competition compared to the concentration ratio but requires more data. The HHI is calculated by the Herfindahl-Hirschman index, where the firm's market share is, and I am the total number of firms. Max (HHI) is a monopoly market, and Min (HHI) when the market includes N equal-sized firms. When the HHI index is below 0.15, the market is unconcentrated, and above 0.25, it is highly concentrated (Du and Chen, 2010).

In another method, Boone et al. (2008) propose a market competition intensity index called profit elasticity (PE), which allows for flexibility in profit concerning costs. The PE index serves as an indicator of competition. It suggests that increasing competition intensity reduces profits from competitively inefficient firms to more efficient ones. Amador and Soares (2018) argue that this measure is preferable to traditional measures due to several advantages. Firstly, it exhibits a monotonic relationship with the concentration of competition, assuming product homogeneity, symmetry among firms (except for marginal costs), constant marginal costs, and independent choice of the strategic variable. Secondly, this measure only requires complete data on some firms to yield meaningful results. However, it should be noted that the output may not be reliable in cases involving destructive prices, conspiracy, and the first mover's advantage.

2.4.2. Quality

Regulatory bodies aim to establish standards and regulations to prevent a competitive race to the bottom and the associated safety and health risks. While specific industries, like healthcare, rely on well-accepted quality measurements, others, such as the food industry, lack universally accepted quality metrics that can be objectively and quantitatively analyzed (Richards et al., 2009). When assessing food quality, multiple dimensions are typically considered to comprehensively evaluate a product's quality. These dimensions include safety, commodity, nutrition, sensory attributes, production concept, ethical considerations, guarantee, facilitated product recognition, and product/market system requirements (Claudio, 2006). Sensory quality refers to the characteristics of the meat that the human senses, such as taste, texture, aroma, and appearance, can perceive. It is crucial in shaping consumers' perceptions, preferences, and purchasing decisions (Ruiz-Casillas et al., 2021). Similarly, nutritional quality relates to the meat's composition of

essential nutrients, vitamins, and minerals, directly affecting its health benefits and nutritional value for consumers (Kausar et al., 2019).

This PhD thesis focuses on sensory and nutritional quality when examining the impact of competition on poultry meat quality and its influence on firms' financial efficiency. This selection is based on the significance of sensory quality and nutritional quality as key factors influencing consumer preferences and market demand for meat products (Rimal, 2002). This study aims to provide insights into the most influential aspects of poultry meat quality in a competitive market environment. Analyzing the impact of competition on sensory quality can reveal how market forces drive improvements or compromises in the taste, texture, and overall sensory experience of poultry meat (Ruiz-Casillas et al., 2021). Examining the relationship between competition and nutritional quality can show how market dynamics affect poultry meat products' nutritional composition and value (Kausar et al., 2019).

Quality assurance systems ensure that purchased products meet consumer expectations and that the production process adheres to human consumption standards (Holleran et al., 1999). Audits and relevant certifications play a crucial role in maintaining food safety standards and ensuring transparency in the supply chain. This transparency, efficiency, and safety can be improved, and stakeholders' collective capacity can be enhanced within the supply chain through continual improvement in each part of the process (GFSR, 2016). According to Konstantinos, Kotsanopoulos, and Loannis (2017), food safety and quality assurance systems can take three primary forms: national farm assurance systems, private voluntary international quality assurance standards like ISO 9000, and proprietary quality assurance systems implemented by sizeable retail food chains. These systems verify whether distributors or food manufacturers can distribute or produce safe products. Skees, Botts, and Zeuli (2001) argue that government engagement is crucial

in identifying the root causes of foodborne illnesses, and they play an essential role in assessing food contamination discovery processes. For example, the Food Standards Agency (FSA) represents Northern Ireland, Wales, and England regarding EU food standards and safety issues. The agency works closely with other government departments and stakeholders to develop a practical framework for European food law, maintaining regular contact with the commission, the council of the EU, the European Parliament, standing committees, and the European Food Safety Authority (EFSA) (FSA, 2017).

2.4.2.1. Poultry Meat Quality Features

Udom Kun and others (2018) suggest monitoring sensory attributes, microbiological aspects, and intrinsic characteristics (chemical and physical), which are crucial to ensure consumer safety and satisfaction. Giampietro-Ganeco and others (2017) highlight factors such as chicken sexual maturity, muscle development, sex, and age at the time of slaughter, which can influence the chemical and physical characteristics of the meat. For instance, advanced age at slaughter can result in higher fat content and reduced moisture, while Zotto and others (2020) claim that moisture (dry matter) and fat content are not influenced by production and genotype. Qamar and others (2019) demonstrate that the moisture and protein content of the meat significantly influences the colour of chicken meat. They also mention pre-slaughter factors such as diet and management practices, along with genetic predisposition, as influential factors.

Similarly, You et al. (2020) note that inadequate pre-slaughter management actions, such as cooling and stunning, can lead to lighter meat colour, indicating a quality concern. Escobedo and others (2020) attribute sensory features such as lower water capacity holding (WCH) and reduced succulence to an acidic environment caused by rapid post-mortem glycolysis and denaturation of

myofibrillar proteins. Katiyo and others (2020) argue that age affects the pH level of the tissue and highlights the inverse correlation between meat lightness and PH. They suggest equipping farms with paddocks can improve aroma and flavour, as broilers experience less stress in a more welfare and comfortable breeding environment. Bowker and Hong (2020) consider tenderness as another sensory feature and propose shear force measurement as an indicator of tenderness. They find a significant negative correlation between pH, shear force, and tenderness. Wu and others (2020) suggest that as chickens mature, the maturation and accumulation of myofibrils in chicken meat increase shear force and decrease tenderness. Besides, Projahn and others (2019) stress the significance of measuring bacterial groups, such as coliform bacteria content, for maintaining hygiene during meat storage and processing, particularly post-sanitizing contamination.

2.4.2.2. Challenges in Quality Regulations

Consumer concerns regarding food safety have prompted government agencies to adopt a more proactive and prescriptive approach toward food quality and safety regulations. However, questions have yet to be raised regarding the effectiveness of the public sector in carrying out such a massive task, given the limitations of available resources (Martinez et al., 2007). While government regulatory systems often allow contaminated food to reach consumers, criticisms have been directed toward food safety laws for their perceived inefficiency in controlling markets and industries. This criticism is particularly prominent for two categories of products: experience goods, whose quality can only be evaluated by clients after consumption and purchase, and credence goods, whose quality consumers generally cannot assess (Stearns, 2010). Additionally, competition authorities have acknowledged the difficulty in identifying the crucial dimensions of quality for consumers, and even when these dimensions are determined, measuring them poses

additional challenges (Howard et al., 1984). These studies collectively highlight a critical characteristic of quality that proves elusive for competition authorities (OECD, 2013). Since quality is a multidimensional concept encompassing subjective and objective dimensions, it becomes a relative matter, where what one person desires, another may detest or disregard.

2.4.2.3. Motivations Behind the Quality Degradation

However, companies often find themselves in situations where it is more advantageous to exploit customers' biases and offer lower-quality products rather than invest in providing accurate information about product quality. In these cases, companies target biased customers who are likely to make purchases regardless of the actual quality of the product (Ezrachi & Maurice, 2015). Under intense competition, producers can resort to degrading product quality to survive (Okpala et al., 2014). Similarly, Ezrachi and Jong (2012) argue that quality erosion becomes inevitable when no effective measures are in place to ensure a company's market presence. Evans (2012) identifies three main factors contributing to producers engaging in adulteration practices:

- consumers' limited knowledge in accurately assessing quality differences
- producers' challenges in communicating inherent quality differences to clients
- inefficient information flow

Indergård and others (2014) support this view, stating that firms no longer have sufficient incentive to compete by offering better deals due to the presence of biased consumers who are likely to purchase from them regardless of quality or price. These scenarios worsen when critical quality dimensions cannot be easily quantified, as firms cannot afford to invest in educating consumers about quality improvements (Yoo & Sarin, 2018). In highly competitive markets where firms

struggle to build trust or gain a competitive advantage, the incentive to degrade quality increases, leading firms to exploit consumers' imperfect willpower and biases; this degradation occurs through deliberate attempts by firms to make product search and price comparison more complex and obscure product quality (Guan & Ying, 2017). In such cases, companies underinvest in quality products when the investment is at risk of free-riding or the cost of educating clients cannot be recovered. Nitsche and Hintenreed (2004) propose that adequate information flow between customers and producers is crucial in shaping the relationship between quality and price. They argue that adequate information flow supports consumer welfare and competitive markets. Credence goods, a category of products that cannot be verified even after purchase, are particularly vulnerable to inadequate information flow (Schutter, 2010). Increasing market transparency and information flow makes it easier for consumers to compare prices and quality across different outlets while also making it harder for retailers to degrade quality or increase prices (Chung et al., 2018). In the absence of adequate information flow, producers can focus on areas that face less scrutiny due to the lack of transparency in quality dimensions. As a result, producers may underinvest in unknown quality dimensions and instead heavily invest in known dimensions subject to scrutiny (Stearns, 2010). The literature suggests that consumers do not always respond as competition authorities expect due to their inability to analyze and interpret information or unforeseen biases (Evans, 2012). As discussed above, the lack of clarity affects consumers and competition agencies in balancing consumer welfare and quality.

2.4.3. Price

Price constitutes a fundamental market aspect, and numerous scholars have offered their perspectives on this subject (e.g., Dasgupta & Titman, 1998; Hinterhuber & Liozu, 2012; Ma et

al., 2021). In summary, price can be delineated as the monetary outlay required to acquire a service or product. Ma et al. (2021) propose a more comprehensive definition, characterizing price as the holistic value a client relinquishes in exchange for the benefits derived from a service or product. Price, in essence, signifies the specific sum of money or its equivalent that a client is willing to trade for the receipt or utilization of a service or product. While non-price factors have gained increasing prominence in recent years, price continues to exert paramount influence over consumer choices, shaping companies' market share and profit margins. Despite its diminishing influence on consumer decision-making, price remains the sole element responsible for generating revenue for enterprises (Wang et al., 2021). Price exhibits remarkable flexibility within the marketing realm, distinguishing itself from other variables such as product attributes, and can adapt swiftly in response to shifts in market conditions. Furthermore, pricing is pivotal in cultivating relationships and enhancing client value (Lusk et al., 2021).

In the poultry industry, price plays a critical role in both production and consumer purchasing decisions. For instance, the pricing of poultry products directly impacts consumer demand and consumption patterns, as seen in studies like Lusk and Norwood (2011), who found that price fluctuations significantly affect poultry meat consumption. The poultry industry, characterized by tight profit margins and high competition, often employs strategic pricing to balance production costs and market demand. Across diverse industries, firms employ varying pricing strategies to attain their principal objective. These strategies necessitate careful consideration of several parameters, including the pricing of analogous offerings by competitors, the nature of the service or product, the overall cost of production, the target market, and macroeconomic factors such as legal constraints, governmental regulations, and economic conditions (Krishnan et al., 1999). Beyond profit maximization, firms pursue various objectives, such as survival, market share

maximization, market skimming, and pursuing product or quality leadership (Rao & Kartono, 2009).

In the fiercely competitive poultry industry, any firm operating in the market faces the imminent threat of elimination, regardless of the strength of its market presence. Consequently, firms must, at a minimum, set their prices equal to their total costs to ensure survival. This pricing strategy is predominantly adopted by newcomers seeking to establish a foothold in the market. Once they have navigated this initial stage of survival, companies undertake efforts to garner additional profitability (Raj, 2021). Many firms maintain low margins and prices to secure economies of scale by amassing a larger market share. This approach, termed 'market penetration pricing,' has augmented long-term profitability due to reduced production costs. The strategy proves particularly effective in highly concentrated markets characterized by price-sensitive consumers (Nyaga & Muema, 2017). In the poultry industry, market penetration pricing is often used to introduce new products or to gain a competitive edge in a price-sensitive market segment (Weersink et al., 2018). Another prevalent pricing strategy is market skimming, primarily employed by high-tech and innovative firms producing electronic devices like mobile phones. This method is favoured because of the substantial entry costs associated with such markets, which only a select few can bear. Notably, in these markets, the product life cycle tends to be brief, leading to rapid price depreciation (Nyaga & Muema, 2017). Finally, this chapter introduces a pricing strategy based on clients' perceived quality, known as 'product-quality leadership.' Luxury products, for instance, position their prices at the pinnacle of the pricing spectrum, reflecting a high standard of quality, taste, or status within the minds of their clientele (Miller & Miller, 2020). In the context of the poultry industry, premium products such as organic or free-range poultry are priced higher to reflect their superior quality and production standards (Carlsson et al., 2007). This

'product-quality leadership' strategy is crucial for targeting niche markets willing to pay a premium for higher quality and ethically produced poultry products. Recent studies have shown that consumers are increasingly willing to pay higher prices for poultry products that guarantee better quality and animal welfare standards (Grunert et al., 2018), reinforcing the importance of price as a strategic tool in the poultry industry.

2.4.4. Financial Efficiency

Despite the extensive coverage of the topic in the existing academic literature, the concept of "Efficiency" remains encumbered by various ambiguities, with numerous challenges in precisely identifying the factors at play. Lebas (1995) takes an unwavering stance, famously stating, "If it is not measurable, then it does not exist," underscoring the necessity of quantifying efficiency. Despite the absence of a consensus on a universally applicable criterion for the quantification of efficiency, the majority of the scholarly discourse, as exemplified by Linares-Mustarós (2018), Correa-Mejía (2020), and Ting (2019), predominantly directs its focus towards the assessment of efficiency through the lens of financial ratios derived from accounting metrics. Bianchi (2020) enumerates the primary advantages of employing financial ratios, including their utility in evaluating a company's competitive position, serving as a basis for both potential and existing investors, shedding light on management efficacy, enabling inter-departmental performance comparisons within large corporations, facilitating the assessment of acquisition performance, and providing a foundation for gauging bankruptcy risks.

In the context of the poultry industry, efficiency is particularly critical given the industry's low profit margins and high sensitivity to input costs. For example, feed efficiency—the amount of feed required to produce a unit of poultry meat—directly impacts the profitability and

sustainability of poultry operations (Jambui et al., 2017). Recent studies have focused on improving feed efficiency through better management practices and genetic selection, highlighting its significance in enhancing overall industry efficiency (Khan et al., 2022). However, it is essential to acknowledge that using distinct financial ratios can yield disparate results. Consequently, the critical endeavour revolves around the judicious selection of suitable financial accounting ratios for efficiency assessment. Financial accounting ratios can be categorized into four main domains: profitability, which gauges the generation of income vis-à-vis costs and associated expenses; liquidity, which measures an enterprise's capacity to meet its short-term obligations; efficiency, encompassing the efficacy of an entity in utilizing its assets and liabilities to generate revenue; and leverage, to assess a firm's capability to fulfil its long-term commitments (Correa-Mejía, 2020).

In the poultry industry, profitability ratios such as gross profit margin and net profit margin play a pivotal role in assessing financial health and sustainability. Efficiency ratios, such as feed conversion ratio and labour efficiency, are crucial for understanding operational performance. Ting (2019) recommends a range of financial ratios for evaluating enterprise performance, including the current capital ratio, current working capital ratio for total sales, return on assets, cash flow to total debt ratio, and debt to asset ratio. Return on equity (ROE) is the primary focus for most investors and Wall Street analysts in assessing company performance, given its enduring utility (Ting, 2019). Ledley (2020) introduces more advanced methods, such as ratios involving earnings before interest and tax expenses to total assets, working capital to total assets, market value equity to total debt, and tax expenses to total assets, as sophisticated indicators for evaluating financial performance. Opeyemi (2019), in his research, emphasizes the return on assets (ROA) as a pivotal metric for analyzing a company's long-term profitability. He also advocates for the consideration of variables including inventory turnover, adequacy of long-term capital, earnings per share (EPS),

fixed asset turnover, debt coverage stability, revenue per share, profit growth rate, and net profit growth rate before and after tax as the most pertinent ratios for evaluating firm performance.

In the poultry industry, the inventory turnover ratio is particularly significant, given the perishable nature of poultry products. Efficient inventory management ensures that products are sold before spoilage, minimizing losses (Nguyen & Wu, 2019). Similarly, Javeed et al. (2020) offer a variety of approaches for measuring the efficiency of business entities, encompassing return on equity (ROE), return on assets (ROA), dividend payable, return on investment (ROI), and Tobin's Q. Return on equity assesses the sustainability and efficiency of firms about their equity. The return on equity is calculated by subtracting all outstanding liabilities from a firm's assets. ROE quantifies a firm's profit in dollars for each dollar of shareholder equity invested. ROE signifies the effectiveness of a firm in utilizing its equity to generate profits and underscores management's capability to yield income from its equity. Bathia and others (2020) suggest that a 10-15% return is generally considered a favourable business benchmark.

Efficiency in the poultry industry can also be evaluated through operational metrics such as feed conversion ratio, growth rate, and mortality rate. These metrics provide valuable insights into the biological efficiency of poultry production systems and are crucial for optimizing performance and profitability (Jambui, et al., 2017). Recent advancements in precision agriculture and data analytics have further enhanced the ability to monitor and improve efficiency in poultry operations, demonstrating the industry's ongoing commitment to sustainability and profitability (Khan, et al., 2022).

2.4.4.1. Return on Assets (ROA)

Return on assets (ROA) represents a pivotal metric employed to assess a company's financial efficiency and gauge its valuation within the purview of corporate performance evaluation. Investors frequently rely on this crucial indicator to measure a company's earnings from its asset base (Priyanto, 2020). In simpler terms, ROA elucidates the extent to which a company generates profits for each unit of capital invested, typically denominated in euros. The computation of return on assets is contingent upon data derived from a company's financial statements, namely the balance sheet and income statement. These essential reports are made available to investors through annual or quarterly disclosures. The annual net income, a fundamental component in ROA determination, can be extracted from the income statement. At the same time, the total capital is sourced from the balance sheet, signifying the summation of all assets and liabilities. As underscored by Tracy (2012), although various formulas exist for ROA calculation, their underlying purpose remains uniform. Nonetheless, in cases where researchers or investors engage in comparative assessments of ROA across different companies, it becomes imperative to ensure uniformity in applying the specific formula. According to Jewell and Mankin (2011), ROA is often computed utilizing the following formulations:

$$ROA = \frac{\text{Company's Net Income}}{\text{Capital}} * 100 \qquad (2\text{-}1$$

Where the company's total capital comprises debt and equity capital, equity can be provided by shareholders or founders of the company. On the other hand, debt capital comes from banks. Therefore, the capital component of companies can be different. Jewell and Mankin (2011) also offer the other formula that takes interest into account:

$$ROA = \frac{\text{Company's Income} \pm \text{Interests}}{\text{Capital}} * 100 \quad \text{(2-2}$$

An alternative method for calculating ROA involves utilizing the average total capital in the denominator of the formula rather than relying on the capital figure extracted from the most recent balance sheet. The rationale underlying this approach is grounded in the notion that a company's profit may not be solely generated with the capital recorded at the close of a fiscal year but instead with an average capital value over the entire period. Consequently, specific literature emphasizes that computing ROA using the average total capital is considered a more precise metric variant (Jewell & Mankin, 2011).

$$Average\ Capital = \frac{capital\ at\ the\ end\ of\ the\ financial\ year - \text{capital at the beginning of the financial year}}{2} \quad \text{(2-3}$$

Sausan et al. (2020) assert that the Return on Assets (ROA) metric can be subject to diverse interpretations by researchers and investors. This metric indicates how efficiently a company utilizes its assets, with a higher ROA typically signifying superior financial performance. Conversely, low or diminishing ROA values can raise concerns. An upward trajectory in ROA can arise from an increase in profit or a decrease in capital. A positive shift in profit can indicate rising prices or reduced costs, contributing to an expanded profit margin.

In contrast, a capital reduction can result from a company's rationalization policies, even when profits remain constant (Purnamasari, 2015). However, it is essential to note that declining capital and increasing profit are not always interpreted positively. An increase in profits might be associated with the write-off of fixed assets, potentially leading to substantial future expenditures

for asset replacement. Capital reduction can also pose challenges when selling operating assets, as it should not reduce the company's earning capacity (Sausan et al., 2020).

On the other hand, a decrease in ROA can signify a company's financial loss. A drop in profits can result from reduced demand or increased costs. Additionally, if a company's capital increases while profits remain unchanged, it may indicate less efficient capital utilization than in the past. For instance, purchasing a machine that remains underutilized due to operational issues would result in the possession of the asset without its effective utilization (Rahadian & Permana, 2021). Furthermore, declining profits may also cause a return on assets due to increased depreciation, as highlighted by Hendrani and Septyanto (2021).

It should be noted that while a higher ROA typically indicates better capital utilization, disparities in the sizes of companies and the industries in which they operate can obscure the picture (Doğan, 2013). For example, asset-intensive industries like manufacturing and banking tend to yield lower ROA values than asset-light industries like IT companies (Raza et al., 2011). Consequently, for a more accurate assessment, researchers must consider the industry within which companies operate before comparing their ROA values (Adetunji & Owolabi, 2016).

The timeframe also plays a crucial role in ROA analysis. An increasing ROA may signify market share growth, more efficient capital utilization, or process optimization, potentially enhancing a company's share prices. Conversely, a declining ROA raises investor concerns and necessitates a closer examination of a company's performance. Here, the significance of volatility and growth comes into play when evaluating ROA trends. Sales and cost dynamics can influence ROA growth (Kurniawan, 2021). Correia et al. (2018) observe that, in conjunction with profitability metrics, most investors prefer low volatility coupled with consistent profit growth and minimal fluctuations. Therefore, researchers must consider special events like unplanned tax payments or

extraordinary depreciation when comparing ROA values. ROA can also serve as a valuable tool for estimating the capital intensity of an industry or company. For example, the average ROA in the automobile industry is 4.5%. In contrast, the average for the IT industry is 15%, indicating that the IT sector is less capital-intensive than the automobile industry (IFRT, 2022).

However, it is essential to acknowledge the limitations of this metric. One limitation pertains to its static nature. ROA is computed based on profit determined at a specific point in time. For instance, an exceptional income recorded on the last day of December can significantly impact the year's net profit. Still, this effect dissipates when analyzing the metric on the second of January in the following year (Purnamasari, 2015). Another drawback is that the size of companies needs to be adequately factored into ROA determination. Larger companies often benefit from economies of scale, the capacity to acquire other companies, and the ability to raise capital at lower costs than smaller entities. Consequently, larger companies can maintain lower costs and more efficiently use capital than their smaller counterparts (Dharmayatri & Wiratmaja, 2021).

2.4.4.2. Return on Equity (ROE)

Return on Equity (ROE) is a pivotal metric to gauge a company's profitability. This metric assesses a company's adeptness in leveraging its equity to generate a profit, as highlighted by Wijaya (2019). Kamar (2017) underscores that while a comprehensive financial analysis of a company cannot solely rely on ROE, it remains a crucial starting point for investors in evaluating its profitability.

As its nomenclature implies, ROE juxtaposes a company's profit against its equity. ROE is determined by dividing the profit by equity, necessitating two essential variables: 'equity' and

'profit.' Profit is typically derived from a company's Profit and Loss statement (P/L), obtained by deducting all costs, including taxes and interest, from sales. Meanwhile, equity is ascertained from the company's Balance Sheet, representing a pivotal figure achieved by subtracting its liabilities from its assets. The ensuing formula calculates ROE (Wijaya, 2019):

$$ROE = \frac{\text{Net Income}}{\text{Equity}} * 100 \quad \text{(2-4}$$

An alternative approach for computing Return on Equity (ROE) involves utilizing 'average equity' instead of the equity figure at the outset of the analysis period. To calculate average equity, the equity at the end of the year and the initial equity at the beginning of the year are summed, and the result is divided by two. This method takes into consideration changes in equity that occur during the year, as elaborated by Daniswara and Daryanto (2020):

$$Average\ Equity = \frac{\text{Equity year (X)} + Equity\ Year\ (X+1)}{2} \quad \text{(2-5}$$

DuPont's chemical company introduced a method to calculate ROE in the 1920s. To better understand ROE, DuPont broke it down into its essential components. Based on this method, ROE is a product of capital turnover, debt, and profit margin. The formula is as follows (Barbier, 2020):

$$REO = Profit\ Margin * Capital\ Turnover * Debting \quad \text{(2-6}$$

Rochim and Ghoniyah (2017) provide a comprehensive elucidation of ROE, contending that this metric predominantly serves as a barometer for investors to gauge a company's proficiency in generating profit. A higher ROE signifies a company's more remarkable ability to yield profits per

unit of its equity, effectively addressing "how efficiently the equity was employed." Moreover, ROE serves as a reflection of a company's management quality. Kijewska (2016) suggest that an increase in ROE can arise from amplified profits, reduced equity, or a combination of both. Conversely, a declining ROE may indicate diminishing profits, an increase in equity, or a confluence of these factors. In practice, changes in ROE predominantly result from shifts in profit rather than alterations in equity. Analyzing ROE proves invaluable for monitoring a company's performance over time or comparing different companies. Sayani and others (2017) argue that Investors can track the trajectory of ROE to ascertain whether it is developing steadily or maintaining stability. On the contrary, a declining ROE can sound an alarm, prompting further scrutiny of the company's performance. ROE is a valuable tool for comparing companies when evaluating profits alone, which may provide limited insight.

This perspective aligns with the view presented by Daniswara and Daryanto (2020), who assert that a high ROE does not always signal a positive outlook. It can indicate high risk. Very high ROEs are often associated with companies possessing exceptionally low equity. Alternatively, they may indicate profit volatility. Consider a company that has incurred substantial losses in recent years and is now recovering and returning to profitability. In this scenario, due to the significant decline in equity and a return to positive profit, ROE may present exceedingly favourable figures, portraying a more stable situation than it is.

Nonetheless, it is essential to acknowledge that ROE has limitations, as Guides (2019) mentioned. One such limitation is its inability to account for actual cash flows. ROE relies exclusively on data from the balance sheet and income statement and disregards information from the cash flow statement. Ozdemir and Cubukgil (2014) emphasize the crucial relationship between ROE and a company's capital structure. They underscore that equity, as a fundamental component of ROE,

exhibits various characteristics that influence a company's financing risks and costs. High equity shares are associated with greater security as they do not require mandatory repayment instalments.

In contrast, borrowed capital is more costly, and since it does not involve dividend payments, its costs are not tax-deductible. Additionally, by reducing the total equity amount, borrowed capital enhances ROE. Hence, ROE may mislead investors, as it does not consider capital distribution, with total equity being the sole actor within this metric. Pradipta (2018) complements this discourse by highlighting the static nature of ROA, a characteristic shared with ROE. This feature, where these metrics are determined at fixed points, renders ROE susceptible to managerial manipulation (Ahmad, 2018).

Furthermore, Laitinen (2017) argues that ROE does not apply to heavily indebted and loss-making companies. Losses diminish a company's equity in the long term, artificially inflating ROE. Consequently, the assessment value of ROE for companies in phases of losses and start-ups is minimal.

2.4.4.3. Gross Profit Margin (GPM)

Gross profit margin (GPM) is a financial ratio to assess a business's profitability. This metric can be reached by deducting the cost of goods sold (COGS) from revenue and dividing the outcome by the revenue. GPM, called gross margin ratio, is usually presented as a percentage. GPM is a valuable metric for evaluating how a business efficiently manages its supplies and labour (Nariswari & Nugraha, 2020). Its formula is as follows:

$$Gross\ Profit\ Margin = \frac{\text{Revenue} - \text{COGS}}{\text{Revenue}} * 100 \quad (2\text{-}7$$

It quantifies the percentage of sales revenue that translates into profit, requiring the deducting of all associated costs from the total sales (Mulyadi & Sihabudin, 2020). Various profit margin ratios are available to cater to the needs of different stakeholders, including creditors and investors, seeking insights into a company's capital management (Nariswari & Nugraha, 2020). In this context, our focus primarily centres on the Gross Profit Margin ratio, calculated by subtracting the Cost of Goods Sold (COGS) from a company's net sales and dividing the result by the net sales. This metric holds significant prominence among investors as a barometer for assessing a company's financial health (Firman & Harahap, 2021). Substantial fluctuations or shifts in GPM can signal a company to reevaluate its management approach or reconsider its products and services (Alexandru, 2019). It is essential to recognize that a healthy GPM can vary by industry. According to IFRS (2022), restaurants, retailers, and other goods producers consider a GPM ratio ranging from fifty to seventy per cent healthy.

Conversely, a fifty per cent GPM might need to be deemed satisfactory for legal firms, financial institutions, and service industries. Technology companies, law firms, and banks typically exhibit a GPM of around ninety per cent. These variations are intrinsic to the differing cost structures between service companies, which incur lower production costs, and goods-producing companies. Therefore, industry-specific benchmarks should be considered when evaluating GPM, reassuring you of its adaptability across different sectors.

This metric serves as a benchmark for companies to strive for and can be used as a target to surpass industry averages. Benchmarking GPM additionally necessitates monitoring within a specific timeframe, as emphasized by Bansal and others (2021). Monthly tracking of GPM enables companies to assess their performance relative to set goals and industry benchmarks. Such

monitoring can also reveal whether a company's revenue and cost of sales are rising proportionally or if the cost growth surpasses that of revenue. Pervan and others (2019) contend that a disproportionate cost increase can signal an underlying issue, potentially damaging a company's profitability. Such a scenario may result from cost increases not adequately offset by corresponding price increases or inefficient operations that inflate COGS relative to industry peers. Selçuk (2016) accentuates the impact of firm maturity, asserting that startups often exhibit lower GPM due to less efficient operational systems compared to more mature enterprises that have refined their processes through years of iteration. Conversely, some startups may demonstrate higher GPM, primarily if they employ experimental hiring practices, with many employees not receiving total compensation.

In summary, GPM offers insights into a company's pricing strategies and operational efficiency. Alarussi and Alhaderi (2018) maintain that an unsatisfactory GPM may stem from rising expenses, such as increased freight or raw material costs, and propose two potential solutions. The first involves raising prices for goods and services, although this may not be viable in industries with low-profit margins, such as food services and retail sales. The second approach entails streamlining operational systems to reduce operating costs, which becomes a viable solution when market conditions preclude passing the additional costs to customers. As Moheb-Alizadeh and Handfield (2018) quoted, producers often have limited control over the cost of raw materials in mass-production industries. Consequently, when such producers experience cost fluctuations, their primary recourse is to increase client prices.

However, like many other financial ratios, the Gross Profit Margin has limitations in providing a comprehensive analysis of an enterprise's profitability, particularly concerning its long-term viability. This is where other metrics, such as net profit margin and operating margin, come into

play, considering additional factors such as taxes, interest expenses, costs, amortization, depreciation, and other fixed and overhead costs (Rashid, 2018; Wadhwa, 2019).

2.4.4.3.1. Revenue

Revenue can be calculated by accounting for the average sale price times the unit number sold. Net income resulted from subtracting costs from this figure. Revenue is also known as sales and can be found in income statements. *Revenue* is the money pouring into the company (Warren et al., 2016). Adamyk (2017) notes that there are different methods to calculate revenue as there are various accounting methods. For instance, accrual accounting considers sales or services sold on credit as part of revenue, and based on this approach, receiving cash in an account is unnecessary. However, other methods, such as cash accounting, consider sales of goods or services as revenue only if the payment hits the company's account. There is another term, 'receipt,' that must be considered. *Receipts* are payments that settle in the account as a down payment or deposit while goods or services have not been delivered. These payments are not considered revenue (Elliott & Elliott, 2007). It is noteworthy that revenue and cash flow should not be confused. Cash flow is the cash that goes out or into the company's account, while revenue is the generated income from selling goods and services. Cash mainly reflects a business's liquidity performance, whereas revenue indicates sales and marketing performance. Revenue is also known as the top line, the opposite of net income, the bottom line, as it sits on the top of the income statement (Al Hayek, 2018). These are two crucial elements in the income statement for investors to see how healthy a company is performing.

Net income can increase with the help of cutting expenses while revenue remains steady. Companies might divide their revenue based on the sectors generating those subdivided revenues

or the tangibility and intangibility of the products and services sold. Revenue can also be split into operating and non-operating revenues. Non-operating revenues, in the contract of operating revenues, usually occur occasionally due to selling a property, equipment, or other occasions (Bradshaw et al., 2014). O'Hare (2016) adds that in financial reports, revenue, income, and gross sales are sometimes used interchangeably, or in some cases, these terms can be found in the reports simultaneously. Revenue and gross sales share the same meanings, while income is something else. Generally, revenue refers to the total money a business makes before deducting expenses.

On the other hand, as Wahlen and others (2022) suggest, income refers to the net proceeds or generated money means different expenses such as COGS, taxes, interests, depreciation, etc. Revenue usually refers to the generated money through selling goods or services. Bradshaw and others (2022) refer to various revenues such as government, non-profit, and real estate. Government revenues mainly comprise securities sales, fines, taxation, resources, and mineral rights. McCarthy and others (2012) argue that In the case of charities and non-profit organizations, revenue is equal to their gross receipts, comprised of fundraising events, grants, donations from individuals, and membership fees. Lastly, real estate's revenue includes rents from properties and car parks and income from selling properties.

2.4.4.3.2. Cost of Goods Sold

Cost of goods sold refers to the direct costs associated with the sold goods or services, including the labour directly engaged and the cost of materials. However, indirect costs such as fixed costs, managerial salaries, sales forces, distribution, and rents are excluded (Nassirzadeh et al., 2013). As noted earlier, the primary importance of COGS is its incorporation in evaluating GPM. However, although some exceptions exist, Blokdyk (2020) asserts a negative link between COGS

and a business's net income's bottom line. Companies try to squeeze COGS as high as possible by lowering manufacturing overhead costs, materials, and labour costs. Bragg (2019) adds that COGS only includes direct costs, and indirect expenses, such as distributing goods to the dealerships or selling labourers, are excluded. Moreover, inventory plays a crucial role in analyzing COGS, and costs of the goods not sold during the calculation of COGS are excluded. The formula for COGS is as follows (Blokdyk, 2020):

$$COGS = Beginning\ Inventory + P - Ending\ Inventory \quad (2\text{-}8$$

The beginning inventory refers to the inventory left from the previous year, and P refers to all goods produced and added to the inventory during the financial year. All merchandise not sold and gone in the inventory by the end of the year is considered ending inventory and must be subtracted from the sum of the beginning inventory and additional production. The information on the inventory status at the beginning and the end of the fiscal year can be found in the balance sheet. Wann (2021) argues that the value of a business's inventories depends on the business's inventory costing method. There are three main methods: (1) first in, first out (FIFO), (2) last in, first out (LIFO), and (3) average cost method. The company utilizes the FIFO method, first selling the inventory that got to the warehouse earlier. Since prices usually rise due to inflation, businesses use this method to sell their least expensive goods first. In these occasions, net income usually tends to increase over time, and the company represents lower COGS than those that utilize LIFO. The second method is LIFO, as discussed. According to this method, the last inventory that reached the warehouse sold first, resulting in a higher COGS. The net income for businesses using this method tends to decrease over time. The third method, the average cost method (ACM), considers the average cost of the goods in a certain period, regardless of their purchase date. This method

prevents high COGS fluctuation from momentary price changes in the market or adopting various manufacturing methods. According to Flood (2018), there are some exceptions where COGS has not been addressed within the GAAP of a company since the company has not sold any inventory item during the given period, or some service companies, such as law and accounting firms, do not have any inventory for sale. Although these companies have their costs to produce their services, those costs cannot sit under the COGS category; Instead, they should be placed under 'cost of services.'

Like many other financial ratios, COGS is vulnerable to manipulation. There are several ways to manipulate COGS, such as over or undervaluing inventory and overhead costs, overstating discounts and returns to suppliers, etc. (Mamo & Aliaj, 2014).

2.4.5. Market Share

The food industry is a dynamic and highly competitive sector that is vital to satisfying consumer demand for food products worldwide. This sector delves into the concept of market share within the food industry, exploring its significance and examining the factors influencing market share trends. Through a comprehensive analysis, the research gains insights into the competitive landscape, the strategies employed by key players, and the implications for both businesses and consumers. *Market share* is a crucial metric measuring a company's sales within a specific industry or market segment. It is typically expressed as a percentage and is calculated by dividing a company's sales revenue by the total sales revenue of the market or industry in which it operates (Edeling & Himme, 2018). By analyzing market share, businesses can evaluate their competitive

position and identify growth opportunities. Several factors influence market share within the food industry (Mirabi et al., 2015).

Product Differentiation: Companies that offer unique and innovative products often gain a competitive advantage and attract a larger market share. Davcik and Sharma (2015) argue that differentiation can be achieved through taste, quality, packaging, branding, and nutritional value. In the poultry industry, differentiation can be observed in the growing market for organic, free-range, and antibiotic-free poultry products, which cater to the increasing consumer demand for healthier and ethically produced food (Nielsen, 2021).

Pricing Strategies: Price is a significant determinant of consumer choice. Faith (2018) believes companies adopting competitive pricing strategies can capture a larger market share. Cost efficiency, economies of scale, and effective pricing structures influence market share trends. In the poultry industry, pricing strategies are crucial due to the sensitivity of consumers to price changes in staple protein sources. Effective pricing can help firms navigate through fluctuations in feed costs and other input prices, maintaining their competitive edge (Taha & Hahn, 2014).

Brand Recognition: Strong brand recognition fosters consumer loyalty and trust. Companies that invest in building a reputable brand image can command a larger market share. Branding encompasses advertising, customer experience, and corporate reputation (Sanny et al., 2020). In the poultry sector, brand recognition is increasingly tied to food safety, traceability, and the ethical treatment of animals, with companies investing in transparency and communication to build consumer trust (Golan et al., 2017).

Distribution Channels: Efficient distribution networks are critical to reaching a broader consumer base. Ferrell et al. (2021) state that companies with well-established distribution channels, such as

partnerships with supermarkets, restaurants, and online platforms, have a competitive advantage in capturing market share. The poultry industry, in particular, benefits from robust distribution systems that ensure fresh and timely delivery of products, which is essential for maintaining product quality and consumer satisfaction (Nahashon et al., 2020).

Consumer Preferences and Trends: Understanding consumer preferences, such as the demand for organic, sustainable, or plant-based food products, enables companies to tailor their offerings and secure a larger market share. Adapting to changing trends and consumer behaviour is essential for sustained market share growth (Loo et al., 2020). The poultry industry has seen a notable shift towards products that align with health and sustainability trends, such as organic and pasture-raised poultry, reflecting broader consumer movements towards healthier and more sustainable food options (Shamsudin et al., 2019).

Recent studies highlight the significance of these factors in shaping market share within the poultry industry. For instance, research by Nielsen (2021) shows that product differentiation through organic and free-range options has significantly impacted market dynamics, as consumers are willing to pay a premium for perceived quality and ethical standards. Moreover, Taha and Hahn (2014) discuss how effective pricing strategies help poultry producers manage costs and maintain market share despite volatility in feed prices. Additionally, Golan et al. (2017) emphasize the role of brand recognition in building consumer trust through transparency and traceability, which are increasingly important in the poultry market.

2.4.5.1. Key Players and Market Share Analysis

The food industry comprises diverse players, including multinational corporations, regional brands, and small-scale producers. The key players and their market share within the sector: Company A: With a robust product portfolio, strong brand recognition, and a vast distribution network, Company A has secured a significant market share. Its focus on innovation and customer-centric strategies has propelled its growth recently (Lassoued & Hobbs, 2015). Company B: Known for emphasizing quality and sustainability, Company B has successfully captured a niche market share by catering to health-conscious consumers. Its organic and ethically sourced products have gained popularity, positioning the company as a critical player in the industry (Ritter et al., 2015). Company C: Leveraging technological advancements, Company C has emerged as a dominant player in the online food delivery segment. Its efficient logistics network and user-friendly platform have contributed to substantial market share growth in the e-commerce food sector (Leong et al., 2017).

Market share trends in the food industry have significant implications for businesses and consumers. Fourcade and Healy (2017) claim that a thorough understanding of market share dynamics allows firms to identify opportunities for growth and devise effective strategies to outperform competitors. Companies can analyze market share data to refine their product offerings, enhance customer experiences, and gain a competitive edge. Baker and Friel (2016) argue that market share trends influence the availability and diversity of food products. Consumers benefit from a broader range of choices, competitive pricing, and improved quality as companies vie for a larger market share. Increased competition often leads to better products and services. Companies seeking to increase their market share invest in research and development, innovation,

and sustainable practices. This drives industry-wide progress and stimulates economic growth (Ren et al., 2015).

Market share is a crucial metric for evaluating the competitive position of companies within the food industry. By understanding the key factors that influence market share trends and analyzing the strategies of key players, businesses can adapt and thrive in an ever-evolving market. Additionally, consumers benefit from increased competition, leading to a broader range of choices and improved quality (Dereli, 2015). As the food industry evolves, market share analysis remains valuable for businesses and consumers.

2.5. Impact of Competition on the Conduct and Performance Factors

2.5.1. Competition – Price Relationship

According to classic economic theory (Post et al., 2018), perfect competition occurs in a market with no entry or exit barriers, identical products, and consumers acting as price takers. In this competitive environment, firms can sell their goods or services if their revenue exceeds their marginal cost. The entry of new competitors into the market leads to increased competition and decreased prices towards the marginal cost, making the market more favourable for customers. However, in specific industries like fashion or hospitality, competition extends beyond pricing and includes factors such as product quality valued by customers (Garattini & Padula, 2018). In imperfect competition models, such as differentiated products, Bertrand competition, and spatial competition models, the entry of new competitors puts additional pressure on firms, leading to price reductions (Azevedo & Gottlieb, 2017). A study by Busso and Galiani (2019) demonstrated

that the entry of new competitors could result in a price reduction ranging from 2 to 6 per cent. The magnitude of the price reduction is higher when a more significant number of competitors enter the market, as it becomes easier for consumers to switch retailers.

Additionally, this study highlighted the potential for quality improvement, although the impact on quality primarily depends on consumers' perceptions. Another study in 2019 found that competition in various sectors significantly reduces the net margin of both food and non-food retailers, as they have to compete for market share (Carter, 2019). To compensate for the loss of pricing power in a highly competitive market, retailers must reassess their pricing strategies and explore new business models to regain their pricing power. Therefore, analyzing the frequency of price reviews and changes in price-setting behaviour can provide insights into the intensity of competition in a market (Holm & Ax, 2020). However, a price-sensitive strategy can have negative economic consequences, such as cancelling investment plans or the risk of scale redundancy due to low pricing and reduced net margins (Singer & Khmelnytskyi, 2021). To gain market share and achieve market leadership, firms may lower their prices, triggering a domino effect where other firms are compelled to follow suit (Ballantyne & Langcake, 2016). Similarly, understanding the frequency of price reviews and the factors influencing pricing decisions provides valuable insights into firms' price-setting behaviour (Park et al., 2010). The Bank's liaison program reveals that approximately sixty per cent of retailers evaluate their pricing daily or weekly (Figure 2.1), as it is more convenient for firms to set competitive prices by monitoring their rivals, thanks to technological advancements (Carter, 2019).

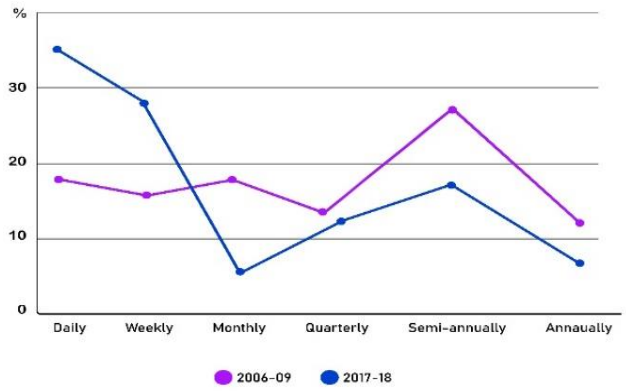


Figure 2.1: Frequency of price reviews; source: (Carter, 2019)

Figure 2.1 depicts the progression of market competition intensity and its impact on price-setting behaviour. The survey was conducted among retailers and assessed the primary reasons behind price adjustments over 12 months. The findings reveal that increased business costs are the foremost cause of price increments. Additionally, a decrease in demand or alterations in competitors' pricing strategies is another significant factor influencing price changes.

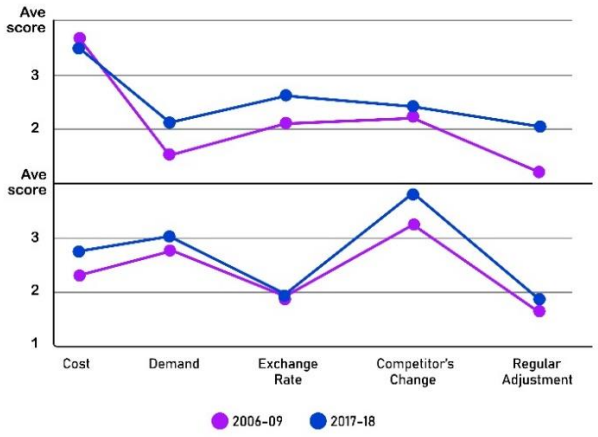


Figure 2.2: factors explaining price changes; source: (Carter, 2019)

The theoretical models of imperfect competition offer a multitude of predictions regarding the effects of competition on prices. However, the results of studies on price competition in retail markets are often complex and nuanced. For instance, Aalto-Setälä (2002) conducted a series of studies on store prices in Finland and found no clear relationship between market concentration and prices when using Herfindahl indices. However, Aalto-Setälä and others (2004) identified a significant correlation between market concentration and food prices in a subsequent study. This demonstrates the intricate relationship between competition and prices, which is not always straightforward. In most theoretical models, such as Reinganum, Spatial Competition, Bertrand Competition, and Imperfect Competition, an increase in the number of competitors and heightened competitive pressure on incumbents tends to result in price reductions (Planer-Friedrich & Sahm, 2020; Ebina & Matsushima, 2017; Andrés & Burriel, 2018).

Research often evaluates the impact of competition on product prices by incorporating external variables that influence the price-competition relationship. These variables include factors like the distance between competitors, the type of retailers, the type of products (branded or generic), government and legal regulations, and more (Hausman & Leibtag, 2007; Majeed et al., 2017; Watane et al., 2021). For instance, Fik (1988) modelled the price-competition relationships and conducted several investigations into price reactions in Tucson, a metropolitan area in the United States. He suggested that the distance between competing stores negatively affects the intensity of price reactions. This implies that a store's competitive pressure on other stores is significant within a few kilometres and diminishes sharply with greater distances. Hausman and Leibtag (2007) conducted a study to analyze the price-competition relationship as influenced by the type of stores. They found that intra-format competition, i.e., competition among similar kinds of supermarkets, has a more pronounced impact than inter-format competition. This means that hard-discounter

supermarkets, for instance, have a more significant influence on similar supermarkets and a lesser effect on supercenters or traditional stores. These findings align with the results of Asplund and Friberg (2002), who suggest that market concentration and price levels are linked to the types of retailers.

Additionally, Gullstrand and Jörgensen (2012) identified a strong connection between distance and price competition, suggesting that a 10% decrease in a store's prices within one kilometre leads to price reductions in neighbouring stores by 2.4% to 6.5%, depending on the type of supermarkets. However, this effect diminishes for stores located more than one kilometre apart. Busso and Galiani (2019) conducted a study examining the impact of new market entrants on prices. Their research revealed a price reduction of 1.4% to 6% and substantial self-quality improvement following the entry of new competitors into the market. According to the Nash-Bertrand model of differentiated shopping patterns, the expansion of supermarket chains (SMCs) and their increased presence in the market led traditional supermarkets to lower their prices to remain competitive, a phenomenon referred to as the 'indirect price effect' (Dender, 2002). Another study in this area was conducted by Watanabe et al. (2021) and focused on branded and generic products. They utilized the National Average Drug Acquisition Cost (NADAC) database to examine drug prices from 2013 to 2017. They collected data on the number of branded and generic product manufacturers from the FDA Orange Book online database. The study found that while the number of prescriptions per person remained stable over time, the prices of branded products increased while generic product prices declined. It became evident from the work of Watane et al. (2021) that the price of generic products is inversely related to market concentration (number of manufacturers), with generic products having more than six manufacturers experiencing the most significant price reduction, a finding consistent with earlier research. However, there was no apparent association

between market concentration and prices for branded products. This study underscores that generic and branded products respond differently to market concentration, leading to the 'Generic Competition Paradox' (Garcia et al., 2019).

2.5.2. Competition-Quality Relationship

Competition in the business landscape exerts two primary yet opposing influences on firms' incentives to improve product quality. This duality arises from companies competing on two distinct fronts: price and quality. While heightened competition serves as a catalyst, motivating firms to enhance the quality of their offerings, it simultaneously erodes the price-cost margin. This decline in the price-cost margin presents a disincentive for firms to invest in quality improvement (Yoo & Cheong, 2018). Consequently, the overall impact of competition on quality remains to be determined. Adding complexity to this relationship is the multifaceted nature of quality, which poses inherent challenges in its empirical assessment. This results in a need for more literature dedicated to exploring the quality-competition relationship. Amidst this ambiguity, a prevailing trend in most research studies suggests a positive association between quality and competition (Sotiriadou, 1963; Zinn, 1994; Goddard, 2015). The research conducted by Mussa and Rosen (1978), later expanded upon by Champsaur and Rochet (1989), underscores the significance of consumer preferences in shaping the quality-competition relationship. Their study introduces the concept that a uniform distribution of consumer preferences for quality can reduce overall market quality. In contrast, when consumer preferences foster a "pure" vertical differentiation structure, the impact of competition on quality becomes uncertain (Fraja, 1996, pp. 389-414).

Further investigations into the quality-competition relationship involve an analysis of the effect of consumer willingness to pay (WTP) for varying quality levels, as demonstrated by Maskin and

Riley (1984). Their findings indicate that an increase in the number of firms within a market results in reduced prices and elevated quality, particularly benefiting consumers with lower WTP. Studies reliant on questionnaire data, such as the work of Domberger and Sherr (1989), highlight quality improvement in response to the introduction of competition, as observed in the conveyancing services within the UK legal sector. Similarly, Liao and Chuang (2004) observe a positive correlation between the number of local fast-food establishments and the quality of their offerings. Notably, food companies tend to emphasize visible quality aspects, such as appearance and taste, often at the expense of less conspicuous attributes like hygiene and safety. Miravete (2004) identifies two underlying factors contributing to quality degradation amidst heightened competition. First, the limited ability of consumers to accurately assess quality differences curtails their ability to make informed choices. Second, communicating the inherent quality distinctions among offered products to consumers is often prohibitively challenging and costly. This erosion of quality can progress to a point where consumers or supermarkets cannot detect these nuanced changes, adversely affecting societal welfare and public health. In a similar vein, Dogan and Lemley (2005) argue that increased competition may not necessarily yield superior quality. This is particularly true when rival firms employ identical pricing strategies, face difficulties conveying quality improvements to customers, or cater to clients lacking the knowledge to identify higher-quality products. The prospective gains from quality improvements may not justify the associated costs.

Wilson and Waddams (2011) emphasize that while clients generally value choice, the need to evaluate numerous options can harm overall welfare. The prolonged and intensive decision-making process can diminish the satisfaction derived from the final selection. Recognizing this aspect of consumer behaviour, companies may exploit it to their advantage by increasing product

complexity and making the decision-making process more challenging. This heightened complexity can introduce biases or errors in consumer decision-making, ultimately favouring the interests of companies (Gabaix & Laibson, 2006).

Certain studies have employed transportation costs as an inverse measure of competition, as Ma and Burgess (1993) exemplified. Their findings suggest that competition has no discernible effect on quality, given that reduced price incentives offset any positive impact of competition on quality. Similarly, Gravelle (1999), who employs the number of firms as a proxy for competition, posits that more firms in a market can diminish the incentives for quality investment due to narrower profit margins. Building on this line of inquiry, Brekke et al. (2010) investigate the quality-competition relationship within the spatial competition framework, where measures such as transportation costs and firm density provide precise indicators of market competition. The airline industry offers a valuable context for such studies, as the on-time departure frequency is a robust quality measure (Stamolampros & Korfiatis, 2019; Bilotkach & Pai, 2020; Gil & Kim, 2021). Investigations within this industry frequently leverage the spatial competition model and utilize flight schedules as temporal indicators. For instance, Lijesen and Behrens (2017) employ the frequency of online departures as a quality proxy and consistently identify a positive quality-competition relationship within the US airline market.

The healthcare sector represents a unique domain in which firms compete based on spatial considerations, with patients often selecting healthcare providers based on proximity. Moreover, price competition is restricted, as prices are typically regulated by governments or insurance companies (Ghandour et al., 2021). Within the spatial competition model, transportation cost is a standard competition metric. Lower transportation costs foster increased substitutability of products offered by companies and intensify competitive dynamics in the market (Merkel, 2017).

Conversely, the Salop model relies on the number of firms as an indicator of Castle and Engberg's (2008) finding that the healthcare market characterized by intense competition exhibits higher quality.

Similarly, research by Enthoven and Tollen (2005), which incorporates various quality and competition measures based on US data, supports a positive relationship between quality and competition. However, Propper et al. (2008) arrive at a contrasting conclusion, drawing from data in the UK, suggesting a significant negative relationship between quality and competition. Ody-Brasier and Sharkey (2019) have delved into specific forms of competition in the US nursing market, including factors such as excess demand and the availability of nursing home substitutes. Their findings indicate a robust positive impact of competition on the quality of nursing services.

Brekke et al. (2010) draw our attention to two pivotal outcomes: Firstly, the quality-competition relationship is profoundly influenced by the marginal utility of the income effect, which gauges the responsiveness of demand to price changes. In cases where utility exhibits a linear relationship with income, the observed lower transportation costs signalling heightened competition led to reduced prices without any discernible impact on quality since these factors offset each other. In contrast, when utility exhibits concavity in income, the restraining effect of competition on quality incentives, driven by lower price-cost margins, is relatively modest, suggesting a positive net impact on quality. Secondly, the degree of cost substitutability between output and quality emerges as a crucial determinant in the effects of competition on product or service quality within a market. In scenarios characterized by a constant marginal utility of income and cost independence between quality and output, an increase in the number of firms in the market leads to reduced quality due to decreased demand for each firm. However, when a sufficient level of cost substitutability

between output and quality is present, the result is reversed, with more firms in the market correlating with higher quality.

Furthermore, the potential for quality improvement is augmented by the decrease in the marginal utility of income. Gravelle and his team (2019) conducted multiple investigations focusing on family physician firms, commonly known as general practices (GPs), within the English National Health Service (NHS). This context was particularly suitable for studying pure quality competition since there is no price competition in the UK healthcare market. Their research, conducted between 2005 and 2012, encompassed over 8000 GP practices and incorporated national clinical standards data, including the Quality and Outcome Framework (QOF), satisfaction reports obtained from patients in the National General Practice Patient Survey (GPPS), and the number of emergency admissions of practice patients for Ambulatory Care Sensitive Conditions (ACSCs) as quality measures. Gravelle et al. (2019) reveal a positive association between the number of GPs in rival practices and quality and patient satisfaction. However, it is worth noting that the magnitude of this effect is not statistically significant (see Figure 2.3). In Figure 2.3, higher numbers correspond to higher quality across all quality measures, except for the ACSC rate, where a higher number indicates a worse clinical outcome. Thus, Figure 2.3 illustrates a consistently favourable or non-negative relationship between competition and quality.

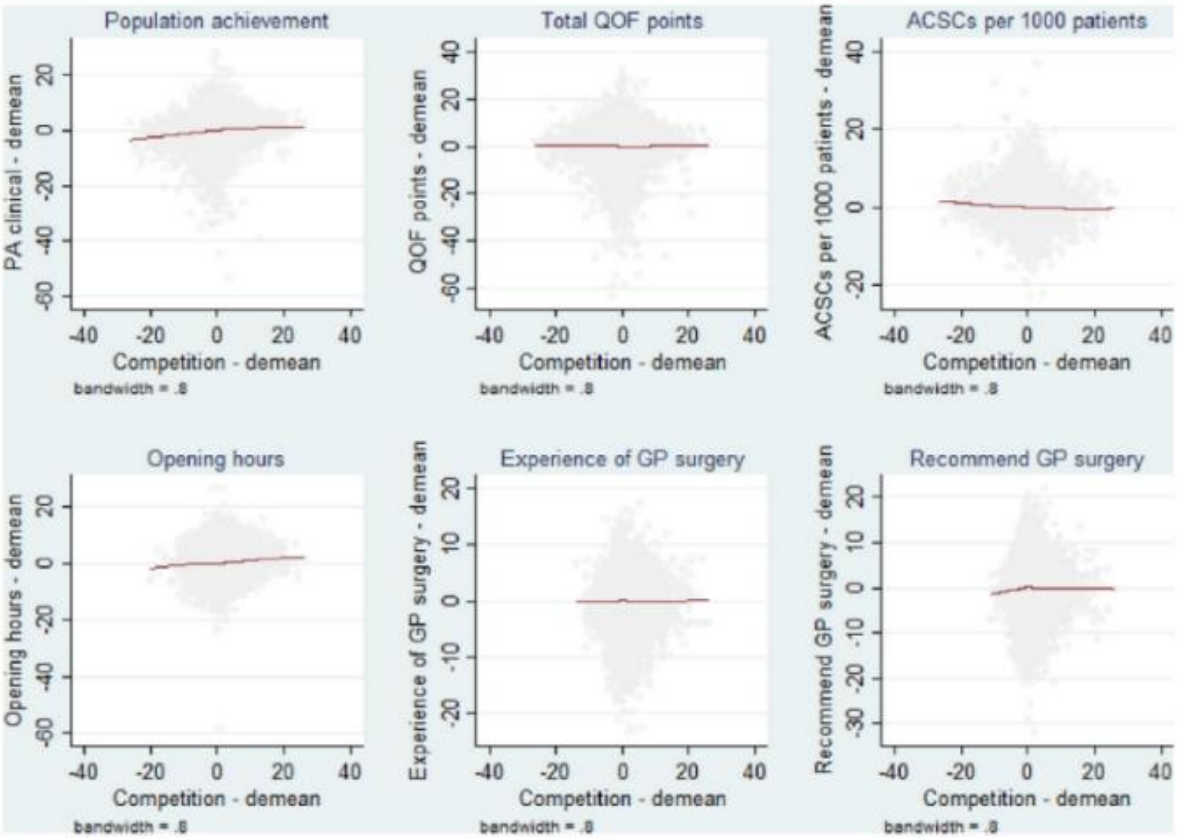


Figure 2.3: Quality-competition correlation in the healthcare market (Gravelle et al., 2019)

The culmination of the extensive literature reviewed, encompassing studies by Propper et al. (2008), Brekke and others (2010), Schutter (2010), Aydin et al. (2016), Ginsburg and Wright (2012), and Song & Zhuang (2017), has yielded a profoundly noteworthy insight: the relationship between increased market competition and improved consumer experience and quality is not always a straightforward one. While many studies reveal a positive correlation between competition and quality, there are instances where this expected positive impact has yet to materialize. Paradoxically, heightened competition sometimes results in reduced quality, accompanied by significant safety and public health concerns, as demonstrated by Song and Zhuang (2017). This scenario presents a situation where consumers, while paying reduced prices,

can receive diminished quality or value in return. For example, consumers experience a decline in the quality of services, such as shorter and less comfortable flights, less relevant and objective search results from search engines, or even alterations in the composition of food products, deviating from their expected standards, as Stucke (2013) noted. This "race to the bottom" phenomenon is not limited to food quality and health safety concerns; it extends to environmental degradation and the exploitation of child labour, as observed by Geistfeld (2019). This body of literature underscores the complex and multifaceted nature of the relationship between competition and quality, emphasizing the need for deep considerations in assessing the consequences of increased competition in various markets. It highlights the importance of focusing on and scrutinizing the broader impact of price reduction on consumers' overall well-being, encompassing safety, health, and environmental concerns. Ultimately, it prompts policymakers and stakeholders to adopt a holistic approach to evaluating competition outcomes in diverse industries.

2.5.3. Competition-Market Share Relationship

Competition is a fundamental aspect of the food industry, compelling companies to engage in continuous innovation and strategic differentiation to secure and expand their market share (Nestle, 2019). This literature review examines the complex relationship between competition and market structure's impact on market share, aiming to illuminate the underlying strategies, industry dynamics, and the broader implications for businesses and consumers.

The food industry is marked by its competitive landscape, featuring diverse players, products, and constantly evolving consumer preferences. It is characterized by intense competition, which results from opportunities for new entrants and significant barriers such as regulatory challenges, capital requirements, and the hurdle of overcoming established brand loyalties (Glänzel & Scheuerle,

2016). Companies use product differentiation to navigate this competitive terrain, focusing on taste, quality, nutritional value, and branding to carve out niche markets and attract customers (Afrifa et al., 2018). However, given the increasing price sensitivity among consumers, companies are challenged to balance competitive pricing with profitability, a strategy that significantly influences market share dynamics (Faith, 2018). Moreover, the shift in consumer preferences towards organic, sustainable, and ethically sourced products adds another layer of complexity, necessitating agile adaptation by companies to maintain relevance and competitiveness (Vahdati et al., 2015). The intensity of competition directly affects companies' market shares, with innovation, pricing strategies, and brand strength emerging as key differentiators. Companies failing to innovate or differentiate their offerings risk market share erosion, while those who successfully navigate these challenges can experience growth and expansion (Thomas & Müller, 2017). This competitive pressure fosters an environment ripe for innovation, with investment in research and development (R&D) becoming a crucial strategy for enhancing market share (Van & Le, 2017).

Effective distribution networks and strategic partnerships are also vital for reaching a broader customer base, highlighting the importance of accessibility in market share expansion (Rietveld & Schilling, 2021). Building robust brand identities and fostering brand loyalty through targeted marketing, social media engagement, and providing superior customer experiences are critical strategies for maintaining and expanding market share (Ferrell et al., 2021). Engaging with customers, understanding their needs, and ensuring satisfaction are pivotal in securing loyalty and safeguarding market share (Fernandes, 2018). The relentless competition drives companies to enhance their product and service offerings and benefits consumers by providing them with more excellent choices, improved quality, and competitive pricing (Gomez & Bernet, 2019). However,

this dynamic environment requires businesses to meticulously balance cost-competitiveness with sustainable profitability to ensure long-term success (Faith, 2018). Furthermore, competition catalyzes industry-wide innovation, fostering technological advancements, sustainability, and overall industry standards (Aghion et al., 2018).

In conclusion, competition is critical in shaping market share dynamics within the food industry, compelling companies to innovate, differentiate, and continuously adapt to consumer preferences and market trends (Lee et al., 2018). While competition poses challenges, it also offers opportunities for growth and improvement, benefiting not only the businesses that navigate it successfully but also the consumers who enjoy the fruits of this competitive fervour (Grullon et al., 2019). Understanding the multifaceted relationship between competition and market share is crucial for any entity looking to thrive in the highly competitive food industry landscape.

2.5.4. Competition-Financial Efficiency Relationship

This sector examines the impact of market structure and competition on the firm's financial performance. Many scholars are interested in the link between firm financial performance and the competitive environment (e.g., Raith, 2003; Pant & Pattanayak, 2010; Sheikh, 2018; Javeed et al., 2020). There are mixed results in this relationship. For instance, Raith (2003), Pant and Pattanayak (2010), and Sheikh (2018) claim that there is a positive relationship between competition in marketplaces and firms' performance. Ammann et al. (2013) comment that competition motivates managers to increase stakeholder income. Higher competition makes firms reduce expenses and end up with higher profitability. Mansuri & Ellouze (2015) conducted research and studied 670 UK-based businesses from 1972 to 1986 and realized that the nature of competition and having

more competitor firms in a market helps various firms' profitability and better performance. The study adds that the positive relationship has materialized because the competitive market resolves conflicts between owners, stakeholders, and managers, resulting in better profitability for the firms. Other scholars (e.g., Javeed et al., 2020; Mubeen et al., 2020) confirm this opinion that product competition positively impacts business organizations' healthier performance.

In contrast, Kim et al. (2018) hold another opinion: competition leads to low pricing power and, consequently, low profits. Part of the differences in views over this relationship can be due to the difference in period, data, and performance measurement. That is why some academic scholars, such as Guney et al. (2011) and Sheikh (2018), suggest further investigations to realize the real impact of coemption on firms' performance. Despite disagreements among scholars, the majority of them (e.g., Raith, 2003; Li & Li, 2018; Javeed et al., 2020; Yung & Nguyen, 2020; Carter et al., 2021) believe that competition motivates business organizations to stay competitive by launching innovating and entrepreneurial strategies to offer innovative products and capitalize on the benefits as the first mover to gain maximum profits from the industry. They believe the competitive business environment pressures managers to achieve their targets and maximize the firms' profitability. The competitive environment also encourages managers to perform well and does not allow them to utilize the firms' resources for personal usage (Januszewski et al., 2002; Allee et al., 2021; Won et al., 2021). Mutinda, 2016 refers to the below equilibrium to explain the relationship between competition and profitability. Where Π_N stands for profit, N number of firms in the market (level of competition), P_N for the price, D (P_N) for demand, F for constant marginal cost, AVC represents average variable cost and fixed costs.

$$\Pi_N = [P_N - \text{AVC}]D(P_N) - F \qquad \text{(2-9}$$

This equation postulates that profitability depends on price, marginal costs, and demand variables. Per prevailing competition theories (e.g., Raith, 2003; Pant & Pattanayak, 2010; Sheikh, 2018), heightened competition typically leads to reduced pricing and an upsurge in overall market output. Mutinda's model (2016) states that a price reduction translates to diminished profits when considering fixed costs and demand. Consequently, these theories posit that intensified competition correlates with narrower profit margins per sale, decreased prices, and elevated demand, particularly in markets characterized by price sensitivity in consumer demand. The escalation of competition is accompanied by a reduction in profit margins, causing prices to converge toward the marginal cost set by the market's most efficient firms. Companies must expand their customer base to sustain profitability, as each sale yields a narrower margin. Nevertheless, due to the decline in prices, the increase in the number of clients is not directly proportional, given that profit margins per sale are diminishing, and the market's ability to accommodate additional products is constrained.

2.6. Interrelationship between Conducts and Performance Factors

2.6.1. Market Share-Price Relationship

Market share shapes business strategies and consumer choices in the dynamic and highly competitive food industry. One significant aspect influenced by market share is product pricing. This sector explores the intricate relationship between companies' market share and product prices within the food industry. By examining the key factors and analyzing the implications, valuable insights can be gained into how market share influences pricing strategies and their effects on

businesses and consumers. Market share represents a company's total sales or revenue within a specific market or industry. It is typically expressed as a percentage and can be calculated by dividing a company's sales revenue by the total sales revenue of the market (Boncinelli et al., 2023). Palmer and others (2018) claim that market share is a crucial metric as it reflects a company's competitive position and influences its profitability, growth potential, and overall market dynamics.

Market share exerts a notable influence on product prices in the food industry. Roest and others (2018) claim that companies with a significant market share often benefit from economies of scale, allowing them to produce goods at lower costs. These cost advantages enable companies to offer competitive prices to consumers, capturing a larger market share and potentially driving competitors out of the market with higher production costs. Syverson (2019) asserts that companies with a dominant market share possess greater pricing power. They can leverage their market position to set prices and influence industry-wide pricing trends. These companies have the flexibility to adjust prices strategically to either gain more market share or maximize profits. According to Amountzias and others (2017), pursuing market share leads to competitive pricing strategies. Companies aiming to increase their market share adopt aggressive pricing tactics, such as offering lower prices than their competitors. This intensifies price competition within the industry and benefits consumers, who can enjoy more affordable products. Market leaders with a significant market share often have well-established brands and reputations. This allows them to charge premium prices for their products based on consumer perceptions of quality, reliability, and brand value. Consumers can be willing to pay a higher price for products associated with reputable brands, even if comparable alternatives exist at lower prices (Sharp & Romaniuk, 2016). Sharma and others (2016) study reveals that companies with a larger market share often invest more in

research and development (R&D) to innovate and differentiate their products. These companies can justify higher prices and maintain their market share despite competition by offering unique features, superior quality, or innovative solutions.

The impact of market share on product prices carries several implications for businesses and consumers within the food industry. Liu and Atuahene-Gima (2018) argue that market share dynamics directly affect the competitiveness of enterprises. Companies with a lower market share face challenges in competitively pricing their products, as they need more economies of scale and pricing power that market leaders enjoy. They must innovate, differentiate, or adopt cost-efficient strategies to remain competitive. Thomas and Muller (2018) note that market share influences product availability, diversity, and affordability. Companies with a larger market share can offer a broader range of products, catering to diverse consumer preferences.

Additionally, increased competition among companies with varying market shares often leads to more affordable options for consumers. Market leaders with a significant market share can frequently maintain profitability even with lower profit margins due to their cost advantages. On the other hand, companies with a more minor market share can only maintain profitability if they can price their products competitively or achieve economies of scale (Thomas & Muller, 2018). According to Sharma and others (2016), market share-driven pricing strategies can incentivize companies to invest in R&D, innovation, and product quality to justify higher prices. This benefits consumers by driving industry-wide innovation and improving product offerings.

Market share significantly influences product pricing strategies in the food industry, shaping competition, consumer choices, and profitability. The relationship between market share and product prices is complex, encompassing factors such as economies of scale, pricing power, brand perception, and innovation (Autor et al., 2017). Businesses must carefully analyze their market

share and competitors' pricing strategies to position their products effectively. Meanwhile, Hashmi and Biesebroeck (2016) add that consumers can benefit from increased competition, affordability, and access to innovative and high-quality products. Understanding the impact of market share on product prices is crucial for businesses and consumers alike in navigating the dynamic landscape of the food industry.

2.6.2. Price - Quality Relationship

The price-quality relationship is a complex concept that extends across various disciplines, including economics, marketing, consumer behaviour, and food science. This relationship becomes particularly significant within the poultry industry due to the unique characteristics of poultry products and the market dynamics that govern them. Consumers often perceive price as an indicator of product quality, influencing purchasing decisions, particularly in contexts where quality is not immediately apparent, such as in the case of poultry products. This perception is well-documented in the literature, with several studies suggesting that consumers associate higher prices with superior quality (Völckner & Hofmann, 2007; Min et al., 2010).

In the poultry industry, the sensory quality of products—including attributes such as taste, texture, aroma, and appearance—is critical in shaping consumer preferences and their willingness to pay a premium (Font-i-Furnols & Guerrero, 2014). These sensory attributes are closely tied to production methods, including breeding practices, feed quality, and processing techniques, which vary significantly between different price segments. Nutritional quality, which encompasses the content of essential nutrients, has also gained prominence among increasingly health-conscious consumers. However, the assumption that higher-priced poultry products are inherently healthier

or of better nutritional value does not always hold, as the relationship between price and nutritional quality is influenced by multiple factors beyond price alone (Darmon & Drewnowski, 2008).

Empirical evidence within the poultry industry suggests that price and quality are complex. For instance, while consumers may expect higher prices to correlate with better taste or nutritional benefits, these expectations are only sometimes met. The sensory and nutritional qualities of poultry products are influenced by various variables, including the type of feed used, the rearing environment, and the processing methods employed rather than price alone (Tougan et al., 2013). This complexity indicates that while premium pricing strategies can be effective for market differentiation, they do not necessarily reflect genuine differences in quality (Henseleit et al., 2007).

The competitive dynamics of the poultry industry further complicate the price-quality relationship. In highly competitive markets, firms may engage in price wars, which can reduce product quality as companies seek to maintain profitability by cutting costs. Conversely, in less competitive markets, firms can leverage higher prices as indicators of superior quality, investing in sensory and nutritional improvements to justify these premiums (Porter, 1980). The structure of the poultry market, characterized by both large-scale industrial producers and smaller, niche producers, also influences how price and quality are perceived and realized in the marketplace.

The influence of cultural, social, and individual preferences on the price-quality relationship is particularly pronounced in the poultry industry, where consumers' quality valuations vary widely. Researches indicate that while the general relationship between price and quality is positive, it is mediated by factors such as the specific type of poultry product and the availability of quality information (Gabor & Granger, 1966; Gardner, 1971; Grewal et al., 2014). In the context of poultry, organic or free-range chicken products often command higher prices. However, these

price premiums do not always correspond to higher nutritional or sensory quality (Beia et al., 2024).

Rodrigue and Tan (2019) discuss the impact of asymmetric information on the price-quality relationship within the food industry, where high-quality producers may set higher prices to signal superior quality without direct quality information. This is particularly relevant in the poultry industry, where consumers may rely on price as a heuristic for quality due to the difficulty in assessing product quality before purchase. Imkamp (2018) further argues that the diffusion of quality information through labelling or third-party certifications can reduce price distortion, leading to more competitive pricing and a weaker price-quality correlation.

Historical studies have shown that the price-quality correlation in food products, including poultry, is often weak, with some products even exhibiting a negative correlation, particularly in imperfect markets (Oxenfeldt, 1950; Riesz, 1979). Some other analyses, such as those by Faulds and Lonial (2001), provide a comprehensive overview of the price-quality relationship across different countries, highlighting significant variations. For instance, in the context of poultry, the price-quality correlation is generally weak, with stronger correlations observed in markets like the United States and Belgium compared to weaker correlations in countries like France and Germany. The work of Grewal et al. (2014) categorizes the price-quality relationship, suggesting that it is more robust in national brands and durable products but weaker in private labels and non-durable goods, a distinction also applicable to the poultry industry. This differentiation underscores the importance of considering product type when evaluating the price-quality relationship in poultry products.

Rroshi and Weichselbaumer (2021) emphasize that the price-quality relationship is contingent on the product type and the information available to consumers. The correlation between price and

quality can vary significantly in the poultry industry, where products can range from basic cuts to value-added or unique items. There is typically a stronger positive correlation between price and quality for durable goods, such as frozen poultry products. In contrast, the correlation is weaker or even harmful for fresh, non-durable goods. This suggests that factors beyond price, such as brand reputation, production practices, and product availability, play crucial roles in consumer quality evaluations in the poultry industry.

In conclusion, while price is often used as a proxy for quality in the poultry industry, the relationship between these variables is complex and influenced by numerous factors. A nuanced understanding of this relationship requires consideration of the strategic implications for firms, consumer behaviour patterns, and the broader socio-economic context within the poultry industry. Further research exploring the specificities of this relationship within different segments of the poultry market would be valuable in enhancing our understanding of how price and quality interact in this critical sector.

2.6.3. Quality - Financial Efficiency Relationship

A comprehensive investigation into the relationship between quality and financial efficiency in the poultry industry requires a deep understanding of the multifaceted nature of quality. Quality can be examined from various perspectives, and five principal approaches are commonly identified: (1) the product-based approach, (2) the transcendent approach, (3) the manufacturing-based approach, (4) the user-based approach, and (5) the value-based approach (Garvin, 1984). Each approach offers distinct insights into how quality is perceived, managed, and linked to financial outcomes within the poultry sector.

The product-based approach (1) asserts that quality is a measurable and precise variable defined by the attributes inherent in a product. In the context of the poultry industry, this perspective emphasizes measurable characteristics such as nutritional content, freshness, and safety, which are critical determinants of consumer preference and market success. For instance, poultry products with higher protein content, lower fat levels, and the absence of harmful contaminants are often perceived as higher quality, leading to a willingness among consumers to pay premium prices (Li et al., 2018). This intrinsic nature of quality supports the notion that higher-quality poultry products, which require superior raw materials and more stringent production processes, are more expensive and thus linked to higher financial returns.

In contrast, the transcendent approach (2) posits that quality is an abstract concept that cannot be precisely defined but is assessed through personal experience. In the poultry industry, this approach is reflected in the consumer's perception of product quality based on taste, texture, and overall satisfaction. This subjective experience, although difficult to quantify, plays a significant role in brand loyalty and repeat purchases, which are critical for maintaining financial performance in a competitive market (Gould, 1992).

The manufacturing-based approach (3) is particularly relevant to the poultry industry, where adherence to strict production standards and specifications is paramount. This approach emphasizes the importance of process control, minimizing defects, and ensuring consistency in product quality. For example, poultry processors that consistently deliver products meeting exacting safety and quality standards will likely see a direct correlation between manufacturing excellence and financial efficiency. This is particularly important in an industry where deviations from quality standards can result in costly recalls and damage brand reputation (Lindemann et al., 2020).

The user-based approach (4) introduces a subjective element to quality, focusing on consumer preferences and perceptions. In the poultry industry, consumer demand for specific attributes—such as organic certification, free-range practices, or antibiotic-free products—illustrates how quality is defined by alignment with consumer values. Poultry producers that cater to these preferences often achieve a competitive advantage, translating into higher sales and better financial performance (Connor-Crabb & Rigby, 2019, pp. 346-374).

Finally, the value-based approach (5) combines performance and cost as determinants of quality. This approach is particularly relevant in the poultry industry in contexts where consumers are price-sensitive yet demand high-quality products. For instance, a poultry product that offers excellent taste, nutritional benefits, and safety at an affordable price is likely to achieve market success, reflecting the balance between quality and financial efficiency (Snyder et al., 2018). This approach highlights that even in a cost-sensitive industry like poultry, there is room for products that balance high quality and reasonable pricing, leading to improved financial outcomes.

Fields et al. (2014) argue that while recent marketing studies show a growing emphasis on the value-based approach, industries such as food and clothing continue to place substantial importance on the quality of materials and ingredients. This is particularly true for the poultry industry, where product-based and manufacturing-based approaches remain more relevant in determining quality. The coexistence of these diverse quality approaches can lead to conflicting perspectives within organizations, especially between manufacturing and marketing departments. In the poultry sector, this could manifest in debates over prioritising cost-efficient production or investing in higher-quality inputs to achieve better market positioning and financial performance.

Regardless of these differing approaches, the focal point for managers in the poultry industry primarily revolves around the financial implications of each perspective, particularly concerning

the connection between quality and financial performance. Figure 2.4 illustrates the positive correlation between quality and financial performance, demonstrating that enhancements in product features, performance, or any dimension of quality can result in increased market share, higher sales, and elevated prices.

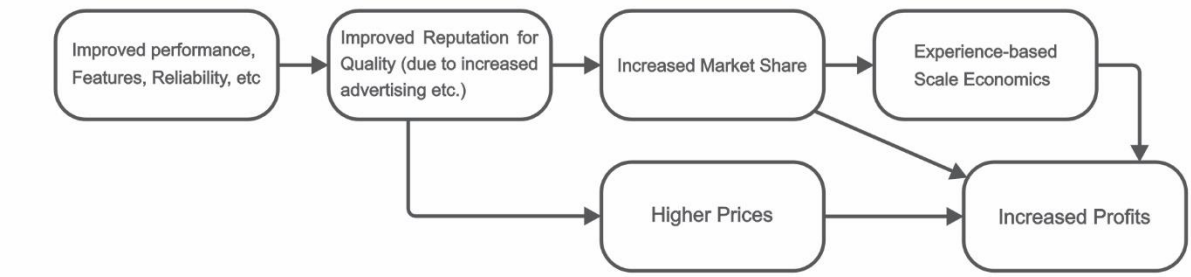


Figure 2.4: Quality-Performance Association; (Garvin, 1984)

However, it is essential to acknowledge that achieving these objectives comes at a cost. For poultry producers, the benefits of quality improvements—such as increased consumer trust, brand loyalty, and market share—must outweigh the expenses associated with implementing these improvements to lead to greater profitability. Studies that align with the manufacturing-based definitions of quality, such as those focusing on production efficiency and defect reduction, sometimes report a weak or negative association between quality and profitability, particularly in cases where the costs of achieving high quality are prohibitive (Murphy et al., 2019; Rahayu et al., 2020).

On the other hand, many empirical investigations confirm a positive correlation between quality and financial efficiency in the poultry industry, particularly concerning return on investment (ROI) as an indicator of a firm's performance. For example, Rogers Mitchell (2021) found that poultry

companies investing in higher quality standards, such as improved feed or better breeding practices, typically see enhanced financial returns, highlighting the strategic importance of quality in driving financial performance. While quality measures can vary in aggregation, the body of research on this subject tends to produce consistent results, with most empirical studies supporting a positive link between quality and financial efficiency rather than a negative one.

2.6.4. Price - Financial Efficiency Relationship

A comprehensive literature review consistently reveals a substantial relationship between product pricing and a business's financial efficiency (Toni et al., 2017; Billings et al., 2018; Chen et al., 2018). However, in the context of the poultry industry, this relationship is influenced by unique factors such as consumer demand and the inherent nature of poultry as a commodity. Labandeira et al. (2017) emphasize that higher prices do not invariably translate to higher profits, particularly in sectors with intense competition and low product differentiation, like poultry. An essential factor in this dynamic is price elasticity, which quantifies how price changes affect consumer demand and financial performance.

Price elasticity in the poultry industry is a critical factor, given that poultry products often exhibit high elasticity due to the availability of numerous substitutes, such as beef, pork, and plant-based proteins (Jawad et al., 2018). When a company decides to increase the price of poultry products, the impact on financial efficiency depends heavily on the demand elasticity of those products. In highly elastic markets, such as those for chicken breasts or eggs, a slight price increase can lead to a significant drop in demand as consumers easily switch to alternative proteins. This underscores the importance of understanding elasticity when setting prices in the poultry industry. Jawad and

coauthors (2018) also highlight the complexity of price reductions in the poultry sector. Lowering prices might attract more customers, but only if the price cut is substantial enough to tap into new market segments. In the highly competitive poultry market, where margins are often slim, attracting a new customer base through price reductions can only enhance financial performance if the additional revenue from increased sales volume outweighs the loss from lower prices. This necessitates a thorough market analysis to accurately assess the potential impact of price changes on financial efficiency.

Moreover, Simonsen et al. (2016) note the distinction between price sensitivity and elasticity. In the poultry industry, where products like organic or free-range chicken are increasingly popular, understanding the elasticity of demand for these premium products is crucial. For instance, consumers might be less sensitive to price increases for organic chicken due to perceived health benefits, leading to lower elasticity. Conversely, conventional poultry products might exhibit higher elasticity due to price sensitivity among budget-conscious consumers. Gilroy et al. (2020) argue that raising prices could result in increased financial efficiency in less elastic markets, such as niche poultry products with strong brand loyalty or unique attributes. However, this is less applicable to the broader poultry market, where products are often considered commodities, leading to higher elasticity and more pronounced price sensitivity. This highlights the need for poultry producers to differentiate their products effectively to reduce elasticity and improve financial performance. Karlan and Zinman (2018) emphasize that determining the appropriate pricing for poultry products is particularly complex due to the diverse nature of the market, which includes everything from commodity chicken to value-added products like marinated or pre-cooked items. A profound understanding of elasticity is indispensable in this context, as it allows producers to predict consumer reactions to price changes more accurately and optimize pricing

strategies accordingly. In practice, most markets within the poultry industry exhibit varying degrees of elasticity, influenced by factors such as consumer income levels, economic conditions, and competitor actions (Asadinejad et al., 2018). For example, during economic downturns, even essential food items like poultry may become more elastic as consumers become more price-sensitive. Conversely, demand might be less elastic in more affluent markets or segments where poultry is perceived as a healthier alternative to red meat. The concept of elasticity is crucial in understanding consumer behaviour in the poultry industry, particularly concerning luxury or non-essential products (Delport et al., 2017).

The formula for calculating demand elasticity is as follows (Butler, 1999):

$$\mathbf{E_{xij}} = \frac{\partial P_{ij}}{\partial \mathbf{x}_i} \frac{\mathbf{x}_i}{P_{ij}} \qquad \text{(2-10}$$

Where $\underset{Xij}{E}$ is a vector of elasticities. $\underset{ik}{P}$ is the probability of the i^{th} individual, choosing outcome, K. $\frac{\delta P}{\delta X}$ stands for changes in probability of choosing a particular alternative. The matrix X is a (1*K) vector of observations on K characteristics for the i^{th} individual. Note that the absolute number is considered the ultimate elasticity, regardless of its negative or positive outcome: the higher the elasticity, the higher the sensitivity to price changes. Gallo (2015) defines five different zones of elasticity, which are particularly relevant in the poultry industry:

1. **Perfectly inelastic (1):** Products like essential poultry cuts with no close substitutes might exhibit deficient elasticity, meaning demand remains stable despite price changes.

2. **Relatively inelastic (2):** Premium poultry products backed by solid brands or those perceived as healthier options might see minor changes in demand with significant price shifts.

3. **Unit elastic (3):** Conventional poultry products could display proportional changes in demand with price adjustments.

4. **Relatively elastic (4):** Commodity poultry products, like frozen chicken parts, might experience substantial changes in demand with slight price variations.

5. **Ideally elastic (5):** In highly competitive segments of the poultry market, a small price change can lead to massive demand fluctuations, particularly for products with no brand differentiation.

Gallo (2015) suggests that understanding where a poultry product lies within these zones is crucial for marketers. In the poultry industry, elevating a product from a relatively elastic to a relatively inelastic category can be achieved through effective branding, quality improvement, and strategic marketing. This transition can help reduce price sensitivity and improve financial efficiency.

However, the relationship between elasticity and financial performance in the poultry industry is also influenced by external factors, such as economic conditions and competitors' actions. Kübler et al. (2020) argue that a product can become more elastic if competitors introduce more convincing alternatives or if consumers' purchasing power declines due to economic downturns. This is particularly relevant in the poultry industry, where economic fluctuations can significantly impact consumer demand.

Razzaq et al. (2019) emphasize that elasticity in the poultry industry should be analyzed within a broader context, including factors such as consumer income, economic conditions, and market competition. They argue that while elasticity can indicate marketing performance, it is also shaped by these broader factors, making it essential for poultry producers to conduct regular market analyses to adapt to changing conditions.

Moreover, elasticity in the poultry industry can only be accurately measured through continuous evaluation and adjustment. Ciliberto et al. (2021) note that more than a single price change can require data accuracy. Instead, multiple price changes and the corresponding demand responses need to be evaluated, a practice many companies would prefer to adopt due to the risks involved. However, Ahmadinejad et al. (2018) suggest that conducting small-scale experiments or surveys can help poultry producers better understand elasticity and refine their pricing strategies accordingly. This approach is precious in a dynamic market like poultry, where consumer preferences and price sensitivities can change rapidly.

2.6.5. Market Share - Financial Efficiency Relationship

Although the direct relationship between market share and financial efficiency is not the primary focus of this research, a brief examination of how these factors interrelate within the poultry industry provides valuable context. Market share is a crucial metric for evaluating a company's standing and success in the highly competitive food industry, including the poultry sector. Its influence extends beyond market dominance and profitability, significantly impacting a company's financial efficiency. This discussion delves into the intricate relationship between market share and financial efficiency within the poultry industry, analyzing key factors and examining their implications.

Financial efficiency (performance) encompasses metrics such as return on assets (ROA), return on equity (ROE), and profit margins (Le et al., 2019), reflecting how effectively a company uses its resources to generate profits and achieve financial goals. In the poultry industry, market share is a significant determinant of financial efficiency (Alshehhi et al., 2018; Assenga et al., 2018).

Companies with a larger market share often benefit from economies of scale, critical drivers of this relationship. For instance, large poultry producers can produce goods in substantial quantities, allowing them to spread fixed costs across a broader revenue base, resulting in lower average costs and enhanced financial efficiency (Baumers et al., 2016).

Economies of scale are particularly relevant in the poultry industry, where large-scale operations can significantly reduce per-unit costs, giving major players a competitive advantage. These companies can achieve higher profits or offer competitive prices without compromising profitability. For example, companies like Tyson Foods and Pilgrim's Pride have leveraged their market share to reduce costs and increase profitability, reinforcing their dominance in the industry (Riffel, 2008; Bushnell, 2014). Furthermore, as Feng et al. (2015) emphasized, companies with substantial market share wield greater pricing power in the poultry industry. These companies can influence market prices, negotiate favourable terms with suppliers, and adjust pricing strategies to maximize profitability. Managing pricing strategies effectively allows these companies to optimize their financial performance, even in fluctuating market conditions.

As asserted by Safitri et al. (2020), companies with larger market shares in the poultry industry possess more extensive resources, including financial, human, and technological assets. These resources enable them to streamline operations, invest in research and development (R&D), enhance production processes, and improve marketing efforts. Efficient resource allocation boosts financial performance and supports continued market share growth. For example, large poultry companies often invest in advanced processing technologies and innovative product development, further solidifying their market position and financial efficiency.

Moreover, according to Kwon et al. (2016), companies with a significant market share can negotiate advantageous terms and pricing with suppliers due to their purchasing volume. This is

particularly true in the poultry industry, where large-scale producers can secure higher-quality inputs, favourable credit terms, and cost-efficient supply chain arrangements. Optimizing supplier relationships enhances financial efficiency and leads to significant cost savings, which are crucial in an industry with tight profit margins. Market leaders with a larger market share are often associated with well-established brands and reputations, as Luxton et al. (2015) highlighted. In the poultry industry, strong brands can reach a wider audience and achieve economies of scale in advertising and promotional activities. This results in more efficient marketing expenditures, heightened brand awareness, and improved financial efficiency. For example, brands like Perdue and Sanderson Farms have successfully leveraged their market share to build strong brand identities, driving consumer loyalty and financial performance.

The impact of market share on financial efficiency carries several implications for both businesses and consumers within the poultry industry (Wang et al., 2016; Xie et al., 2019). Companies with a larger market share can leverage their robust financial efficiency to gain a competitive edge. Enhanced financial efficiency enables companies to invest in growth initiatives, R&D, and strategic acquisitions, further reinforcing their market position. For instance, investments in sustainable farming practices and animal welfare have become key differentiators in the poultry industry, attracting socially conscious consumers and enhancing financial returns.

As Ghassim and Bogers (2019) pointed out, companies with substantial market share and solid financial performance are more likely to achieve sustainable profitability. By diligently managing costs, optimizing resource allocation, and maximizing profit margins, these companies can withstand market fluctuations and bolster long-term sustainability. Financial efficiency is crucial for maintaining stability and growth in the poultry industry, where market conditions can be volatile due to factors such as feed costs and disease outbreaks.

Additionally, companies known for their efficiency and larger market share can offer competitive prices, invest in product innovation, and provide superior customer service (Danso et al., 2019). This benefits consumers through increased product choices, improved quality, and affordability, driven by the companies' emphasis on financial efficiency. Market leaders, characterized by robust financial performance, often set industry benchmarks and standards, driving competitors to enhance their performance. This spurs industry-wide improvements and benefits consumers with superior product offerings and heightened market competition (Grashuis & Su, 2019).

In conclusion, market share exerts a considerable influence on the financial performance of companies in the poultry industry (Alshehhi et al., 2018; Assenga et al., 2018). Market leaders can enhance their financial performance through economies of scale, pricing power, resource allocation, and brand strength, reinforcing their market position and sustainability (Roest et al., 2018). Understanding this intricate relationship is pivotal for companies aiming to optimize their performance and secure long-term success in the competitive poultry industry.

2.7. Chapter Summary

The central objective of this chapter was to conduct a comprehensive review of the extant literature on the interplay between competition and the determinants of firms' conduct and performance. Drawing from the synthesis of existing scholarship, it was discerned that various factors contribute to firms' conduct and performance, such as pricing strategies, market share, sensory attributes, nutritional characteristics, and financial efficiency. Furthermore, this chapter examined the relationships between competition and critical conduct and performance determinants encompassing competition price, competition quality, competition market share, and competition

financial efficiency interfaces. Additionally, an exploration of the intricate web of associations between conduct and performance factors was undertaken, examining relationships like market share versus price, price versus quality, quality versus financial efficiency, price versus financial efficiency, price versus quality, and market share versus financial efficiency. These critical associations were scrutinized to pinpoint any existing gaps or constraints within academic literature.

Previous research endeavours have predominantly focused on appraising the influence of competition on distinct functional aspects of business operations, as evidenced by works such as those by Post et al. (2018), Yoo & Cheong (2018), Nestle (2019), and Javeed et al. (2020). However, these inquiries must focus on the competition's holistic and relative impact on businesses' overall conduct and performance. There is a notable gap in investigating the influence of competition on firms' overall performance, the intricate interrelationships among conduct and performance determinants, the existence of trade-offs, and the identification of optimal points within these relationships, particularly within the poultry industry.

In addition, the extant body of literature in the domain of competition and firms' performance has proffered theoretical frameworks advocating the positive effects of competition on firms' performance, as exemplified by the works of Teece (2014), Uzunidis (2016), and Melissa & Kuhil (2018). These frameworks often concentrate on single strategies to illustrate the beneficial consequences of competition, with limited empirical investigations conducted within the specific context of the poultry industry. Hence, it becomes evident that pertinent issues about the nexus of competition and performance warrant further examination, which will be expounded upon in the subsequent chapter (Chapter 3). In this context, research hypotheses will be formulated, delineating the degree of competition's impact on the firms' conduct and performance and the

mutual influence of conduct determinants on one another. These hypotheses will be instrumental in ascertaining the optimal points of competition and identifying trade-offs through a comprehensive analysis of the contributing factors.

Chapter 3

Conceptual Framework and Research Hypothesis

3.1. Introduction

This chapter initiates by delineating the evolution of the study's conceptual framework within a theoretical context and a proposed research model. The conceptual framework comprises four integral parts: 1) the direct impact of competition on market share, price, quality, and financial efficiency; 2) the mediating role of market share in the relationship between competition and price; 3) the mediating role of quality in the relationship between price and financial efficiency, and 4) the mediating effects of market share, price and quality between competition and financial efficiency (figure 3.1). Market share is considered the central unidimensional, while price, quality, competition, and financial efficiency are the significant multi-dimensional constructs. The study draws upon the structural conduct performance (SCP) theory to evaluate the effects of competition (market structure) on market share, price, and quality (conduct) and their impact on financial efficiency (performance). As Forza (2002) elucidated, "A hypothesis is a logically conjectured relationship between two or more variables expressed in the form of a testable statement." Hypotheses are crafted to address research questions and support attaining research objectives. In this research, four principal hypotheses are posited, centring on the influence of competition and

the efficacy of strategies in mitigating the negative impact of competition on firms' conduct and performance. The theoretical underpinnings of these hypotheses are expounded upon in this chapter. The significant items (figure 3.1) studied in this PhD thesis are competition, market share, price, sensory quality, nutritional quality, and financial efficiency.

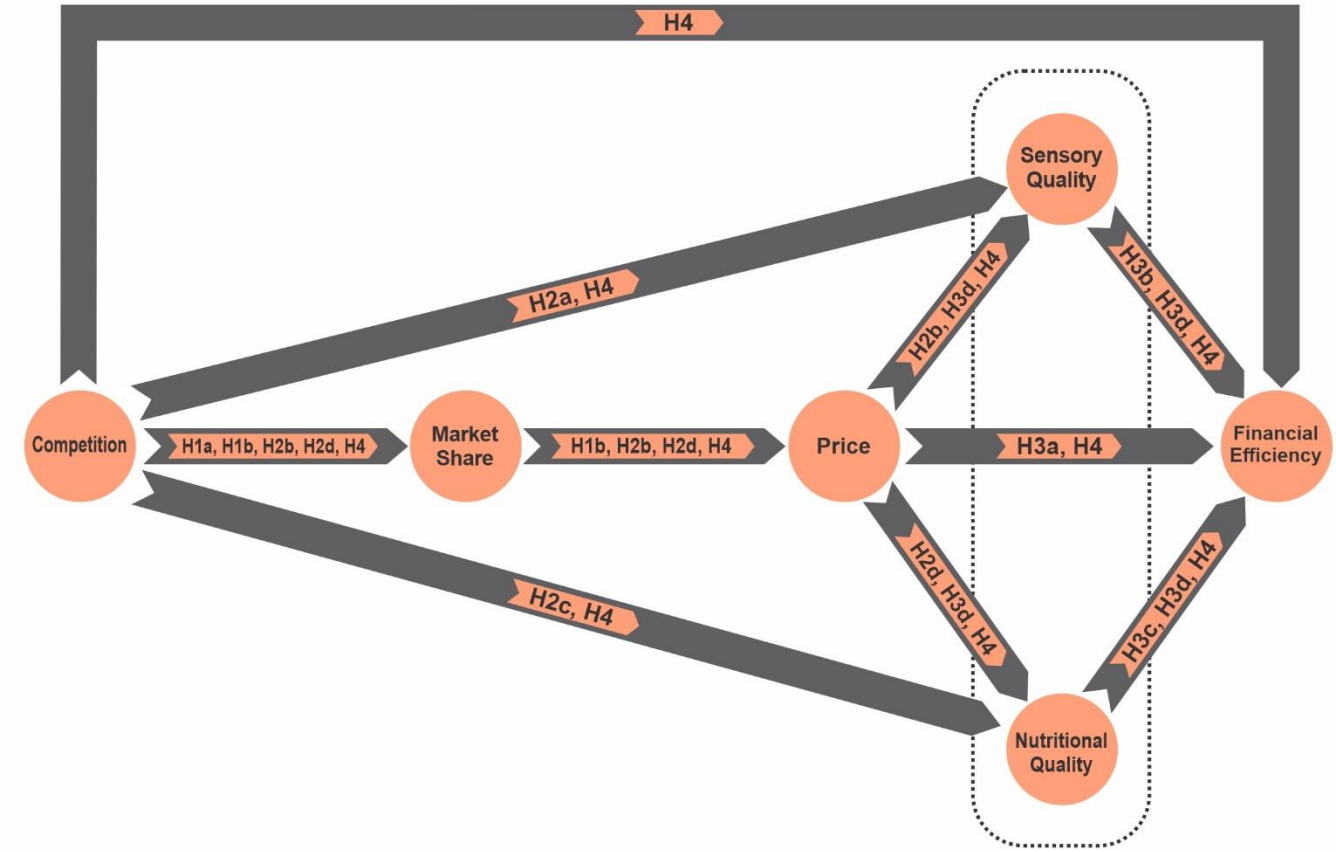


Figure 3.1: The construct structure.

Table 3.1: Research Constructs, Items and Related References

Constructs	Items	Related Literature
Competition	Price-Cost-Margin	(Soares, 2020; Collins & Preston, 2020; Spierdijk & Michalis, 2017; Mansurbek, 2020, Huang, Chiang, and Chao, 2017);

	Labor Production Ratio	(Kazekami, 2020; Kehrig and Vincent 2017; Michael et al., 2009, Johari and Jha, 2020; Kehrig and Vincent 2017);
	Profit Elasticity	(Boone 2008; Balashova et al., 2019; Tan, 2018; Schiersch & Schmidt-Ehmcke, 2010; Boone, Ours, and Wiel 2007)
Market Share	Market Share	(Edeling & Himme, 2018; Palmer, et al., 2018; Fitzgerald & Priolo, 2018; Syverson, 2019; McKiernan, 2015; Baker, 2017; Palepu et al., 2020)
Price	Price	(Kienzler and Kowalkowski, 2017; Hanna, et al., 2019; Faith, D.O, 2018; Toni, et al., 2017; Asdi & Putra, 2020; Hinter Huber and Liozu, 2019; Bandalouski, et al., 2018; Deac, et al., 2016; Asdi and Putra 2020; Weinrich and Gassler, 2021)
Sensory Quality	Age	(Rigdon et al., 2021; Chen et al., 2018; Sánchez-Mací and others, 2019; Purslow, 2018);
	Meat Color & Light Reflection	(Nazir and others; 2020; Hasanah & Indrawn, 2020; Hughes et al., 2017; Zhang et al. 2021);
	Temperature & Stiffness	(Buhr, et al., 2014; Harris, et al., 2018; Zhuang, et al., 2013; Fidan et al., 2020; Zhao et al., 2017; Shung, et al., 2022; Wan et al., 2017; Alekseeva et al., 2021)
Nutritional Quality	Transportation and Slaughterhouse Equipment	(Warries, 1990; Kannan, et al., 1997; Swatland, 2004; Santé-Lhoutellier, et al., 2008; Sandercock, et al., 2009; Zhang, et al., 2013; Falowo, et al., 2014; Shimokomaki et al., 2017; Zulkifli et al., 2019; Grandin and Cockram, 2020; Derrick's, 2017);
	Heat Stress & Fasting Time	(Huang et al., 2019; Esser et al., 2017; Chauhan et al., 2019; Xue et al., 2021; Jiang et al., 2021);
	Chilling Type	(Stella et al., 2021; Handley et al., 2018, Ang and Hamm,1983; Kim et al., 2017; Handley et al., 2018; Yang et al., 2020)
	PH level	(Barbut ,1993; Knight et al., 2019; Etebari et al., 2021);
	Amino Acids	(Mueller et al., 2020; Abdollahi et al., 2018; Carmona et al., 2019; Sheng-hui et al., 2019; Chrystal et al., 2020; Fu et al., 2021);
Financial Efficiency	ROA	(Shabani, et al., 2019; Swandewi & Purnawati, 2021; Strouhal, et al., 2018; Kurniawan, 2021; Pointer & Khoi, 2019; Hewitt and others, 2017);
	ROE	(Damodaran, 2007; Daniswara & Daryanto, 2020; Damodaran, 2022; Anwar, 2019; Kharatyan, 2016; Wijaya, 2019; Adawiyah & Setiyawati, 2019)

3.2. Hypothesis

3.2.1. Competition-Price Relationship

Economic theories mainly confirm the effect of competition on market prices and confirm that price is a function of competition (Hausman & Leibtag, 2007; Majeed et al., 2017; Watane et al., 2021). Accordingly, lower competition increases prices if all else is equal (Hausman & Leibtag, 2007). A study by Planer, Friedrich, and Sahm (2020) confirms the effect of merging companies as a competitive indicator of prices. The newly merged companies mainly increase their post-merger prices above their pre-merger levels.

Less competition shifts the market supply curve leftwards and increases the prices, while higher competition shifts the curve rightward and reduces the prices (Bernstein et al., 2021). According to the Cournot-Nash model, less competition results in two things: first, it reduces the market's total output, presumably due to fewer active players. Second, it increases the supply of every individual firm (Penkovskii et al., 2018). Although the net effect on prices is ambiguous, usually, the price effect of the total market output reduction is expected to be less than the higher output of every surviving individual firm and the economics of scale effect, suggesting the price increase effect overweights the reduction (Andrés & Burriel, 2018). Figure 3.2 shows how the post-merger price increases above the pre-merged prices based on the Cournot-Nash model (Davis & Garces, 2010). Where P_1 is the price of firm 1, C_1 is the marginal cost of firm 1, C_2 is the marginal cost of firm 2, and P_2 is the price of firm 2 for a similar product and R is the reaction function.

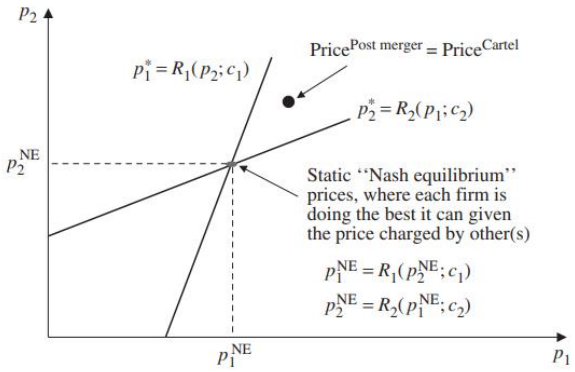


Figure 3.2: price-competition relationship (Davis & Garces, 2010)

Bertrand's theory provides a supplementary model predicting the price-competition relationship. In this model, firm 1 sets its product price based on its reaction function R (Davis & Garces, 2010):

$$P_1 = R(P_2;\ C_1, \Theta) \qquad (3\text{-}1$$

Where Θ is a constant presenting the consumer's taste parameter and C_1 is the marginal cost of firm one and P_2 is the price of firm two for a similar product. According to Bertrand, merging two firms and, consequently, less competition allows the merged firm to increase the price of its substitute good, increase the demand for its second substitute good, and ultimately maximize its profit. This ability to receive profit from both substitute goods will result in a higher price equilibrium for both goods, all equal (Ebina & Matsushima, 2017). The merged firm sets its prices based on the below equation where D is a function of demand to maximize the company's profit:

$$\max_{p_1,p_2}(p_1 - c)D_1(p_1, p_2) + (p_2 - c)D_2(p_1, p_2) \qquad (3\text{-}2$$

Bertrand calls this incentive to raise prices the 'unilateral' effect. Moreover, this incentive comes from the ability of the merged company to retain profit from consumers switching to the second substitute good after raising the price of the first product (Bian et al., 2018). On the other hand, if goods are 'demand complements,' the merging results in a fall in the prices of both goods due to the effect of the economy of scale (Mosca, 2008). Apart from theories, the actual impact of competition on market prices is challenging (Busso & Galiani, 2019). The empirical approach to predict the causal effect is to look at the market price outcomes with differing competition. The price-competition association is revealed by comparing prices in markets with the various levels of competition. Majeed and others (2017) emphasize that while comparing markets, it is necessary to be sure that markets are meaningfully similar to reach a reliable conclusion.

Most studies and theories (e.g., Hausman & Leibtag , 2007; Davis & Garces, 2010; Majeed et al., 2017; Watane et al., 2021) confirm the association between competition and price, mainly confirming that less competition leads to higher market prices and decreased market outputs. Notably, the effect is unambiguously predictable when companies compete in prices of differentiated products that can be substituted. In the case of empirical market studies, it is crucial to compare similar markets. Haw and others (2015) claim that many other factors affect market prices apart from the competition. Among these factors, the market cost characteristic is the most decisive one. Therefore, if cost is not controlled in the cross-market analysis, the result would suffer from endogeneity issues. If so, the study's result does not indicate the causal relationship between competition and price but rather the effect of a third independent factor. There are some econometric techniques, such as the use of instrumental variables and fixed effects, to curb the endogeneity problem (Yang et al., 2021). The other decisive factor influencing the competition-price relationship is market share. The relationship between higher competition and market share

is well-established in the literature (e.g., Cennamo & Santali, 2013; Mancos et al., 2015; Nestle, 2019).

As markets become more competitive, firms strive to gain a larger market share to secure their position. This pursuit often results in intense rivalry among competitors, leading to market share distribution among a more significant number of firms. Consequently, individual firms find it challenging to maintain or increase their market share in highly competitive environments (Thomas & Müller, 2017). Empirical evidence (Amountzias et al., 2017; Syverson, 2019) suggests that a lower market share can be associated with lower product prices. Firms with reduced market share employ pricing strategies to attract consumers and regain market traction. Lowering prices can serve as a strategic manoeuvre to entice customers away from competitors, thereby contributing to the firm's market share recovery efforts.

Reduced market share necessitates cost-cutting measures, prompting firms to pass on consumer benefits through lower product prices (Su & Tang, 2016). Increased competition among firms is negatively associated with market share in highly competitive markets. Furthermore, lower market share positively correlates with lower product prices as firms adopt competitive pricing strategies to regain market share (Ovodenko, 2016). The intensified competition among firms in a market leads to a dispersion of market share as individual firms struggle to maintain their positions. Consequently, firms with diminished market share tend to adopt price reduction strategies to attract consumers and stimulate market share recovery (Alves et al., 2020).

The conceptual framework presented in this research serves as a valuable tool for understanding the complex relationships between higher competition, market share, and product prices. The hypotheses developed in the following sections lay the groundwork for empirical research, inviting

further investigation into the dynamics of competitive markets and their implications for pricing strategies. As this research ventures into the empirical realm, it has the potential to refine and validate these relationships, contributing to a deeper understanding of market dynamics and their implications for firms and consumers.

3.2.1.1. Competition-Market Share Relationship

Competition is fundamental to any market, significantly influencing companies' dynamics and market shares (He & Huang, 2017). Understanding the relationship between competition and market share requires accurately exploring how competitive pressures shape firms' strategic decisions, ultimately affecting their market positions. This section delves into the direction and nature of the relationship between competition and market share, providing a theoretical and empirical foundation for the hypothesis proposed in this research.

Competition is often viewed as a double-edged sword in market economies. On the one hand, it drives companies to innovate, improve their offerings, and strive for a larger market share (Tukker & Tischner, 2019). On the other hand, intense competition can erode individual market shares, especially in markets where product differentiation is minimal. According to traditional market structure theory, particularly within the framework of perfect competition, higher levels of competition typically result in decreased market shares for individual firms (Ovodenko, 2016). In perfectly competitive markets, numerous firms offer homogeneous products, leading to fierce price competition and leaving little room for differentiation. As a result, individual firms often need help to capture significant market share, and the market becomes evenly distributed among competitors.

Conversely, the resource-based view (RBV) suggests that firms with superior resources and capabilities can leverage these advantages to thrive in competitive environments (Kull et al., 2016). Firms that effectively utilize their unique resources—such as proprietary technology, brand reputation, or innovative capabilities—are better positioned to maintain or increase their market share despite competitive pressures. This view posits that competition encourages firms to invest in research and development, marketing, and operational efficiency, all of which contribute to a more decisive competitive advantage and, subsequently, a larger market share.

Empirical studies on the relationship between competition and market share present mixed results, reflecting the complexity of this relationship (Ovodenko, 2016; Tukker & Tischner, 2019; Lemus & Luco, 2021). The impact of competition on market share varies across industries and is heavily influenced by factors such as product differentiation, market maturity, and firms' strategies. In highly competitive markets with minimal product differentiation, firms often experience decreased market shares due to intense price competition and the need for more sustainable competitive advantages (Gu, 2016). In such environments, firms that cannot differentiate their products or services compete primarily on price, leading to thinner profit margins and reduced market share. This outcome aligns with the traditional market structure theory, which suggests that competition erodes individual firms' market shares in markets where products are mainly undifferentiated.

However, in industries characterized by moderate levels of competition, firms that successfully differentiate their products or adopt innovative marketing strategies can achieve increased market shares (Jiang et al., 2015). Differentiation can take many forms, including offering unique product features, superior quality, or exceptional customer service. By creating a solid value proposition that resonates with customers, firms can attract a loyal customer base, increasing their market share even in competitive markets.

Furthermore, firms that position themselves as leaders or specialists within specific market segments can capture larger shares of those segments (Aaker & Moorman, 2017). For example, by focusing on niche markets or addressing specific customer needs, companies can establish a competitive advantage that shields them from the adverse effects of competition in the broader market. This strategy allows firms to grow their market shares within targeted segments, even when market competition is high.

Understanding the complex relationship between competition and market share is crucial for firms aiming to enhance their market positions. Firms must carefully assess industry dynamics, customer preferences, and competitive strategies to respond effectively to competitive pressures. Differentiation and innovation emerge as critical factors in this context. Firms that offer unique products, superior quality, or exceptional customer experiences are more likely to attract and retain customers, increasing their market share (Zahir et al., 2015).

In addition to differentiation, strategic partnerships and mergers can provide firms with synergistic benefits, enhancing their competitive positions and enabling them to gain larger market shares. He and Huang (2017) argue that firms can strengthen their market presence and improve financial performance by pooling resources, expanding distribution channels, and broadening customer bases.

Given the complexities outlined above, the relationship between competition and market share is context-dependent, with varying outcomes based on industry characteristics and firm strategies. However, the literature suggests that higher competition in perfectly competitive markets generally leads to decreased market shares for individual firms, while firms that differentiate themselves or strategically manage their resources can maintain or increase their market share despite competitive pressures (Tukker & Tischner, 2019; Kull et al., 2016).

Based on this understanding, this research proposes the following hypothesis:

Hypothesis 1: Higher competition negatively influences price through decreased market share.

Hypothesis 1a (H1a): Higher levels of competition in the poultry market are negatively associated with the market share of individual firms.

3.2.1.2. Market Share-Price Relationship

Competition tends to be more intense in markets characterized by numerous companies with smaller market shares. In these fragmented markets, companies often strive to attract consumers through various means, with price being a significant determinant of competitive success (Cattani et al., 2017). The intensity of competition in such markets frequently leads to price wars, as firms reduce prices to capture a larger market share. This behaviour generally results in lower overall prices within the market, driven by the collective efforts of companies seeking to increase their market share.

The underlying rationale for this phenomenon is rooted in the pursuit of market share. As Geng and Shulman (2015) observe, companies with lower market shares typically seek to expand their customer base by offering lower prices than their competitors. This strategy mainly attracts price-sensitive consumers who are likely to switch brands or try new products when they perceive a better value proposition. Companies can enhance their market share by successfully attracting these consumers, a key indicator of competitive success and market influence. In contrast, markets dominated by a few companies with higher market shares often exhibit reduced competitive pressure (Cattani et al., 2017). Dominant firms in such markets enjoy significant market power, enabling them to set prices at a premium. With limited alternatives available to consumers, these

companies can maintain higher prices without fearing a substantial loss in market share (Reenen, 2018). This pricing power is often supported by factors such as brand loyalty, perceived quality, and established market dominance, which allows these firms to command higher prices.

The relationship between market share and pricing is complex and influenced by various factors, including market structure, consumer preferences, and competitive dynamics. Nagle and Muller (2018) argue that understanding this relationship is crucial for companies seeking to optimize their pricing decisions and maintain a competitive edge. Firms must navigate a range of strategic decisions when setting product prices, and their market share plays a critical role in shaping these decisions. The complexity and importance of these decisions can make companies feel the weight of their pricing strategies. By understanding how market share influences pricing strategies, companies can better position themselves within the competitive landscape.

Larger market share companies often adopt a price leadership strategy, setting prices that smaller competitors follow. Wan et al. (2023) suggest that this can lead to higher overall prices in the market, as dominant firms use their market power to establish pricing norms that competitors are compelled to match. However, the relationship between market share and pricing can be complicated. Empirical studies have produced mixed findings, highlighting the context-dependent nature of this relationship. For instance, Autor et al. (2017) indicate that companies with larger market shares may offer lower prices, leveraging economies of scale and operational efficiencies to attract a broader customer base. Conversely, Palmer et al. (2018) argue that more significant market share firms often charge higher prices, capitalizing on consumer perceptions of higher quality, brand loyalty, and the ability to command price premiums. These divergent findings underscore the importance of considering the specific market context and the competitive environment when analyzing the relationship between market share and pricing.

Companies with smaller market shares face significant pressure to lower prices, especially in highly competitive markets. As competition intensifies, these firms use aggressive pricing strategies to maintain their market positions and avoid losing customers to competitors (Toni et al., 2017). This behaviour often leads to price wars, where companies continuously lower prices to attract and retain customers, ultimately driving down profit margins across the industry.

Nguyen et al. (2015) argue that the market structure, particularly the degree of concentration, plays a crucial role in shaping pricing dynamics. The emphasis on the role of market structure can make the audience feel the significance of this factor. In markets with a higher number of competitors and lower concentration, prices tend to be lower due to intensified competition among firms striving to gain market share. This stands in contrast to more concentrated markets, where fewer firms with substantial market shares can exercise greater control over pricing, often resulting in higher prices.

Understanding the relationship between market share, competition, and pricing is critical for both businesses and policymakers. The stress on the importance of this understanding can make the audience feel the urgency and relevance of this knowledge. For companies, this knowledge is vital in formulating effective pricing strategies that align with their competitive landscape. By recognizing the dynamics at play, firms can make informed decisions on whether to pursue price leadership, differentiation, or a hybrid approach to optimize their market positions. For policymakers, insights into how market structure influences pricing strategies can inform the design of regulations that promote healthy competition and protect consumers from monopolistic practices. In concentrated markets, where dominant firms use their market power to set higher prices, regulatory interventions are necessary to ensure fair competition and prevent consumer exploitation.

Given the complexities of the abovementioned relationships, this research seeks to establish a correlation between market structure, competition, and pricing patterns. Influencing factors such as consumer preferences, entry barriers, and regulatory environments will be considered to provide a comprehensive understanding of observed pricing dynamics. In summary, in markets with lower concentration and higher competition, companies with smaller market shares are more likely to engage in aggressive pricing strategies, leading to lower overall market prices, compared to markets dominated by a few large firms where prices are higher due to reduced competitive pressure.

3.2.1.3. Indirect Impact of Competition on Price in the Poultry Industry

In the conceptual framework of this thesis, market share functions as a mediator between competition and pricing strategies within the poultry industry. The mediation process unfolds as follows: heightened competition leads to market share fluctuations, which in turn prompt adjustments in pricing strategies. This sequential process effectively captures the strategic decisions that firms make in response to competitive pressures in the market.

As competition intensifies within the poultry industry, firms often experience fluctuations in their market share. A decline in market share typically triggers strategic responses, where firms lower prices to attract or retain customers. This price reduction is often a tactical move aimed at counteracting the effects of competitive pressure by appealing to price-sensitive consumers. Conversely, when a firm successfully gains market share, it may leverage this improved position by maintaining or even increasing its prices, capitalizing on its strengthened market presence (Gökhan et al., 2014). This strategic interplay between market share and pricing is a critical mechanism through which competition influences the economic dynamics within the poultry

industry. The framework suggests that competition exerts pressure on market share, and firms respond to changes in market share through pricing adjustments. In this way, firms use pricing as a strategic tool to influence consumer behaviour and maintain financial viability in a competitive environment.

Technological innovations play a pivotal role in shaping competitive dynamics within the poultry industry. Advances in breeding techniques, automation in production processes, and other technological improvements can provide firms with significant cost advantages, influencing a firm's market share by enabling more efficient production and potentially lower pricing strategies. Firms that successfully leverage such innovations are better positioned to withstand competitive pressures, as their enhanced efficiency allows them to compete more effectively on price while maintaining profitability. This technological edge can increase market share, influencing the firm's pricing strategy. Thus, technological innovation serves as both a competitive differentiator and a driver of market share dynamics, further complicating the relationship between competition and pricing.

The poultry industry operates under stringent regulatory frameworks that dictate production standards, biosecurity measures, and animal welfare practices. These regulations significantly impact competition, market share, and pricing strategies. For instance, changes in regulations that increase production costs can affect a firm's pricing strategy. Firms that can adapt to these regulatory changes efficiently secure a competitive advantage, allowing them to maintain or even grow their market share despite the increased costs. Regulatory pressures can also lead to market segmentation, where firms specializing in compliant, high-standard production can command premium prices, while others may compete primarily on cost. This segmentation further illustrates

how market share mediates the relationship between competition and pricing, as firms strategically adjust prices based on their regulatory compliance and market positioning.

The Structure-Conduct-Performance (SCP) paradigm and Industrial Organization (IO) Theory provide a valuable lens through which to understand how the structure of the poultry industry—including the intensity of competition—shapes firm behaviour. According to IO Theory, firms resort to price competition as a primary strategy in industries where differentiation is challenging, such as the poultry industry. This aligns with the observed behaviour in the poultry market, where firms often lower prices in response to competitive pressures, reflecting the industry's structural characteristics (Grassi, 2017). The Resource-Based View (RBV) further emphasizes the role of unique resources and capabilities in gaining a competitive advantage. In the context of the poultry industry, firms with superior resources—such as advanced breeding techniques, efficient supply chains, or robust distribution networks—are better equipped to withstand competitive pressures. These firms can strategically manage their market share and pricing, using their unique capabilities to maintain profitability despite intense competition (Alexy et al., 2018). For example, a firm with an efficient supply chain may offer competitive prices without sacrificing margins, increasing its market share and strengthening its market position.

In summary, the indirect impact of competition on pricing within the poultry industry is mediated by market share, with firms adjusting their pricing strategies in response to shifts in market share driven by competitive pressures. This strategic decision-making process, influenced by technological innovations, regulatory frameworks, and unique firm capabilities, underscores the importance of continuous adaptation to maintain market position and financial performance in competitive environments. Thus, considering the relationship between competition and price within the poultry industry, this research proposes the following.

Hypothesis 1b (H1b): Higher competition in the poultry industry leads to a decrease in market share, resulting in a strategic price adjustment, with firms lowering prices to counter market share losses.

The formulated hypothesis guides empirical testing in this research, which explores the relationships within this specific sector.

3.2.2. Competition-Quality Relationship

Quality, a crucial consideration for competition authorities, is as significant as price when firms vie for market dominance. Unchecked competition can distort quality, posing a risk to consumer welfare that may rival or surpass the impact of price hikes (Goddard, 2015). The complexity of analyzing quality in a competitive context is evident in its subjective and multidimensional nature, which sharply contrasts with the objective and singular dimension of price. While consumers universally prefer lower prices with consistent quality, defining superior quality at a specific price point is subjective, as consumer priorities vary widely (Stamolampros & Korfiatis, 2019).

The theoretical relationship between competition and quality remains an area of active inquiry, with economists grappling with fundamental questions about consumers' willingness to pay for quality and the ambiguous impact of competition on quality levels (Bilotkach & Pai, 2020). The ambiguity arises because quality, unlike price, is not easily measurable or universally agreed upon. Consumers prioritize different quality aspects—such as durability, aesthetics, or customer service—making it challenging to develop a one-size-fits-all theory of how competition impacts quality.

Empirical research has started to illuminate this intricate relationship, though the findings are not uniform. For instance, studies in service sectors often indicate a positive link between competition and quality, as firms strive to attract and retain customers by enhancing service standards (Aydin et al., 2016; Gravelle et al., 2019). However, other studies suggest that increased competition can lead to a decline in quality, particularly in industries where cost-cutting measures are necessary to maintain competitiveness (Cheng et al., 2013; Yoo & Cheong, 2018). This divergence in findings can be attributed to the multidimensional nature of quality and the variation in consumer preferences, which make the impact of competition on quality highly context-dependent (Prajogo, 2007).

The incentive to produce higher-quality products is closely linked to the intensity of competition and the fixed costs associated with maintaining high quality. Brekke et al. (2010) argue that firms must enhance product quality in highly competitive markets to differentiate themselves and secure long-term market presence. Supporting this notion, numerous studies affirm that competition encourages firms to elevate their quality standards to survive in a competitive marketplace (Ginsburg & Wright, 2012; Song & Zhuang, 2017; Gravelle et al., 2019). In this context, competition catalyzes firms to optimize resource utilization, minimize costs, and foster innovation (Ferreira et al., 2020).

Despite this, the relationship between competition and quality can be complicated. While competition tends to drive prices toward the marginal cost of the most efficient firms, its impact on quality is less predictable (Planer-Friedrich & Sahm, 2020). In markets characterized by imperfect competition, where firms possess some degree of pricing power, the predictions regarding the impact of competition on quality are less precise. Kyle (2019) notes that models of imperfect competition often fail to provide precise predictions about how competition will

influence quality. Instead, the impact is contingent on factors such as the relative strength of the quality elasticity of demand versus the price elasticity of demand.

Empirical studies have begun to address these theoretical gaps by exploring how competition influences both price and quality in various industries. Some studies suggest that while price and quality competition can enhance consumer welfare, unchecked price competition can lead to cost-cutting strategies that compromise quality in ways that are not immediately perceptible to consumers (Yoo & Cheong, 2018). For example, in industries where quality is difficult for consumers to assess—such as healthcare or education—firms might reduce quality subtly to maintain low prices, potentially harming consumer welfare in the long run.

The findings of these studies underscore the need for a comprehensive understanding of the trade-offs between price and quality in competitive markets. While lower prices are generally seen as beneficial for consumers, they can sometimes come at the expense of quality, particularly in industries where the cost of maintaining high quality is significant. This suggests that competition authorities must vigilantly monitor not only pricing practices but also quality standards to ensure that consumer welfare is not compromised by the pursuit of lower prices. The relationship between competition and quality is complex and multifaceted, shaped by industry-specific factors and the inherent subjectivity of quality. While competition can incentivize firms to improve quality, it can also lead to quality degradation if firms prioritize cost-cutting over quality maintenance. Theoretical models have struggled to capture this complexity, often relying on empirical studies to provide a clearer picture of how competition impacts quality. As such, both price and quality competition should be carefully balanced to protect consumer welfare, particularly in markets where quality is difficult to assess.

3.2.2.1. Competition - Sensory Quality Relationship

In the intricate ecosystem of the poultry industry, the relationship between competition and product quality—precisely the sensory quality of poultry meat—offers a compelling study area. This section seeks to elucidate how heightened levels of competition can drive improvements in the sensory quality of poultry meat, laying the groundwork for hypothesis development and empirical investigation within the industry.

Competition in the poultry industry is a significant catalyst for quality improvement, particularly regarding sensory attributes such as taste, texture, juiciness, and appearance. Firms operating in highly competitive markets are driven to innovate and differentiate their products to gain market share and satisfy consumer preferences. Bayraktar et al. (2017) suggest that in a competitive environment, firms are compelled to innovate as a strategic response to maintain or increase their market position. This innovation often manifests in enhanced sensory quality as firms seek to offer superior products that appeal to discerning consumers.

Neo and Emel (2017) argue that improving sensory quality becomes a vital competitive strategy in the poultry industry, where firms invest in advanced breeding practices, sophisticated feed formulations, and cutting-edge processing technologies. These investments are designed to elevate the overall sensory experience of consuming poultry meat, making it more appealing to consumers who prioritize quality in their purchasing decisions. For instance, breeding practices focused on optimizing muscle fibre composition can produce more tender and flavorful meat. At the same time, innovations in feed formulations can enhance the meat's nutritional profile and sensory attributes (Aarhus et al., 2009). Competition also triggers a race for efficiency and technological advancement, where firms strive to implement the latest innovations to gain a competitive edge. In the poultry industry, such advancements can include precision feeding techniques, automated

processing systems, and enhanced biosecurity measures—all of which contribute to improving the sensory quality of the final product. Zhang (2015) highlights that consumer preferences play a crucial role in shaping these strategies, as firms responding to consumer demand for higher-quality products are more likely to invest in practices that improve sensory attributes.

Research indicates that consumers increasingly prioritize quality attributes, including sensory quality when purchasing (Albayrak & Caber, 2015; Ju et al., 2019). As a result, firms in the poultry industry are under constant pressure to meet and exceed these expectations to remain competitive. This pressure drives firms to channel resources into research and development, focusing on innovations that directly enhance the sensory quality of their products. The sensory attributes of poultry meat—such as flavour, tenderness, and juiciness—are critical determinants of consumer satisfaction, and firms that excel in these areas are more likely to achieve sustained market success.

The conceptual framework of this research posits that competition catalyzes quality improvement in the poultry industry, particularly regarding sensory attributes. Firms engaged in intense competition are expected to allocate significant resources to research, technology, and innovative practices that enhance sensory quality. This dynamic relationship between market forces and the pursuit of excellence in product quality reflects the industry's ongoing efforts to meet consumer demands and maintain competitive advantages.

In the poultry industry, certifications and adherence to quality standards play a pivotal role in establishing and maintaining a competitive edge. Kotsanopoulos and Arvanitoyannis (2017) argue that firms striving for quality excellence often seek certifications that attest to the sensory attributes of their products. These certifications signal to consumers and other stakeholders that the firm's products meet rigorous quality standards, thereby enhancing the firm's reputation and competitive position.

The global nature of the poultry industry introduces additional layers of complexity to the relationship between competition and sensory quality. Firms engaged in international competition must tailor their products' sensory qualities to meet different regional markets' diverse tastes and preferences. For example, a firm must develop distinct flavour profiles or textural qualities for poultry products for different cultural contexts. This need for customization adds another dimension to the competition-quality relationship, as firms must continuously adapt their strategies to succeed in various markets (Pellattiero et al., 2020).

In conclusion, the poultry industry's relationship between competition and sensory quality is characterized by a dynamic interplay of market forces, consumer preferences, and technological innovation. Competition drives firms to improve the sensory quality of their products as a means of differentiation and market positioning. This process involves substantial investments in breeding, feed formulation, processing technologies, and adherence to quality standards. The global nature of the industry further complicates this relationship, requiring firms to tailor their products to meet regional preferences while maintaining high standards of sensory quality.

This conceptual framework sets the stage for developing a hypothesis to guide empirical investigation within the poultry industry, exploring how competition influences sensory quality, consumer satisfaction and market success.

Hypothesis 2: Market share and price mediate the relationship between competition and quality.

Hypothesis 2a (H2a): Higher levels of competition in the poultry industry lead to improved sensory quality in poultry meat as firms try to enhance the overall consumer experience in response to competitive pressures.

This hypothesis provides a lens through which it can be explored how competition drives improvements in the sensory quality of meat within the poultry industry. The formulated hypothesis sets the stage for empirical research to validate the intricate dynamics discussed. By understanding the mechanisms by which competition influences sensory quality, this research can contribute valuable insights to this field.

3.2.2.2. Indirect Impact of Competition on Sensory Quality in the Poultry Market

In the intricate ecosystem of the poultry industry, the relationship between competition and product quality—precisely the sensory quality of poultry meat—offers a compelling study area. This section seeks to elucidate how heightened levels of competition can drive improvements in the sensory quality of poultry meat, laying the groundwork for hypothesis development and empirical investigation within the industry.

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The conceptual framework of this research posits that competition catalyzes quality improvement in the poultry industry, particularly regarding sensory attributes. Firms in intense competition must allocate significant resources to research, technology, and innovative practices that enhance sensory quality. This dynamic relationship between market forces and the pursuit of excellence in

product quality reflects the industry's ongoing efforts to meet consumer demands and maintain competitive advantages.

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In conclusion, the poultry industry's relationship between competition and sensory quality is characterized by a dynamic interplay of market forces, consumer preferences, and technological innovation. Competition drives firms to improve the sensory quality of their products as a means of differentiation and market positioning. This process involves substantial investments in breeding, feed formulation, processing technologies, and adherence to quality standards. The global nature of the industry further complicates this relationship, requiring firms to tailor their products to meet regional preferences while maintaining high standards of sensory quality.

This conceptual framework sets the stage for developing a hypothesis to guide empirical investigation within the poultry industry, exploring how competition influences sensory quality, consumer satisfaction and market success.

Hypothesis 2: Market share and price mediate the relationship between competition and quality.

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This hypothesis provides a lens through which it can be explored how competition drives improvements in the sensory quality of meat within the poultry industry. The formulated hypothesis sets the stage for empirical research to validate the intricate dynamics discussed. By understanding the mechanisms by which competition influences sensory quality, this research can contribute valuable insights to this field.

3.2.2.3. Competition - Nutritional Quality Relationship

The role of competition in driving nutritional quality improvements in the chicken meat market is a pivotal aspect of the poultry industry that demands comprehensive exploration. As consumer awareness and concern about health and nutrition continue to escalate, understanding how competition fosters enhancements in the nutritional profile of chicken meat becomes increasingly crucial. This section is dedicated to elucidating the mechanisms through which competition acts as a catalyst for improved nutritional quality, ultimately leading to the development of a hypothesis that will steer the empirical investigation in poultry production.

In a highly competitive market, poultry producers continually seek avenues for differentiation to attract and retain consumers. Baksi et al. (2017) argue that while price and taste have traditionally been the primary focal points of competition, there is a discernible shift towards emphasizing the nutritional aspects of poultry meat. As consumer preferences evolve, with a growing emphasis on health and wellness, producers increasingly view nutritional quality as a strategic differentiator. This shift reflects a broader industry trend where nutritional quality is key in attracting health-conscious consumers and aligning with stringent regulatory and industry standards. Competition acts as a significant driver of technological advancements within the poultry industry. Producers leverage various technologies, from selective breeding to precision nutrition and innovative processing techniques, to optimize the nutritional composition of chicken meat. Nkukwana (2018) highlights how these advancements allow producers to meet evolving consumer expectations for healthier, more nutrient-dense food options. For example, selective breeding programs may focus on enhancing specific nutritional attributes of chicken, such as increasing lean muscle mass or reducing fat content. At the same time, precision nutrition enables the formulation of feeds tailored to the poultry's nutritional needs, ultimately leading to meat with enhanced nutritional profiles.

Precision nutrition, in particular, plays a pivotal role in the competitive pursuit of efficiency and quality within the poultry industry. Mills et al. (2019) emphasize that producers invest significantly in research and development to formulate specialized feeds that enhance the nutritional profile of poultry meat. This targeted approach allows producers to meet specific nutrient requirements, such as increasing omega-3 fatty acids or fortifying the meat with vitamins and minerals, contributing to the final product's overall healthfulness. As competition intensifies, firms that can demonstrate superior nutritional quality through these innovations are better positioned to capture market share and build brand loyalty among health-conscious consumers. Producers increasingly recognize the

importance of maintaining an informed and engaged consumer base as competition heightens. Transparency about the nutritional content of chicken meat becomes a competitive advantage as consumers demand greater accountability and information about the foods they consume. Astill et al. (2019) argue that producers invest in communication strategies to educate consumers about the nutritional benefits of their products, fostering a sense of trust and loyalty. Producers can differentiate themselves in a crowded marketplace by clearly communicating the nutritional advantages of their chicken meat—such as higher protein content, lower fat, or the absence of antibiotics.

Producers pursue certifications and labels highlighting their chicken meat's nutritional attributes in response to consumer demands for transparency and assurance regarding nutritional quality. Labels such as "organic," "antibiotic-free," or "high in omega-3 fatty acids" not only serve as powerful marketing tools but also provide consumers with valuable information to make informed nutritional choices (Baéza et al., 2022, p. 100331). These certifications and labels can significantly influence consumer purchasing decisions, as they often signal a higher quality standard and align with consumer values related to health, sustainability, and ethical production practices.

The relationship between competition and nutritional quality in the poultry industry is multifaceted and driven by various mechanisms, including technological innovation, precision nutrition, consumer education, and certification. Competition encourages producers to improve the nutritional quality of their products as a means of differentiation and market positioning. This process involves significant investments in research and development, transparency initiatives, and adherence to certification standards, all of which contribute to the overall enhancement of nutritional quality in chicken meat. This conceptual framework lays the groundwork for developing a hypothesis that guides empirical investigation into how competition influences

nutritional quality in the poultry industry. Understanding this relationship is essential for producers aiming to meet consumer demands and policymakers seeking to promote public health through improved nutritional standards in food production.

Hypothesis 2c (H2c): The competition-driven landscape in the poultry industry, characterized by a focus on precision nutrition and innovative processing, ultimately enhances the nutritional quality of poultry meat.

This hypothesis encapsulates the multifaceted relationship between competition and nutritional quality in the chicken meat market. It posits that competitive pressures prompt producers to adopt advanced technological practices and differentiation strategies (Baksi et al., 2017). These strategies, encompassing precision nutrition, innovative processing, and consumer education, collectively improve the nutritional profile of poultry meat. The hypothesis invites empirical exploration into the specific mechanisms through which competition catalyzes nutritional enhancements in poultry production. Nkwanta (2018) argues that the regulatory landscape within the poultry industry plays a significant role in shaping competition dynamics. Producers operating in regions with stringent nutritional standards face additional pressures to meet or exceed these standards, further driving improvements in nutritional quality. Competition in the global chicken meat market extends beyond local producers to international players. The dynamics of global competition introduce considerations of regional preferences, cultural norms, and varying consumer expectations regarding nutritional content. Producers in international competition tailor their nutritional strategies to meet diverse market demands (Mottet & Tempio, 2018).

This conceptual framework offers insights into the direct and indirect impact of competition on the nutritional quality of poultry meat in the market. As consumer expectations evolve and health-conscious choices become increasingly prevalent, competition emerges as a powerful force driving

producers to innovate and prioritize the nutritional aspects of their products. The hypothesis formulated provides a foundation for empirical research, encouraging delve into the specific mechanisms and outcomes of competition-driven enhancements in the nutritional quality of poultry meat.

3.2.2.4. Indirect Impact of Competition on the Nutritional Quality in the Poultry Market

The poultry industry operates within a complex and dynamic competitive landscape where market forces, strategic decisions, and consumer preferences converge to shape the nutritional quality of poultry meat. This section explores the intricate mechanisms through which competition indirectly impacts nutritional quality, mediated by factors such as market share and pricing strategies. By examining these relationships, this discussion provides a conceptual framework that lays the groundwork for empirical investigation.

Competition within the poultry market exerts significant pressure on companies to gain or retain market share, a crucial determinant of business success. Duanmu et al. (2018) propose that market share is a pivotal mediator between competition and nutritional quality. As competition intensifies, companies must strategically manoeuvre to capture a larger market share or defend their existing position. These efforts to influence market share, in turn, shape the pricing strategies that companies adopt, directly and indirectly affecting their products' nutritional quality. Changes in market share directly influence the pricing strategies employed by poultry companies. According to Nagle and Muller (2018), firms with a higher market share can implement premium pricing strategies, capitalizing on their market dominance to command higher prices. These firms may leverage their established reputation and perceived value to justify higher prices, often associated

with superior quality, including nutritional aspects. Conversely, companies with a lower market share are more likely to adopt competitive pricing strategies, reducing prices to attract cost-conscious consumers and gain a foothold.

Pricing strategies, shaped by market share dynamics, are critical mediators between competition and nutritional quality. Ingenbleek (2015) argues that fluctuations in market share necessitate adjustments in pricing strategies, which indirectly impact the perceived nutritional quality of chicken meat. For instance, lower prices may lead consumers to question the quality of the product, including its nutritional attributes. In comparison, higher prices might be associated with better nutritional content, even if the nutritional value remains unchanged.

Competition prompts poultry companies to adopt dynamic pricing strategies, where prices are frequently adjusted in response to market conditions. Nagle and Muller (2018) suggest that lowering prices can be a tactical response to competitive pressures, aiming to attract price-sensitive consumers or gain a temporary competitive advantage. However, these pricing decisions have significant implications for the accessibility and affordability of chicken meat, which can paradoxically influence its perceived nutritional quality. Interestingly, Rodina et al. (2019) argue that as prices decrease due to heightened competition, companies strategically invest in enhancing the nutritional quality of chicken meat. This counterintuitive strategy challenges common consumer perceptions and is driven by the recognition that nutritional quality has become a critical factor in consumer decision-making.

The fluctuations in pricing strategies, mediated by market share dynamics, influence how poultry companies allocate resources. Dizzee et al. (2017) claim that to maintain competitiveness, firms allocate resources towards research, technological advancements, and production practices that enhance the nutritional quality of poultry meat. These investments are significant in a competitive

market where consumers are increasingly health-conscious and demand higher nutritional standards. As a mediator, price also plays a crucial role in shaping consumer perceptions of nutritional quality. Delmas & Lessem (2017) suggest that consumers often associate lower prices with potential compromises in quality, including nutritional content. To counteract these perceptions, companies invest in transparent communication strategies, such as labelling and certifications, to assure consumers of their products' continued high nutritional standards despite lower prices. Nygaard and Silkoset (2023) emphasize that these strategies are essential in building consumer trust and loyalty, particularly in a market where price competition is fierce.

The indirect impact of competition on nutritional quality in the poultry market is mediated through complex interactions between market share, pricing strategies, and resource allocation. As companies navigate competitive pressures, their strategic decisions related to market positioning and pricing influence the nutritional profile of their products. This intricate relationship underscores the importance of understanding how competition shapes not only the economic aspects of the poultry industry but also the nutritional quality of the products offered to consumers. This understanding is crucial for producers seeking to enhance product quality and for policymakers aiming to promote healthier food options through competitive market practices. Therefore, this conceptual framework provides a basis for empirical exploration, offering insights into the mechanisms through which competition influences nutritional quality in the poultry market.

Hypothesis 2d (H2d): Higher competition in the poultry industry leads to lower market share; subsequently, to maintain the market share, companies reduce prices and improve nutritional quality

This hypothesis encapsulates the intricate relationships outlined in the conceptual framework. It posits that competition sets a series of strategic responses in motion, with market share and pricing decisions as pivotal mediators. Despite the apparent contradiction of lowering prices, the hypothesis proposes that companies, driven by competition, strategically invest in nutritional quality enhancements. The hypothesis suggests delving into the intricate mechanisms through which competition indirectly influences nutritional quality in the poultry industry.

3.2.3. Price-Financial efficiency Relationship

The concept of elasticity is pivotal in the price and financial efficiency relationship. Elasticity, as expounded by Jawad et al. (2018), pertains to the responsiveness of one variable to changes in another. In the context of price and financial efficiency, elasticity can be understood as the degree to which changes in price influence the overall financial performance. The dynamic interplay between price alterations and their influence on financial efficiency hinges on the nuanced understanding of elasticity, as articulated by Simonsen et al. (2016). While price escalation typically triggers a demand reduction, the extent to which this phenomenon impacts financial efficiency is contingent upon the underlying elasticity.

Elasticity is commonly categorized into three classifications: elastic, inelastic, and unitary, each delineating specific behavioural patterns. The response to price fluctuations is pronounced in elastic demand, with elasticity exceeding one. Conversely, inelastic demand characterizes situations where demand remains unswayed by alterations in price. Unitary elasticity demand signifies proportional responsiveness to changes in price dynamics (Gilroy et al., 2020). A graphical representation in Figure 3.3 distinctly demarcates the demand curve into three zones

based on elasticity, underscoring the idea that the repercussions of price adjustments on efficiency are contingent upon the firm's position along the demand curve (Mücka, 2016).

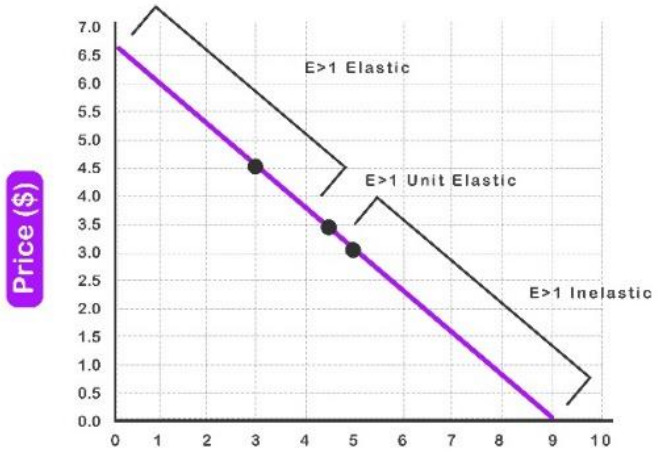

Figure 3.3: demand elasticity curve (Mücka, 2016)

At a more detailed level, applying elasticity is crucial in understanding the dominance of two opposing forces: the 'price effect' and the 'quantity effect.' The 'price effect' suggests a price rise leads to increased revenue per unit sold. Conversely, the 'quantity effect' argues that a price increase reduces the volume of units sold (Chen et al., 2016). These contrasting effects work harmoniously, necessitating elasticity to determine which effect is more dominant. Delport et al. (2017) provide valuable insights by stating that, in the elastic domain, the quantity effect is more significant than the price effect.

Consequently, price escalation within this realm translates to diminished revenue and compromised financial efficiency. Conversely, within the inelastic domain, the price effect outweighs the quantity effect. Price elevation results in heightened revenue and enhanced efficiency, as illustrated in Figure 3.4. This nuanced understanding underscores the intricate

dynamics wherein the interplay of price and quantity effects is contingent upon the firm's elasticity positioning.

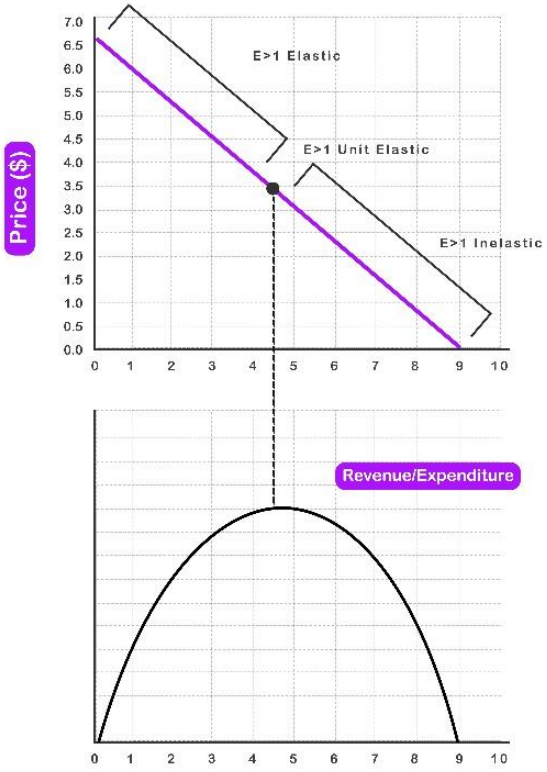

Figure 3.4: Price-financial efficiency relationship (Mücka, 2016)

The pinnacle of revenue attainment is discerned at the juncture of unit elasticity. Beyond this point, where prices exceed this equilibrium, the dominance of the quantity effect over the price effect precipitates diminished revenue. Conversely, when prices fall below this critical point, the ascendancy of the price effect over the quantity effect ensures that heightened prices correlate with increased revenue (Mücka, 2016). Conclusively, the characterization of elasticity into elastic ($e > 1$), unit elastic ($e = 1$), and inelastic ($e < 1$) encapsulates the essence of the price-financial efficiency relationship. The positioning of a firm along this elasticity spectrum becomes the fulcrum upon which the dynamics of this intricate relationship hinge. The interplay between price and financial

efficiency is profoundly contingent upon the firm's specific location within the elastic-inelastic continuum.

In the poultry meat market, most companies are expected to be located in the elastic location of the demand elasticity curve (Engle et al., 2016). This phenomenon can be attributed to several economic and practical factors that influence the behaviour of consumers and producers in this specific industry. Firstly, according to Lusk and Tonsor (2016), the nature of poultry meat as a product with many substitutes and choices makes the demand for it relatively elastic. This means that small price changes can significantly impact the quantity consumers demand. As a result, companies in the poultry meat market often operate in a highly competitive environment, where any change in price or quality can directly affect consumer behaviour.

Furthermore, Nkukwana (2018) asserts that poultry meat production is influenced by feed costs, labour costs, and government regulations, which can all affect the supply and pricing of the product. In order to remain competitive, companies must carefully consider these factors and adjust their production and pricing strategies accordingly. This makes the demand for poultry meat even more elastic, as companies must constantly adapt to changes in the market to maintain their position. The perishable nature of poultry meat also contributes to its elastic demand. Consumers are more likely to make quick decisions about purchasing poultry meat based on price and quality, as they know the product has a limited shelf life. This makes the demand for the product more sensitive to changes in price and other external factors, driving companies to be more responsive and flexible in their operations (Mohammadi et al., 2023).

Therefore, the status of most companies in the poultry meat market in the elastic location of the demand elasticity curve can be attributed to the competitive nature of the industry and the practical

and economic factors that influence the behaviour of consumers and producers. This phenomenon highlights the need for companies in this market to remain agile and responsive to changes to maintain competitiveness and meet the market's demands. Consequently, this thesis proposes the following hypothesis.

As observed, given the myriad economic and pragmatic considerations shaping the conduct of consumers and producers within this industry, corporations predominantly position themselves within the elastic segment of the elasticity curve. In this domain, the quantitative impact prevails over the price effect, increasing prices correlating with reduced revenue and compromised financial efficiency. Consequently, the present thesis posits the ensuing hypothesis.

Hypothesis 3: Quality plays a crucial role in mediating the relationship between price and financial efficiency in the poultry industry.

Hypothesis 3a (H3a): A lower price leads to better financial efficiency in the poultry industry.

3.2.3.1. Price-Quality Relationship

The relationship between price and quality is a central topic in consumer economics, influencing purchasing decisions across various markets. Independent consumer agencies around the world, such as Consumer Reports in the US, Konsument in Austria, Test in Germany, UFC-Que Choisir in France, and Which in the UK, provide crucial insights into product quality, often compared alongside price information to illuminate the complex interplay between these two factors (Rroshi & Weichselbaumer, 2021). Analyzing this data reveals nuanced dynamics that vary depending on product type, market conditions, and consumer perceptions.

Empirical studies have shown that disseminating quality information can significantly reduce price distortion in the market. Imkamp (2018) found that as more quality information becomes available, the correlation between price and quality becomes more apparent, particularly for durable goods. For example, Grewal et al. (2014) argue that durable, high-quality products tend to be priced higher, while nondurable, high-quality items often see weaker price-quality relationships due to economies of scale and competitive pricing strategies. Imkamp's study highlights that quality information disclosure leads to an immediate increase in durable product prices by approximately 1%, whereas high and medium-quality nondurable products see a 2-5% price reduction.

Further evidence from Rroshi and Weichselbaumer (2021) underscores the impact of quality information on market dynamics. Their research demonstrates that no high-quality products exit the market within 500 days following the disclosure of quality information, whereas about 10% of low-quality products do. This suggests a consumer shift toward higher-quality offerings when they are better informed about product quality, reinforcing the importance of transparency in maintaining market competitiveness.

The relationship between price and quality is markedly different between durable and nondurable goods. Rodrigue and Tan (2019) observed that increased quality information generally leads to declining prices for both high- and low-quality products, with a more pronounced effect on high-quality items. This is attributed to the more significant distortion in the market for high-quality products, where reputation plays a significant role. However, over time, revealing more information about durable goods tends to increase their prices as the importance of reputation diminishes and the actual quality becomes more transparent. For nondurable goods, particularly in the food sector, the association between lower prices and higher quality often stems from economies of scale. Tyagi and Arora (2018) explain that mass production reduces unit costs,

enabling manufacturers to offer high-quality products at lower prices. Furthermore, competitive forces drive companies to enhance product quality while maintaining lower prices to gain a market edge. This is evident in the case of private-label products, which are frequently of comparable or superior quality to branded counterparts, thus reinforcing the perception that lower prices do not necessarily equate to lower quality (Calvo & Levy-Mangin, 2016).

Consumers often use price as a stand-in for quality, especially when they need more information about a product (Waluya et al., 2019). However, this assumption is only sometimes accurate. Chen et al. (2011) point out that consumer reports often reveal a surprising relationship between price and quality rankings, suggesting that higher prices do not always mean better quality. This complexity underscores the importance of considering the market context when analyzing the price-quality relationship, as the strength and direction of this relationship can vary significantly across different sectors and consumer segments (Monga & Williams, 2016; Pappas, 2017). Moreover, the intricacies of quality assessment across different publications add to the ambiguity of the price-quality relationship, making it essential to account for contextual factors (Quraeshi, 2017). Jeong et al. (2019) assert that consumer behaviour plays a pivotal role in shaping this relationship, distinguishing between price-sensitive consumers who prioritize affordability and quality-sensitive consumers who are willing to pay a premium for higher quality. These behavioural distinctions further complicate the price-quality dynamic, as different consumer groups perceive the same product's value differently based on their price sensitivity and quality expectations. However, the role of consumer reports in revealing the true price-quality relationship reassures consumers about the reliability of these reports.

Extensive research indicates that the price-quality relationship is contingent on several factors, including product durability and consumer behaviour. Pauwels and D'Aveni (2016) and Curzi and

Pacca (2015) emphasize that this relationship is solid in markets for durable goods, where higher prices often correlate with superior quality due to greater transparency and consumer knowledge. However, the relationship can be harmful in markets for nondurable goods, especially food products, driven by mass production efficiencies and competitive pricing strategies.

Consumer behaviour further modulates this relationship, with significant quality improvements often accompanying even small price increases at lower price points, while higher price tiers can see more marginal quality shifts (Curzi & Pacca, 2015). Therefore, while higher prices generally align with superior quality under similar competitive conditions, the strength of this relationship varies across different price tiers and product categories. This complex understanding of the price-quality relationship underscores the importance of considering product type, market structure, and consumer preferences when analyzing price and quality dynamics. For businesses, this means that pricing strategies should be tailored to the specific context of their products and target markets, while for consumers, it underscores the value of accessing reliable quality information to make informed purchasing decisions, providing a comprehensive view of the factors influencing the price-quality relationship.

3.2.3.2. Quality-Financial Efficiency Relationship

The relationship between product quality and financial efficiency remains an area that needs to be explored in the literature, which has predominantly focused on the interplay between quality and competition. This gap underscores the need for empirical studies investigating how a firm's commitment to quality influences its financial outcomes. Within the strategic framework, firms often face a dichotomy: competing based on price or differentiating through superior quality (Hoe & Mansori, 2018).

A pivotal study by Morikawa (2021) sheds light on the financial benefits of quality-centric strategies. The study reveals that companies engaged in quality competition achieve significantly better financial outcomes than those focused on price competition. Specifically, firms prioritizing quality exhibit a 0.8% higher return on assets (ROA) and a 0.9% higher return on sales (ROS) than their counterparts competing primarily on price. These differences are particularly significant when considered against the mean ROA and ROS values of 4.1% and 3.2%, respectively, as reported in Morikawa's comprehensive analysis.

The impact of quality competition extends beyond traditional financial metrics to include labour productivity (LP) and total factor productivity (TFP), both of which are crucial indicators of a firm's overall efficiency. Morikawa (2021) highlights that companies embracing quality-centric strategies experience approximately 3% higher levels of LP and TFP. This suggests that firms committed to quality are more productive and more efficient in their operations than those that engage in price competition. Higher productivity and operational efficiency contribute to a stronger financial position, as these firms can better leverage their resources to generate profits.

These findings challenge the traditional view that focusing on quality inevitably leads to higher variable costs, which could negatively impact a firm's financial efficiency. Murphy et al. (2019) argue that pursuing higher quality typically involves increased costs associated with superior materials, advanced technologies, and enhanced production processes. However, empirical evidence from Chambers et al. (2022) offers a more accurate perspective. Their analysis demonstrates that firms delivering superior products can achieve enhanced financial efficiency simultaneously, suggesting that the benefits of higher quality can offset the associated costs.

The insights provided by Chambers et al. (2022) substantively contribute to a deeper understanding of the complex relationship between quality and profitability. By dissecting the multifaceted

dynamics of this relationship, they reveal that companies focusing on delivering high-quality products often exhibit superior financial performance. This is achieved through multiple avenues, including increased customer loyalty, reduced return rates, and the ability to command premium prices, all of which enhance profitability despite the higher costs associated with quality improvements. These findings call for a reassessment of the traditional cost-quality paradigm. The convergence of evidence from Morikawa (2021) and Chambers et al. (2022) suggests that the pursuit of quality can lead to substantial financial rewards, contrary to the prevailing assumption that quality necessarily entails higher costs that diminish financial efficiency. In fact, the emphasis on quality can serve as a driver of superior financial performance, positioning firms that prioritize quality at a competitive advantage. The relationship between product quality and financial efficiency is complex and multifaceted. The empirical evidence from Morikawa (2021) and Chambers et al. (2022) underscores a significant association between quality-focused strategies and enhanced financial performance. Firms that prioritize quality competition not only outperform their price-focused counterparts in key financial metrics like ROA and ROS but also demonstrate higher levels of productivity and operational efficiency. This evidence challenges traditional assumptions linking quality to increased costs, affirming that investing in product quality can lead to superior financial outcomes and long-term competitive advantage for firms. This perspective encourages businesses to consider quality not merely as a cost center but as a strategic asset that can drive financial success, inspiring and motivating the audience to adopt quality-focused strategies. As such, further empirical research is needed to explore this relationship across different industries and market contexts, providing deeper insights into how quality influences financial efficiency in various competitive environments.

3.2.3.2.1. Sensory Quality - Financial Efficiency Relationship

The poultry industry is a vital component of the global food sector, with chicken meat being a dietary staple for millions worldwide. Within this industry, the sensory quality of poultry meat—encompassing attributes such as taste, texture, aroma, and overall palatability—plays a significant role in shaping consumer preferences and purchasing decisions (Moyo et al., 2020). This section delves into the intricate relationship between the sensory quality of chicken meat and the financial efficiency of poultry firms, drawing upon existing literature to elucidate the mechanisms through which sensory quality impacts financial outcomes.

The sensory perceptions of poultry products are critical determinants of consumer choices. Rondoni et al. (2020) argue that sensory quality becomes a key differentiator in the highly competitive poultry market, where products often appear homogenous. Sensory attributes such as tenderness, juiciness, and flavour contribute to a more enjoyable eating experience, enhancing consumer satisfaction and loyalty. Doets & Kremer (2016) and Tan et al. (2016) have consistently demonstrated that consumers associate higher sensory quality with a more satisfying and pleasurable eating experience, leading to repeat purchases and long-term brand loyalty. As consumers become more discerning about the quality of the food they consume, poultry firms that prioritize and enhance the sensory attributes of their products are likely to gain a competitive edge. This competitive advantage is reflected in increased market share, higher sales volumes, and improved financial performance. By investing in technologies and practices that enhance the sensory quality of their products, poultry firms can distinguish themselves in a crowded market, attract a loyal customer base, and ultimately drive financial success.

Sensory quality is a crucial differentiator in a market where products often seem indistinguishable from the average consumer. Rocha et al. (2022) suggest that firms that invest in improving the

sensory attributes of their chicken products are better positioned to stand out among competitors. The ability to deliver a superior sensory experience not only fosters brand loyalty but also encourages repeat business, which is essential for maintaining steady revenue streams. Consumers who consistently enjoy the sensory aspects of a product are more likely to develop brand loyalty, leading to increased customer retention rates and, consequently, higher financial returns for the firm. The positive feedback loop created through consumer word-of-mouth and online reviews further strengthens the relationship between sensory quality and financial efficiency. Kokthi et al. (2022) emphasize that positive sensory experiences lead to favourable consumer feedback, which enhances brand reputation and attracts new customers. This cycle of positive consumer perception and repeat business contributes to sustained financial performance, underscoring the importance of sensory quality as a critical driver of profitability in the poultry industry. Achieving and maintaining high sensory quality requires meticulous attention to detail throughout the supply chain, from sourcing high-quality poultry to implementing rigorous quality control measures during processing. Firms prioritising sensory attributes demonstrate a commitment to delivering a superior product, aligning with consumer expectations and building trust. Stone et al. (2020) note that this commitment to quality meets consumer demands and minimizes the risk of product recalls or quality-related issues, which can have significant financial repercussions.

By reducing the likelihood of costly recalls and protecting the firm's reputation, consistent sensory quality contributes to the financial efficiency of poultry companies. Avoiding unfavourable publicity and maintaining a solid brand reputation is critical for sustaining financial performance, particularly in an industry where consumer trust is paramount. Empirical evidence and theoretical insights support the relationship between sensory quality and financial efficiency in the poultry industry. The financial dividends associated with quality-centric strategies, as highlighted in earlier

discussions of the quality-financial efficiency relationship, are particularly relevant when considering the sensory quality (Lai et al., 2010). Firms that excel in delivering superior sensory experiences are likely to see improvements in key financial metrics such as return on assets (ROA) and return on sales (ROS), as well as overall operational efficiency.

The sensory quality of chicken meat plays a pivotal role in shaping consumer preferences and driving financial outcomes in the poultry industry. Firms that invest in enhancing the sensory attributes of their products can gain a competitive edge, foster brand loyalty, and achieve superior financial performance. The relationship between sensory quality and financial efficiency underscores the importance of quality as a strategic asset, with significant implications for the long-term success of poultry firms. This exploration provides valuable insights into the complex interplay between sensory quality and financial outcomes, offering a foundation for further empirical research that can deepen our understanding of this critical relationship in the poultry industry. Consequently, this thesis posits the following hypothesis.

Hypothesis 3b (H3b): Higher sensory quality of meat is positively related to increased financial efficiency in the poultry market.

3.2.3.2.2. Nutritional Quality - Financial Efficiency Relationship

The poultry industry is a vital component of the global food sector, and the nutritional quality of meat has become an increasingly influential factor in consumer choices. This chapter delves into the intricate relationship between the nutritional quality of meat and the financial efficiency of poultry firms, drawing on existing literature to elucidate the mechanisms through which nutritional attributes impact financial outcomes. Spiro and Wood (2021) argue that as consumer awareness of

health and nutrition grows, there is a heightened demand for nutrient-rich foods. Poultry meat, a widely consumed protein source, is scrutinized for its nutritional composition. Consumers increasingly seek products that satisfy their taste preferences and contribute to their health and well-being. Poultry firms that respond to this demand by providing chicken meat with enhanced nutritional profiles are likely to attract a health-conscious consumer base.

Nutritional quality has become a focal point in contemporary health and wellness trends. Poultry meat, a lean protein source, is perceived as a healthier alternative to red meat (Takata et al., 2013). Additionally, consumers are looking for chicken products that boast essential nutrients such as vitamins, minerals, and omega-3 fatty acids. Poultry firms that invest in developing and promoting nutritionally enriched products align themselves with prevailing health trends, creating opportunities for market differentiation and enhanced financial performance. Jaffee et al. (2018) assert that meeting and exceeding nutritional standards set by regulatory authorities ensures compliance and builds consumer trust. Poultry firms that prioritize and invest in maintaining high nutritional quality adhere to regulatory guidelines, reducing the risk of legal issues and product recalls. *Consumer trust* is a valuable asset that contributing to brand loyalty, positive word-of-mouth, and sustained financial success. Besides, Prache et al. (2022) add that firms that adopt sustainable practices in poultry farming and processing contribute to the nutritional quality of meat, such as organic feed, free-range farming, and ethical treatment of animals, which can enhance the nutritional content of the final product. As consumers increasingly value sustainable and ethical practices, firms embracing such approaches can position themselves favourably in the market, attracting a discerning consumer base and contributing to long-term financial efficiency. Hence, this thesis posits the following hypothesis.

Hypothesis 3c (H3c): Higher nutritional meat quality is positively related to increased financial efficiency in the poultry market.

3.2.3.3. Indirect Impacts of Price on Financial Efficiency in the Poultry Industry

The poultry industry operates within a complex network of relationships where the price of chicken meat is a pivotal factor influencing both direct and indirect facets of financial efficiency. This section delves into the mediation mechanisms through which sensory quality and nutritional quality of meat intricately connect price dynamics to the financial efficiency of firms in the poultry market.

The first indirect relationship in this conceptual framework involves the impact of price on sensory quality. Lower prices raise consumer concerns about potential compromises in sensory attributes such as taste, texture, and overall eating experience. Sensory quality becomes a crucial mediator between price dynamics and financial efficiency. According to Aljumah et al. (2022), as a mediator, sensory quality plays a pivotal role in shaping consumer preferences and loyalty. Higher sensory quality contributes to positive consumer perceptions and repeat business despite lower prices. This enhanced sensory experience indirectly influences the financial efficiency of firms, as companies with superior sensory quality can maintain market share even with lower prices.

The second indirect relationship involves the impact of price on nutritional quality. Lower prices might raise concerns among consumers regarding potential compromises in the nutritional attributes of meat. In this thesis, nutritional quality mediates between price dynamics and financial efficiency. The factor that assumes significance in the health-conscious consumer landscape. Vermeulen et al. (2022) argue that higher nutritional quality can attract a niche market segment

that prioritizes health benefits, even at lower prices. This positive perception translates into consumer loyalty and, subsequently, contributes to the financial efficiency of firms.

3.2.4. Competition - Financial Efficiency Relationship

Competition influences firms' efficiency in a multifaceted and complex way, as Thompson and Khondoker (2019) outlined. Competition drives managers to enhance efficiency as they strive to outperform rivals in competitive markets. This viewpoint underscores the pivotal role of competition in incentivizing owners to ensure high organizational efforts, ultimately leading to lower inefficiency (Thompson & Khondoker, 2019). Furthermore, Thompson and Khondoker (2019) assert that the pressure of competition prompts managers to invest in initiatives and processes that result in higher levels of efficiency. Taking a deeper dive into the impact on workers and product market rents, as noted by Girma and Gong (2008), competition is posited to directly affect workers' efforts to be more efficient. This is intricately tied to the distribution of market rents among workers through higher wages in competitive environments, as highlighted by Girma and Gong (2008).

Moreover, building upon the notion of indirect influence, the relationship between competition, pricing, and product quality is expounded upon by Girma and Gong (2008) and Thompson and Khondoker (2019). In highly competitive markets, firms are compelled to adjust their pricing strategies to remain competitive, often leading to downward pressure on prices to attract and retain customers, as Girma and Gong (2008) indicated. Consequently, firms strategically invest in the attributes of their products in response to lower prices, as emphasized by Thompson and Khondoker (2019). This strategic investment in product quality is a pivotal mediator in price and

financial efficiency, as highlighted by Thompson and Khondoker (2019). Even amid competitive pricing, maintaining higher quality is posited to yield various consumer-centric benefits, such as fostering loyalty and positive brand perceptions, ultimately contributing to improved financial efficiency for the firms (Thompson & Khondoker, 2019).

In summary, competition's influence on firms' efficiency encompasses a range of factors, including managerial efforts, labour dynamics, market rents, pricing strategies, and product quality. This diverse array of influences underscores competition's extensive impact on financial efficiency and consumer-related aspects, with potential implications for market positioning, brand perception, and overall business performance.

Hypothesis 4: Higher competition positively influences better financial efficiency in the poultry industry.

This hypothesis encapsulates the intricate relationships outlined in the conceptual framework. It posits that higher competition sets a series of strategic responses in motion, with market share, pricing decisions, and quality attributes as pivotal mediators. Despite the challenges associated with lower prices due to heightened competition, the hypothesis proposes that firms can leverage investment in quality attributes to enhance consumer perceptions and financial efficiency. The hypothesis encourages delving into the detailed mechanisms through which market share, price, and quality mediate the relationship between competition and financial efficiency in the poultry industry.

3.2.5. Optimum Level of Competition

The intricate interplay among competition, market share, pricing strategies, product quality, and financial efficiency within the poultry industry serves as this segment's focal point of investigation. The objective is to discern the potential optimal level of competition wherein firms achieve the highest market share, quality, and financial efficiency while sustaining the lowest possible price. This equilibrium, if attained, represents an ideal scenario mutually benefiting both firms and consumers. The subsequent discourse delves into the complexities of each component and formulates a hypothesis rooted in academic research.

Academic inquiries consistently assert that elevated competition levels in the poultry industry directly contribute to enhanced financial efficiency for firms. The competitive landscape compels companies to elevate operational efficiency, innovate, and strategically position themselves, positively impacting their financial well-being (Moradi et al., 2017; Chen et al., 2020). Competition sets in motion a sequence of events that influence market share dynamics. Increased competition often correlates with diminished market share as companies contend for consumer attention and loyalty (Tukker & Tischner, 2019). Palmer et al. (2018) contend that market share is a crucial mediator influencing pricing strategies—diminished market share prompts firms to adopt competitive pricing, influencing lower prices. Pricing decisions, in turn, directly affect the financial efficiency of firms. Reduced prices, stemming from intensified competition, force companies to elevate their financial efficiency (Meutia et al., 2019).

Tyagi and Arora's (2018) research illustrates that in the direct relationship, the pricing strategy plays a pivotal role in determining the quality of chicken meat. Lower prices, driven by competition, may raise concerns about potential compromises in quality. However, strategic

decisions can mitigate this impact. As noted, despite lower prices, sensory and nutritional quality significantly contribute to consumer perceptions and brand loyalty. Firms invest in maintaining or enhancing quality attributes to secure their presence in the market, consequently improving their financial efficiency (Chambers et al., 2022). The optimum level of competition lies at the point where firms strike a delicate balance. It involves maintaining a competitive edge to ensure financial efficiency while strategically managing market share, quality, and pricing to meet consumer expectations. This delicate equilibrium aims to offer consumers the highest quality at the lowest possible price, thus fostering both their interests and those of the firms. The following hypothesis posits that the poultry industry's optimum level of competition is a delicate balance where firms concurrently achieve heightened market share, superior product quality, and enhanced financial efficiency while maintaining competitive pricing. This delicate equilibrium reflects a scenario where firms strategically manage competition to foster consumer interests, striking the ideal balance between quality and affordability.

Hypothesis 5 (H5): The optimal competition point varies based on the emphasis given to each firm's conduct and performance factors—market share, price, sensory quality, nutritional quality, and financial efficiency.

3.3. Chapter Summary

This chapter was dedicated to crafting the foundational structure for the research, encompassing four pivotal steps towards formulating hypotheses: 1) exploring the impact of competition on price, 2) exploring the impact of price on financial efficiency, 3) exploring the impact of competition on financial efficiency, 3) looking for an optimum level of competition fulfilling the society welfare

and firms' interests. Section 3.1 initiated the establishment of a conceptual framework to explore the potential repercussions of competition on other constructs. The subsequent development of the research conceptual model in Section 3.2 involved developing and precisely defining hypotheses. Drawing insights from the comprehensive literature review undertaken in Chapter 2, the research model framework comprises several vital factors, including competition, market share, price, sensory quality, nutritional quality, and financial efficiency. The conducts, identified through a synthesis of relevant literature, influence companies' performance substantially. This conceptual framework provides a robust basis for empirically exploring the intricate interplay between competition dynamics, conducts and various facets of business performance.

Chapter 4

Methodological Framework

4.1. Introduction

This section provides an overview of methodological frameworks and delineates the research methodology. Commencing with elucidating the research design, the subsequent discussion encompasses the research strategies employed to evaluate the hypotheses. This includes a detailed exposition of the utilized data sources and the design of the questionnaires. The section dedicated to questionnaire design expounds on intricate aspects such as construct measurement, scale development, and the procedural intricacies of question development. Subsequently, the data collection strategies are meticulously examined. The chapter culminates with a comprehensive exploration of the statistical strategies to analyze the collected data.

4.2. Research Design

A research design serves as a structured plan guiding the collection and analysis of data. This comprehensive design framework encompasses various interrelated sub-processes to address existing literature gaps. These sub-processes involve translating the theoretical and empirical

domains, conducting design and pilot testing, data collection, data analysis, and result interpretation (Asenahabi, 2019). Figure 4.1 illustrates the research design employed in this study. The inception of the research design involved identifying the research problem, followed by formulating research questions based on a thorough literature review. The subsequent step involved the meticulous design of a questionnaire. The data collection process was implemented following the completion of the sampling process and a pilot test—the subsequent phase comprised data analysis, addressing theory testing/development and identifying tradeoffs to optimize outcomes. Finally, conclusions were drawn from the findings, and potential avenues for future research were discerned.

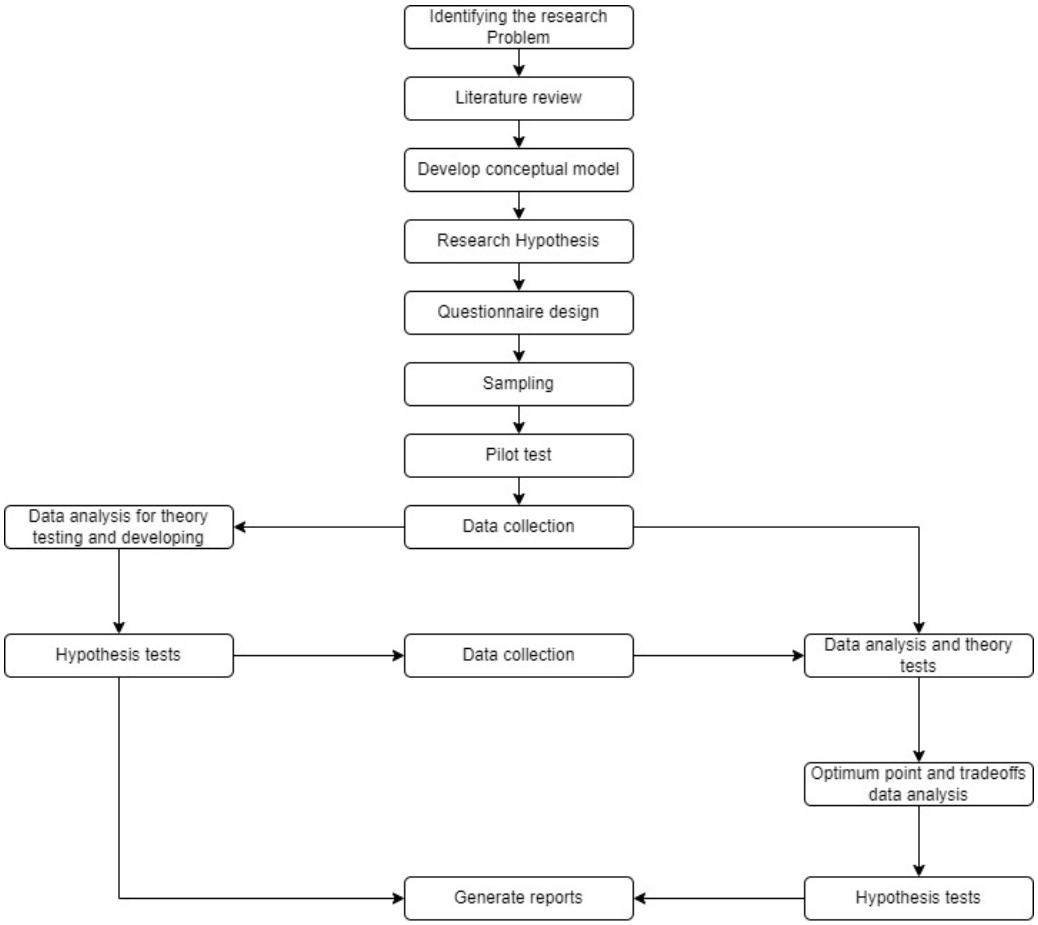

Figure 4.1: Research design

4.3. Research Strategies

In alignment with the research objectives outlined in Section 1.4 and Section 1.5, a quantitative survey approach was employed to address the research systematically. Confirmatory survey research, as opposed to exploratory survey research, was chosen given the articulated knowledge of the phenomenon in a theoretical framework using well-defined concepts, models, and propositions. Confirmatory survey research is particularly pertinent when the intent is to test and develop a theory based on pre-established constructs (Bandalos & Finney, 2018). This study, therefore, exemplifies confirmatory survey research with a primary focus on theory testing and development. Simultaneously, it explores the prospect of an optimal point within the relationships under investigation. The chosen methodology is well-suited to generalize research findings and fulfil the research aims, specifically to examine the relationship between various constructs, assess the impact of competition on business conduct and performance, and identify trade-offs. The application of confirmatory survey research aligns to employ well-defined concepts to approach the study's aims rigorously.

The research approach chosen adheres to a systematic deductive reasoning framework, which involves the initial formulation of hypotheses and the application of existing theories and models to guide the investigation. This systematic approach is particularly suitable when the research aims to test specific hypotheses and predictions drawn from established theories within the field (Bryman & Bell, 2015). In this context, the deductive approach allows for the systematic testing of theoretical propositions and hypotheses related to the impact of competition on business performance factors, thereby contributing to theory validation and refinement within the domain of competitive dynamics and business performance.

Applying quantitative methods within the chosen research approach, specifically in survey research, is well-justified by the need to collect structured, numerical data that can be statistically analyzed to examine relationships, patterns, and associations between variables. This aligns with the nature of the research objectives, which centre on investigating the relationships between various performance factors and assessing the impact of competition on business functions' performance. The quantitative approach enables the systematic measurement and analysis of these relationships, providing empirical evidence and quantitative insights that contribute to a comprehensive understanding of the phenomena under investigation (Creswell, 2014). This study aims to advance established theories and practical implications in competitive dynamics and business performance by integrating the deductive research approach and quantitative methods. The rigorous application of these methods ensures that the findings are robust, generalizable, and conducive to theory development and refinement, thereby adding substantive value to the existing body of knowledge within the field.

4.3.1. Sources of data

The decision-making process for data sources is fundamentally centred around choosing between primary and secondary data. Primary data originated by the researcher for the specific investigation (Ajayi, 2017) is precious for generating original insights and instilling greater confidence in research findings (Prada et al., 2018). On the other hand, secondary data comprises pre-existing data and statistics, offering advantages in terms of cost and time efficiency (Cole et al., 2018). However, it is essential to recognize the limitations associated with using secondary data, including issues related to selection, quality, and the limited control of the researcher over the collection methods, which may occasionally impede validation (Andrei, 2018). Nevertheless, certain

secondary data types may be relevant to the study, especially if collected for other research purposes.

In this study, a deliberate decision was made to utilize primary data sources for hypothesis testing and examining the influence of competition on the global poultry market. A questionnaire-based survey emerged as the preferred approach among the various primary data collection methods available, such as observation, interviews, and questionnaires. This selection was driven to investigate the impact of competition on business functions and uncover the causal relationships between the constructs. The overarching goal is to identify the optimal level of competition where both companies and society derive the highest possible benefits.

4.3.2. Questionnaire Design

Kumar et al. (2002) argue that the creation of a questionnaire is fundamentally "an imperfect art," reflecting a lack of established procedures that consistently yield a "good" questionnaire. Despite its inherent complexities, an efficient design that seeks to fulfil research objectives typically follows a logical sequence of steps: (1) determining what to measure, (2) crafting questions to elicit the required information, (3) making decisions about the sequence and phrasing of questions, as well as the overall structure of the questionnaire, (4) pilot-testing the questionnaire with a small sample to identify any omissions or ambiguities, and (5) rectifying the identified issues and, if necessary, conducting further pre-testing (Kumar et al., 2002).

4.3.2.1. Measurement for Constructs

Concerning inquiries about the influence of competition on the firms' conduct and performance, a questionnaire was devised, comprising 28 questions (items) organized into six distinct sections. These sections encompass Sensory Quality (SQ1-7 items), Nutritional Quality (NQ1-8 items), Price (P1-3 items), Market Share (M1-1 item), Competition (C1-7 items), and Financial Efficiency (FE1-2 items). These 28 specific facets of firms' conduct and performance were formulated by a comprehensive literature review, as detailed in Chapter 2. Furthermore, survey participants were instructed to assess the questions employing a 7-point Likert scale. However, for some aspects of price, respondents were required to provide numerical input in the designated questionnaire blanks. Given that the measurement items for the constructs utilized in this study were widely dispersed throughout the pertinent literature, an assortment of established measures was adapted to align with the research objectives.

4.3.2.2. Questionnaire Development Procedure

Various specific methodologies were employed in formulating the questionnaire, drawing on insights from the work of Foo et al. (2021). Initially, the questionnaire featured screening questions about participant profile information strategically positioned at the outset. Subsequently, sensitive questions were incorporated to cover all relevant variables comprehensively. The questions were categorized to align each section with a specific construct. The questionnaire was developed using a rigorous assessment process to ascertain reliability and validity before dissemination to respondents. Initially, a supervisor reviewed the questionnaire to assess the clarity and sequencing of the questions. After refining all questions for clarity, a pilot test was conducted with interviews with three professional managers from distinct manufacturing companies. The objective was to

confirm the comprehensibility of the questions, ensuring they were devoid of uncertainty or confusion for respondents. Based on feedback from the informants, adjustments were made to the structure of the cover letter, and problematic questions were rephrased. Given the assumption that the primary respondents, being top managers of companies, possessed a sophisticated level of English language proficiency, the questionnaire was distributed in English.

A systematic approach was applied to access top management within the poultry production industry. Initially, a comprehensive list of the primary poultry producer countries was compiled (Appendix C), subsequently identifying the foremost producer companies within each continent (twenty-three countries). Following this, a roster of the top ten companies within each country was curated, extracting the requisite contact information using their official websites. Subsequently, contact via email communication was initiated. When a substantive response could have been more forthcoming, a direct engagement through telephone communication was applied to connect with their uppermost management echelons. During these interactions, the research objectives were effectively communicated as a precursor to inviting respondents to participate in the survey. The questionnaire adopted a seven-point Likert scale approach to facilitate straightforward responses from informants and minimize the likelihood of missing data, following the insights of Taherdoost (2019). Matell and Jacoby's (1972) findings were considered, indicating that as the number of scale steps increases, respondents' tendency to choose the mid-point category decreases. Detailed criteria associated with all questions can be found in Appendix 1.

4.4. Constructs Formation

In academic research, the clarity and precision of construct definitions are not just important; they are crucial. Each construct—competition, market share, price, sensory quality, nutritional quality,

and financial efficiency—uniquely shapes the conceptual framework's dynamics. Therefore, establishing meticulous definitions for these constructs is not just a task but a necessity.

Competition within the poultry industry can manifest in various forms, such as price wars or innovative product offerings. A precise definition will enable a nuanced analysis of competitive forces, shedding light on the industry's resilience and adaptability. The indicators used in this research to assess the competition dynamic include total revenue, cost of labour, domestic consumption, etc. Price, a critical determinant of consumer choice, requires a clear definition tailored to the intricacies of the poultry market. Price fluctuations can signal economic shifts or competitive pressures, making a precise definition essential for accurate interpretation. Market share, a fundamental construct, demands a meticulous definition to gauge the relative strength of market players. Understanding how market share evolves within the poultry sector provides insights into the industry's structure and the strategies adopted by different entities. It is a unidimensional variable by definition and has been measured with a single item and directly without utilizing indicators in this study. Although subjective, sensory and nutritional quality are pivotal in the food industry. In order to measure quality objectively, indicators such as the level of PH, the scalding temperature, the age of chickens before slaughter, etc., are being used in this study. Crafting precise definitions for these factors allows for a comprehensive examination of consumer preferences, health considerations, and their impact on market trends within the poultry sector. Financial efficiency, another integral construct, necessitates a clear definition to assess the economic health of poultry businesses. This includes evaluating factors such as return on assets and return on equity.

In the context of the poultry industry, where variables interconnect intricately, having well-defined constructs becomes more than just a methodological cornerstone. It becomes a practical necessity.

It not only ensures the accuracy and reliability of the research but also facilitates meaningful comparisons and extrapolations. A clear conceptual framework, anchored in precise construct definitions, empowers the thesis with the robustness required to contribute meaningfully to the scholarly discourse within the poultry industry and, potentially, to the industry itself.

Figure 4.2 summarizes the interplay of different items to provide a solid framework for this research. It displays the effect of competition as an independent variable on mediator variables (conducts) such as sensory quality, nutritional quality, market share, and price, as well as the impact on financial efficiency (performance) as a dependent variable. This figure also illustrates the impact of indicators and environmental factors on the constructs.

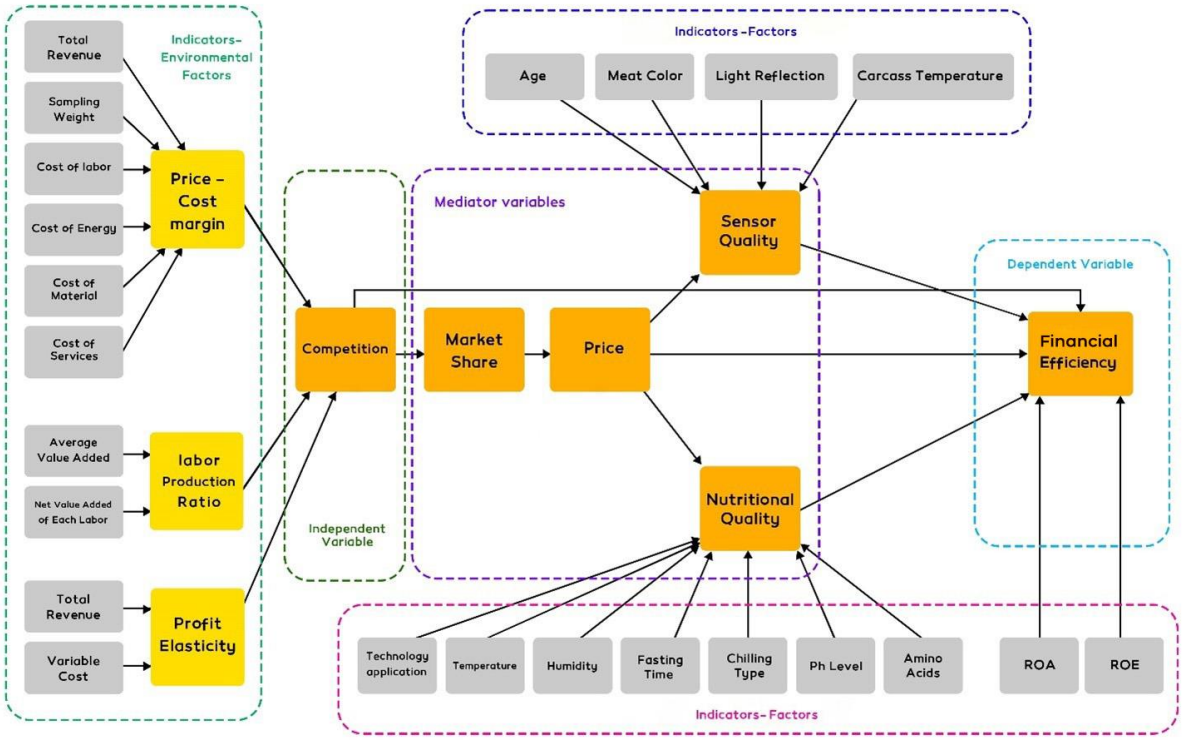

Figure 4.2: Conceptual Framework & Indicators

4.4.1. Meat Quality

Numerous definitions exist for the concept of meat quality. Groom (1990) posits a widely accepted definition, asserting that quality encompasses the composite of characteristics distinguishing individual units of a product, significantly influencing the acceptability of that unit to the user. In the context of the meat industry, however, the term "meat quality" encapsulates a comprehensive array of characteristics, spanning chemical, physical, biochemical, morphological, sensory, microbial, hygiene, technological, culinary, and nutritional properties (Ingr, 1989). Giusti et al. (2008) assert that quality is a partially subjective concept shaped by consumer judgments based on appraisal criteria while possessing an objective dimension defined by technological and scientific criteria. Zhou et al. (2019) categorize food quality into three primary domains: 1) Sensory attributes encompassing taste, texture, and aroma, and 2) Nutritional aspects, inclusive of micro and macronutrients, nutrient bioavailability, formation, and antinutrient inactivation. 3) Hygienic considerations, covering pesticide residues, drugs, microorganisms, additives, etc. However, this study concentrates on the initial two elements, namely sensory and nutritional attributes, as assessing hygienic aspects of meat quality necessitates laboratory examinations beyond the scope of this research.

4.4.1.1. Sensory Quality

According to Ruiz-Capillas et al. (2021), sensory attributes, including appearance, juiciness, texture, firmness, wateriness, odour, tenderness, and flavour, are identified as the most noticeable and crucial factors influencing consumers' initial and final judgments before and after purchasing a meat product. Within these sensory factors, 'appearance' is a paramount quality attribute for raw and cooked poultry meat. This is particularly noteworthy due to its association with the perceived

freshness of the product from the consumers' perspective, ultimately influencing their decision to purchase based on this specific factor.

4.4.1.1.1. Colour

One of the pivotal factors influencing the sensory attributes of poultry products is the colouration of their meat. According to Nazir et al. (2020), discolouration of the epidermal layer is observed when the scalding temperature surpasses 54 degrees Celsius, serving as a distinct indicator of scalding temperature impact. Hasanah and Indrawan (2020) posit that various factors, such as meat moisture, intramuscular fat, age, excitement, carcass temperature preceding slaughter, and stress, directly influence meat colouration. They further assert that muscle pH and myoglobin content contribute significantly to deviations in meat colour. Additionally, the physical appearance of meat and the extent of protein denaturation is contingent upon pH and postmortem temperature, affecting the reflected light from the meat surface. This relationship is articulated by Hughes et al. (2017), who elucidate that the degree of protein denaturation, directly proportional to light scattering, determines the external and internal light reflection from the meat surface. Zhang et al. (2021) ascertain that a one-unit reduction in pH escalates the protein denaturation rate by a factor of 12. Consequently, muscles with a pH below 6.0 exhibit pronounced protein denaturation, producing opacity and increased light scattering. Conversely, muscles with a pH above 6.0 manifest reduced light scattering, minimal protein denaturation, a translucent appearance, and a darker hue (Hughes et al., 2019).

4.4.1.1.2. Texture (age)

From the consumers' satisfaction with eating experiences, texture is a paramount quality determinant (Rigdon et al., 2021). This attribute is predominantly influenced by intermuscular water content, which intricately shapes the firmness and texture of meat. Water is pivotal in imparting a more resilient structure to meat by occupying interstitial spaces between myofibrils and binding to muscular proteins (Chen et al., 2018).

In livestock science, the term 'rigour mortis,' elucidated by Sánchez-Mací et al. (2019), denotes the stiffness in meat resulting from halted blood circulation, accompanied by the cessation of oxygen and nutrient supply to the muscles. After this phenomenon, meat undergoes a process of tenderization and softening during cooking. Any procedure influencing the transition from muscle to meat will inherently impact meat tenderness. Moreover, the chemical cross-linking of collagen in muscles significantly contributes to the maturation of connective tissue, a process that intensifies with age. The augmentation in the quantity of muscle collagens enhances meat heat resistance while diminishing salt solubility, rendering older meat inherently more challenging (Purslow, 2018).

4.4.1.1.3. Temperature & Stiffness

Scalding is a critical slaughter process in poultry production that significantly impacts the sensory quality of the meat. The method, temperature, and duration of scalding are meticulously adjusted to optimize feather removal while preserving skin and meat quality (Buhr et al., 2014). The scalding method—whether hard or soft—determines the carcass's thermal exposure. Hard scalding involves higher temperatures (58-62°C) and shorter times, which can enhance feather release but risk damaging the skin integrity and increasing fat mobilization from the skin. This fat loss can

alter the fatty acid composition of the skin, potentially impacting flavour profiles and meat juiciness adversely.

Conversely, soft scalding uses lower temperatures (50-54°C) with longer exposure times, preserving skin and cutaneous fat but requiring more precise control to prevent under-scalding and inadequate feathers (Harris et al., 2018). The sensory attributes of the meat, including tenderness and juiciness, are closely linked to the structural integrity of the skin and the underlying muscle. Scalding temperatures that are too high can lead to excessive moisture loss during cooking, resulting in more rigid, less juicy meat (Zhuang et al., 2013).

Furthermore, the duration of scalding must be carefully controlled. Prolonged exposure to high temperatures can exacerbate the loss of intramuscular fat and moisture, diminishing the meat's sensory appeal. In contrast, insufficient scalding times can lead to incomplete feather removal, necessitating additional handling that can affect its textural quality (Shung et al., 2022)

Optimal scalding conditions—tailored to specific poultry lines and production goals—are thus essential for maximizing the sensory quality of poultry meat, affecting consumer perception and the economic viability of poultry products.

4.4.1.2. Nutritional Quality

Amidst a growing emphasis on health awareness, consumers are increasingly mindful of the nutritional attributes inherent in their purchased products. Kausar et al. (2019) delineate the meat's nutritional characteristics, including drip loss, cook loss, collagen content, cohesiveness, protein solubility, pH, and fat-binding capacity. Poultry meat primarily comprises minerals, lipids, and

proteins ranging from 0.8 to 1.2%, 1.3 to 6%, and 18.4 to 23.4%, respectively, as Winiarska-Mieczan et al. (2016) noted.

A notable advantage of chicken meat over dairy and meat products lies in its absence of trans-fats, a prominent factor contributing to coronary heart attacks. Unlike dairy and beef products, poultry meat is devoid of trans fat. Approximately one-third of chicken fat consists of less healthy saturated fats, while half comprises desirable monounsaturated fats, as elucidated by Greger (2014).

4.4.1.2.1. Transportation and Slaughterhouse Equipment

In poultry production, various stages such as transport, loading, slaughtering, processing, and unloading are inevitable and profoundly impact meat quality by causing stress (Swatland, 2004). Shimokomaki et al. (2017) posit that implementing a water spray shower before slaughtering can enhance meat quality by mitigating stress. Zulkifli et al. (2019) identify critical stress-inducing stages during poultry slaughtering, including shackling, unloading, and stunning birds. They advocate for alternatives such as Controlled Atmosphere Slaughtering (CAS) instead of electrical stunning, automatic crate unloading, and loading systems to alleviate stress and enhance the efficiency of these processes.

Warries (1990) argues that these stressor conditions can activate the animal's physiological stress responses, affecting their meat quality. When chickens are exposed to stress, their bodies initiate physiological responses. The primary response is activating the hypothalamic-pituitary-adrenal (HPA) axis, leading to the secretion of corticosteroids, mainly cortisol (Kannan et al., 1997). Cortisol plays a crucial role in mobilizing energy reserves to prepare the animal for a fight-or-flight response, but it also has significant implications for muscle metabolism. Under stress, the demand for energy results in an accelerated rate of glycolysis, the metabolic pathway that breaks

down glucose to produce energy (Zhang et al., 2013). Moreover, the oxidative stress associated with releasing cortisol leads to reactive oxygen species (ROS) forming, which can damage cellular components, including lipids, proteins, and DNA (Sandercock et al., 2009). This oxidative damage can impair the nutritional quality of the meat, affecting the stability of vitamins and the oxidation of fats.

Additionally. the degradation of protein quality and the increase in fat oxidation can lead to a reduction in the essential amino acid profile and increased levels of peroxides and free radicals in the meat (Santé-Lhoutellier et al., 2008). These changes reduce the nutritional value and pose health risks to consumers, as oxidized fats and proteins have been linked to various diseases, including cardiovascular diseases and cancer (Falowo et al., 2014).

4.4.1.2.2. Heat Stress and Pre-slaughter Fasting

Pre-slaughter heat stress typically results in the onset of rigour in muscles and a rapid decline in PH. Esser et al. (2017) elaborate on the consequences of pre-slaughter heat stress, elucidating that it leads to the premature onset of rigour mortis, accelerated glycolysis, and an increased rate of postmortem metabolism. Notably, muscles exhibit a pH decline of 1.04 units per hour, compared to the usual rate of 0.65 units per hour due to the premature onset of rigour mortis. While postmortem glycolysis influences the rate of pH decline, the ultimate pH level in the meat is contingent upon the glycogen levels in the muscles at the time of slaughter (Chauhan et al., 2019). To expedite rigour mortis and reduce the energy required for postmortem metabolism, Xue et al. (2021) underscore the significance of pre-slaughter fasting, recommending an 8–12-hour feed withdrawal for chickens before slaughter. Additionally, Jiang et al. (2021) report that the shortening and compactness of muscles resulting from forming actomyosin

complexes significantly amplifies water loss and drip formation and diminishes the water-holding capacity of meat.

4.4.1.2.3. PH

PH directly affects the meat quality attributions such as water holding capacity (WHC) and shelf life (Knight et al., 2019). The PH of broiler meat is the function of the rate of glycogen conversion into lactic acid after slaughter and the number of glycogens in the muscle before slaughter. Low PH leads to different and higher reflections of the light from the muscle surface and causes proteins to break down (Etebari et al., 2021). Barbut's (1993) study shows that darker than regular fillets have 32.9% cook loss, 3.34% drip loss, 7.67% marination pickup, and 6.02 PH. On the other hand, the lighter than regular fillets have 34.4% cook loss, 5.88% drip loss, 6% marination pickup, and 5.8 PH, which illustrates a considerable loss resulting from lower PH.

4.4.1.2.4. Fatty Acids and Proteins

Providing birds with carbohydrate-rich and low-fat diets has been demonstrated to reduce carcass yield, carcass fat, and breast meat yield, with no discernible impact on sensory characteristics (Mueller et al., 2020). Adopting high nutrient density regimens, characterized by elevated protein and energy levels, has been associated with diminished fatness and enhanced carcass yield (Abdollahi et al., 2018). Noteworthy findings from Carmona et al. (2019) indicate that incorporating polyunsaturated fatty acids (PUFA) into the avian diet reduces abdominal fat. Additionally, Conjugate Linoleic acid (CLA), identified for its immune-enhancing properties, atherosclerosis inhibition, and favourable effects on meat yield and body fat reduction, is recognized as anti-carcinogenic (Sheng-hui et al., 2019). Fu et al. (2021) reported that augmenting

CLA supplements in the dietary regimen yields a notable reduction in fat content by up to 3% and a simultaneous increase in protein content by 3%. In summary, elevating dietary levels of single amino acids or crude protein, coupled with a reduction in dietary fat, is associated with amplified amino acid and protein content in carcasses, resulting in higher breast yield (Chrystal et al., 2020).

4.4.1.2.5. Effects of Chilling on the Nutritional Value of the Meat

The overarching objective of the chilling process is to prolong product shelf-life in the market and enhance the safety of food consumption. Stella et al. (2021) assert that achieving a broiler carcass deep temperature below 4.4 degrees Celsius within eight hours post-slaughter is crucial for preserving meat quality. The poultry industry employs two primary chilling methods: water chilling and air chilling. According to Handley et al. (2018), water chilling, involving immersing chickens in a chilled tub, does not significantly affect lipids or proteins but does impact the water-soluble and nutritional aspects of the meat. In comparing chilling methods, Ang and Hamm (1983) note that immersion chilling results in 12% less ash, 5.8% less potassium, and 10% less sodium than air-chilled meats. Kim et al. (2017) further reveal that immersion in chill water leads to sodium, calcium, potassium, phosphorus, nitrogen, and chlorine loss from poultry meat. The other drawbacks of using the water chilling method are associated with a dilution effect on other components, carcass water uptake, increased leaching of solids, and heightened drip loss (Kim et al., 2017). Despite being the more prevalent method, water chilling increases carcass water retention to (4-6) % from surrounding fat and skin, whereas air chilling allows for a (1-2) % moisture loss (Handley et al., 2018). Besides, Yang et al. (2020) argue that water chilling deployment encompasses challenges like water uptake, solids leaching, wastewater management, cross-contamination risks, and post-chill purge loss.

4.4.2. Competition

The concept of 'competition' assumes diverse forms, needing a precise definition in the existing literature. Jeanjean (2020) addresses this ambiguity by defining *competition* as the scope of actions undertaken by companies to attract increased demand from clients. This study focuses on competition in the product market, denoting the rivalry among firms for product demand (Wu et al., 2017). Despite efforts, the understanding of competition remains intricate and unresolved, as noted by Duanmu, Bu, and Pittman (2018). Common indicators such as firms' market share or the number of companies in the market, while typical measures of competition intensity, may present an unclear depiction of the competitive landscape. Consequently, a few large or numerous smaller firms can shape the competitive atmosphere, depending on their aggressiveness (Lemma et al., 2018). Given these complexities, this study employs a range of competition indicators to encompass various dimensions, aiming for a comprehensive and cohesive assessment of competition.

4.4.2.1. Price-Cost Margin

Soares (2020) posits that in an economic entity, when the long-run marginal cost aligns with the selling price, it signifies efficient resource allocation. The author defines 'normal profit' as the result of minimal excess of revenues over costs, while substantial differences between costs and prices characterize 'abnormal profit'. The Price-Cost margin or Lerner index, utilized by various researchers (e.g., Collins & Preston, 2020; Spierdijk & Michalis, 2017; Mansurbek, 2020), serves as a profitability indicator, gauging firms' capacity to set prices relative to costs. Huang, Chiang, and Chao (2017) contend that intensified competition compels firms to adjust prices until they

equate marginal costs. The marginal cost is composed of variables such as service (S), material (M), energy (E), and labour cost (L). According to Huang (2018), the calculation of PCM is as follows:

$$PCM_{it} = \frac{Y_{it} - (L_{it} + E_{it} + M_{it} + S_{it})}{Y_{it}} \quad (4\text{-}1$$

Where:

‘t’ stands for year, and ‘I’ stands for the firm; Y_{it} total revenue; L_{it} Cost of labours; M_{it} cost of materials; E_{it} cost of energy; S_{it} cost of services. For the macro level calculation of the industry ‘j’ stands for industry for which data comes from national accounts, PCM is calculated as:

$$PCM_{jt} = \frac{Y_{jt} - (L_{jt} + E_{jt} + M_{jt} + S_{jt})}{Y_{jt}} \quad (4\text{-}2$$

4.4.2.2. Labor Production ratio

Labour and capital stand as primary indicators in the productivity ratio, a measure of output relative to a firm's input, as elucidated by Kazekami (2020). Johari and Jha (2020) define *labour productivity* as the added value per workforce, calculated based on a company's output. Correspondingly, Kehrig and Vincent (2017) propose the labour income ratio (LINC) as an indicator representing the proportion of labour income in the net value added by a company. This method is grounded in the concept that higher labour productivity correlates with increased competition, as firms, amidst intense competition, are compelled to operate more efficiently. According to Michael et al. (2009), the calculation of this ratio is as follows:

$$LINC_{it} = \frac{L_{it}}{NVA_{it}} \quad (4\text{-}3$$

Where:

$LINC_{it}$ Stands for labor productivity ratio for firm I and year t.

L_{it} Stands for average value-added of each labor force in the firm i.

NVA_{it} Is net value added

4.4.2.3. Profit Elasticity (Boone Indicator)

Boone (2008) proposes the Relative Profit Differences (RPD) as a competition indicator, grounded in the assumption that competition rewards more efficient firms while penalizing less efficient ones. Efficiency, as defined by Balashova et al. (2019), reflects a firm's ability to produce similar output with lower marginal costs, making the comparison of firms' efficiency indicative of the level of competition. The Boone-Indicator (BI) gained popularity due to its user-friendly nature, sharing exact data requirements with PCM, and demonstrating accurate results in scenarios influenced by entry barriers or changes in the aggressiveness of interacting companies (Tan, 2018). Boone's model operates under several assumptions:

- direct impact of competition changes on firms
- relative homogeneity of goods in the market
- the ability to rank firms based on efficiency

Fierce competition prompts output reduction, but this decrease is less pronounced for more efficient firms (Schiersch & Schmidt-Ehmcke, 2010). The Profit Elasticity (PE), a microdata level indicator, can only be calculated based on microdata, as outlined by Boone, Ours, and Wiel (2007). The calculation of PE involves normalization of the data:

$$z_i = \frac{x_i - \min(x)}{\max(x) - \min(x)} \quad (4\text{-}4$$

Then

$$RPD_{it} = \int_t^{t+1} (Y_{it} - VC_{it}) \quad (4\text{-}5$$

Where:

Variable Cost $$VC_{it} = E_{it} + L_{it} + S_{it} + M_{it} \quad (4\text{-}6$$

An increase in the market competition lowers RPD and the area between total revenue (Y), and the variable cost (VC) curves illustrate competition fierceness. Since all values have been normalized, any point on the RPD curves with the value one implies zero competition, and any point that shows zero implies perfect competition.

4.4.3. Financial Efficiency

This subsection defines the components contributing to financial efficiency as a construct in this research. As identified in the literature review, numerous methods exist for measuring enterprise performance. However, this research adopts Return on Assets (ROA) and Return on Equity (ROE) as performance measures. Tayeh et al. (2015) and Javeed et al. (2020) advocate for accounting-based measurements as the most suitable methods for evaluating enterprise performance, emphasizing their ability to effectively assess a company's value management.

4.4.3.1. Return on Assets (ROA)

Return on Assets (ROA) serves as a financial metric delineating the efficiency with which a company generates wealth from its assets (Shabani et al., 2019). Typically, this metric is expressed as a ratio utilizing a company's net income to its average assets. A heightened ROA signifies proficient utilization of assets for profit generation, whereas a lower rate indicates inefficiency, signalling the potential for enhancement (Swandewi & Purnawati, 2021). According to Tamuntuan (2015), a company's sustainability hinges on its capacity to profit from its available resources, with ROA as an indicative measure of this proficiency. It is imperative to note that ROA benchmarks differ across industries, necessitating comparisons within specific sectors. For meaningful assessments, ROAs are best compared against a company's historical performance or with peers within the same industry (Strouhal et al., 2018). ROA provides investors insights into how effectively a business transforms its assets into net income. The mathematical representation of ROA is articulated in the formula (Kurniawan, 2021):

$$ROA = \frac{\text{Company's Net Income}}{\text{Total assets}} * 100 \qquad (4\text{-}7$$

It is pertinent to note that both returns on assets (ROA) and returns on equity (ROE) endeavour to gauge a business's capacity to generate profit from its resources. Nonetheless, ROE overlooks the company's indebtedness and the origin of its resources. Conversely, ROA assesses how efficiently a business utilizes its resources, irrespective of the mix of debts and equities. ROE reflects the proficiency with which a company employs its equities within its obligations. Consequently, ROA

is responsive to a business's indebtedness, whereas ROE assesses performance irrespective of liability terms, focusing solely on equities (Pointer & Khoi, 2019).

In addressing the limitations of ROA, Hewitt et al. (2017) highlight its unidirectional applicability and its limited transferability across diverse industries. They also draw attention to the data utilized in ROA calculations, which rely on historical cost and value records while overlooking the impact of interest expenses and incomes. The dichotomy between equity and debt in businesses, where net income serves as the return for investors and interest expense as the return for debt providers, underscores a fundamental flaw in the current ROE formula. This formula juxtaposes net income with assets derived from debts, necessitating a refinement. In response to this deficiency, two novel variations of ROA have been introduced, incorporating considerations of interest and tax rates (Jewell & Mankin, 2011).

Variation No 1:

Net Income + [Interest Expense x (1 - Tax Rate)] / Total Assets (4-8

Variation No 2:

Operating Income x (1 - Tax Rate) / Total Assets (4-9

Undoubtedly, ROA stands as a well-established metric within the stock market, serving as a pivotal gauge for investors. A rising ROA signifies a company's adeptness in generating increased value for each invested dollar, while a declining ROA serves as a negative indicator of business performance. Moreover, a diminishing ROA suggests an over-investment in assets. It is noteworthy that there is no universally defined or standard range for ROA, as its appropriateness varies across industries. Nonetheless, Supriyadi (2021) propounds a rule of thumb, asserting that an ROA exceeding 5% is deemed satisfactory and surpassing 20% is considered exemplary.

4.4.3.1.1. Net Income and Total Assets

Two key parameters are essential to compute Returns on Assets (ROA): (1) net income and (2) total assets. Voinea (2017) delineates net income (NI), synonymous with net earnings, as the result of deducting all costs from sales revenue. Costs encompass general and administrative expenses, cost of goods, depreciation, operating expenses, taxes, interests, etc. NI, positioned at the bottom line of an income statement, provides investors insight into the profitability of a business by revealing a comparison between expenses and revenues. The calculation starts with total revenue, deducting operating costs and business expenses to derive earnings before taxes, culminating in net income after tax deduction (Delen et al., 2013).

It is noteworthy that NI, like other financial metrics, can be susceptible to manipulation through aggressive revenue presentation or expense concealment. The second constituent of ROA is total assets (TA). Fano (2017) defines *assets as* resources with economic value controlled or owned by a country, company, or individual, anticipating future benefits. Given the dynamic nature of assets due to buying or selling, the average total assets are employed for ROA calculations. Steven and Bragg (2020) emphasize that assets, irrespective of category (fixed, current, intangible, financial), are anticipated to reduce expenses or generate revenue, bestowing economic benefits upon a business. Assets, as per Steven and Bragg (2022), can be classified into (1) fixed, (2) current, (3) intangible, and (4) financial assets appearing on the company's balance sheet.

Fixed assets possessing a lifespan exceeding one year (e.g., buildings, equipment) undergo depreciation, reflecting a gradual loss of value. GAAP recognizes various depreciation methods, such as the accelerated method, assuming faster value loss in early years, and the straight-line method, implying a steady value decline. Current assets, expected to be converted into cash within

a year, encompass inventory, accounts receivable, cash equivalents, and prepaid expenses. Apart from cash, the others require periodic monitoring by accountants, with potential write-offs if deemed non-realizable within a year.

Intangible assets lack a physical presence, including trademarks, patents, goodwill, and copyrights. Like current assets, they undergo periodic evaluations for impairment or reauthorization.

Lastly, financial assets, such as preferred equity, stocks, hybrid securities, and bonds, are evaluated based on market supply and demand and the underlying security.

4.4.3.2. Return on Equity (ROE)

Return on Equity (ROE) is a financial ratio that divides net income (NI) by shareholders' equity, also referred to as return on net assets, as equity is derived by subtracting debts from assets (Damodaran, 2007). Like ROA, ROE is a profitability metric assessing a business's overall profitability. However, while ROA compares net income to the company's assets without deducting liabilities, ROE contrasts net income with net assets, offering insights into the business's wealth generation from equity financing. A higher ROE signifies the enhanced ability to generate wealth from equity. This percentage figure is calculable only when both components are positive numbers (Daniswara & Daryanto, 2020). The ROE formula is expressed as follows (Wijaya, 2019):

$$ROE = \frac{\text{Net Income}}{\text{Equity}} * 100 \qquad (4\text{-}10$$

Evaluating an excellent or lousy Return on Equity (ROE) ratio is contingent upon factors such as industry, country, and the comparative performance of peers within the specific industry (Adawiyah & Setiyawati, 2019). Contextualizing this, Damodaran's (2022) data on U.S.

companies in 2022 illustrates varying average ROEs across sectors, exemplified by 13.44% for food processing, 11.18% for food wholesalers, 46.38% for semiconductor equipment manufacturers, and - 40.21% for hotels and hospitality. Industries demanding more assets generally exhibit lower ROEs, partly influenced by macroeconomic factors. Notably, the substantial negative ROE in the hotel sector reflects the pronounced impact of COVID-19.

Comparative analysis within the same context is crucial, as Anwar (2019) emphasizes that an above-average ROE signifies superior management performance in utilizing company assets for profit generation. However, a moderately above average or even an average ROE is generally preferable to excessively high figures. A significantly elevated ROE is advantageous only when accompanied by substantial net income, as it indicates the company's profitability and helps readers assess the sustainability of the ROE. This is a crucial point to consider when interpreting ROE. Nevertheless, a markedly high ROE can be a risk indicator, often stemming from a small equity relative to net income. This scenario arises if a company undergoes substantial losses in consecutive financial years, subsequently experiencing a windfall profit. The company compensates for losses with shareholders' invested equities, resulting in a sharp drop in equity value over time. An unusually high ROE in such instances is associated with heightened risks. Another factor leading to a high ROE is excessive debt, as equity is derived from subtracting debts from assets (Kharatyan, 2016).

4.4.3.2.1 Shareholders’ Equity

One of the components of Return on Equity (ROE) is shareholder's equity (SE), which represents the remaining dollar value for shareholders if they opt to liquidate the business' assets and settle

all debts and liabilities. This residual claim on assets after debt settlement underscores SE as the owners' stake in the business (Shah et al., 2021). Any capital invested in the company, encompassing retained earnings, contributes to shareholders' equity. It is imperative to distinguish retained earnings from liquid assets like cash. Shareholders' equity is a pivotal metric for calculating various financial ratios, including return on equity and debt-to-equity (Makoujy, 2010).

According to Belmonte (2015), SE can manifest as positive or negative. A negative SE indicates a debt surpassing the company's assets, termed balance sheet insolvency, while a positive figure implies that the business possesses sufficient assets to cover its debts. For accurate ROE calculation, it is advisable to consider the average SE, mitigating inaccuracies arising from discrepancies between balance and income sheets. The beginning and ending periods should align with the period during which net income is measured (Pinto et al., 2015).

4.4.4. Price

Kienzler and Kowalkowski (2017) define *pricing* as a method or strategy to find the most competitive price for a product or a service. Price renders a product's standards and quality in the clients' eyes. Price is a decisive factor in consumers' decision-making mechanism regarding buying a product (Hanna et al., 2019). Pricing is a strategic measure for a business to reach its profit objectives. Since time affects many variables upon which pricing is built, it is essential to rely on the factors with the minimum influence of the time. This is where marketers' reason for using psychology laws lies (Faith, 2018). Nagle and Holden (1987) introduced their famous nine psychological factors affecting consumers' purchasing habits. With the help of these laws, marketers can adjust pricing strategies exploiting consumers' psychological behaviours. If

Maximizing profit is not the primary goal of every company, it is undoubtedly one of the primary goals of every company, and the marketing strategy of a business used in different sectors is determinant to achieving this goal (Toni et al., 2017). One of the most well-known marketing pricing strategies is the 4P strategy: promotion, place, price, and products (Asdi & Putra, 2020). Due to the progress of technology and the widespread usage of the internet, customers have become very selective due to online access to the companies' details and competitors' product prices. Therefore, if businesses want to succeed, they have to be one step ahead of the clients and adjust their prices dynamically based on the information from the market (Faith, D.O, 2018). According to Hinterhuber and Liozu (2019), the pricing strategy can affect each of the following objectives: (1) profit objective, (2) competitive objective, and (3) customer objective.

Profit-Oriented Pricing

Profit-oriented pricing links the company's finances with its products. As discussed in the previous sectors, the business profit equals its revenue minus all its expenses (Bandalouski et al., 2018). In this pricing strategy, the price of each product must be set higher than the cost of producing and selling the product to ensure the company profits from the sales. Therefore, the profit of every sale is guaranteed for the company (Deac et al., 2016). However, this method has its downsides; for instance, on some occasions, the company must adopt more aggressive marketing strategies to gain momentum and steal shares from the market. The ability to follow profit-oriented pricing is simply impossible. The next point is that from a psychological perspective, clients are not concerned with the costs of the products on which the profit-oriented pricing method sets the price; rather, their main concern lies in the Value a product delivers to them. Therefore, due to the noted shortages and lack of flexibility, companies are unlikely to achieve their goals through this method

(Hinterhuber & Liozu, 2019). Audi and Putra (2020) argue that to convince the client to buy the product, the marketers who deploy this method must apply further adjustments on the other 4Ps, like promotion, place, and product, which naturally apply additional costs leading to different prices.

Competitive-Oriented Pricing

The competitive-oriented pricing method sets the prices following the prices of competitors. This method involves copying competitors' pricing strategies or using them as bases to differentiate the company's products. This means the marketer can set a higher price than competitors to imitate a higher quality product or price it lower to gain more market share (Avlonitis & Indounas, 2005). This pricing strategy is known as the easiest one, especially when collecting competitors' prices, which is simple. However, Gangwar and Rao (2020) argue that it also has its defects. There is no guarantee that prices match the quality. The price set via this method does not reflect the actual value of the products based on the client's perception. The product might be set over-priced or lower-priced, or in other words, the product can be ill-priced.

Customer-Oriented Pricing

Customer-oriented pricing, also known as value-oriented pricing, is the most recommended approach as it locates the customer at the centre of the pricing strategy. The customer-oriented pricing approach is based on a simple formula of Value = Perceived Benefits – Perceived Costs

and tries to find a balance in this equation (Hinterhuber & Liozu, 2012). Therefore, this method applies the highest price that matches the Value received by the clients. Application of this method requires a sufficient understanding of the client-market relationship. The company must know clients' behaviour, to what extent the client puts Value in its products, and to what extent its products can meet the client's needs. Customer-oriented pricing applications require multiple market pieces of research to understand clients' opinions about the product and market (Petrovska et al., 2017). Weinrich and Gassler (2021) maintain that since researching every matter is complicated and challenging, marketers apply the Van Westerndrop price sensitivity meter to achieve the same. This method can be summarized as the answer to four questions: (1) What price is considered too expensive, or at what price does the client refuse to buy? (2) What price is considered very cheap, and does the client feel the product is associated with low quality? (3) what is the price where the client does not decide to buy the product but starts to think it seems expensive and might not buy it? (4) At what price does the client find the product a bargain and an excellent value for the money? The answer to the above questions provides details of the client's perspective on the product and helps to find the balance point in the value equation.

4.4.5. Market Share

Market share is a vital metric for companies as it provides insights into their competitive position and performance within an industry (Edeling & Himme, 2018). This section aims to explore the different methods used to calculate market share and discuss the implications of this metric for businesses. Companies can make informed strategic decisions to enhance their market position by understanding the calculation techniques and analyzing market share data. This section also highlights the importance of accurate market share analysis and guides its effective utilization.

Market share is a crucial indicator for companies to assess their standing in the market and measure their relative success compared to competitors. By accurately calculating market share, businesses can gain valuable insights into their market position, identify growth opportunities, evaluate the effectiveness of their strategies, and make informed decisions to improve performance (Palmer et al., 2018). This section explores various methods used to calculate market share and discusses their implications for companies.

1) Unit Market Share: This method measures market share based on the number of units a company sells compared to the total units sold. It is calculated by dividing the company's unit sales by the total market unit sales and multiplying the result by 100. Unit market share quantitatively represents a company's market presence (Fitzgerald & Priolo, 2018). 2) Revenue Market Share: Revenue market share determines a company's market share based on the total revenue generated compared to the overall market revenue. It is calculated by dividing the company's revenue by the total market revenue and multiplying the result by 100. Revenue market share highlights a company's financial performance relative to its competitors (Syverson, 2019). 3) Relative Market Share: Relative market share compares a company's market share with that of its largest competitor. It is calculated by dividing the company's market share by the market share of the most significant competitor. Relative market share indicates a company's competitive position and ability to capture a more significant portion of the market than its biggest rival (McKiernan, 2015).

Baker (2017) notes that calculating market share allows companies to understand their relative position in the market. A higher market share indicates a stronger competitive position, while a lower market share signifies the need for strategic improvements to gain a more significant market presence. Palepu and others (2020) argue That market share analysis helps companies identify potential growth opportunities. By analyzing market share trends, businesses can identify

underserved segments, emerging markets, or areas where competitors may be vulnerable, allowing them to focus their resources on capturing new market share. According to Thabit and Raewf (2018), market share data enables companies to evaluate the effectiveness of their marketing and sales strategies. By comparing changes in market share over time with corresponding marketing activities, businesses can determine which strategies are successful and which need adjustment. West and others (2015) believe that market share analysis provides insights into a company's competitive advantage. A higher market share suggests a stronger competitive position, indicating that the company has a competitive edge over its rivals. This information can be leveraged to reinforce existing advantages or develop new ones.

4.5. Data Collection Strategies

4.5.1. Sampling

The process of selecting respondents for a methodologically robust sample involves several sequential stages, as delineated by Bradley (2007): (1) scrutinizing the study's objective, (2) defining the target demographic, (3) identifying an appropriate source for population members, (4) determining the sampling type and approach, (5) establishing the sample size, (6) executing the fieldwork, and (7) rectifying sampling errors in preparation for reporting.

The categorization of industries holds particular significance in shaping the population (Wood et al., 2017). This study focused on diverse manufacturers producing poultry meat under varying levels of competition. Manufacturing companies were selected from five continents, representing the top chicken meat-producing countries in each continent, and randomly chosen from the top ten chicken meat-producing companies in each country. Sample designs were categorized into

probabilistic and non-probabilistic sampling. Purposive sampling, a form of non-probabilistic sampling, was employed for choosing companies due to its effectiveness in providing more information for a given sample size by identifying criteria such as industry type, size, and performance (Forza, 2002).

The survey based on the following criteria and sampling procedure was conducted to collect data from various manufacturing companies:

- This industry includes poultry products such as broilers, turkey, quail, and duck, which are the leading products. It is vertically integrated and comprises broiler farms, parent farms, feed mills, slaughterhouses, and incubation plants.
- Industry size, with criteria including annual turnover exceeding £80,000,000, more than 800 employees, and a production capacity of at least 12 million birds per year.
- The registration date requires companies to have been registered for over five years.

After purification of the initial list, 115 firms were selected. On average, twelve informants, primarily top managers, were targeted within each manufacturing firm, resulting in 1200 participants. The stratified sampling method, a probability sampling technique, was used to target participants among the chosen firms. The positions of the target respondents were used as strata. It was intended to be above the managerial level, covering operations, sales and marketing, accounting, managing board, quality control, and customer service.

4.5.2. Data Collection

Various classifications for data collection in questionnaire-based survey research are available, as outlined by Saunders et al. (2009), and depicted in Figure 4-3.

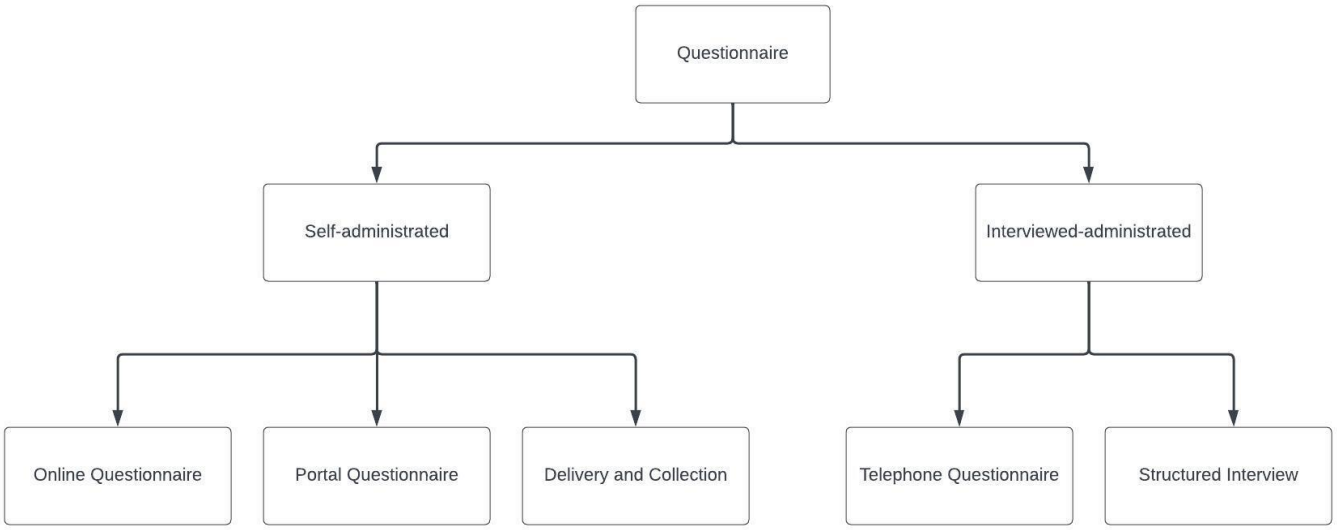

Figure 4.3: Data collection classification Saunders et al. (2009)

In selecting data collection methodologies, the present study opted for online and telephone questionnaires as the primary vehicles for gathering data. Online questionnaires offer distinct advantages, including minimal staffing requirements and enhanced respondents' time for thoughtful consideration of questions (Nayak & Narayan, 2019). Telephone surveys provide a quick and efficient method of gathering primary data for academic research, offering the ability to reach a diverse and representative sample of respondents. Furthermore, they allow for real-time rapport building with participants, leading to increased response rates and higher-quality data. Additionally, telephone surveys enable researchers to clarify any ambiguities in the questions, thereby reducing the potential for misinterpretation of responses (Block & Erskine, 2012).

Furthermore, this research justifies the choice of online surveys based on specific considerations: 1) the need to cover a wide geographic area, 2) cost and time constraints, where online surveys are identified as the most cost-effective method, and 3) the perceived anonymity associated with online surveys (Regmi et al., 2016). Consequently, the final version of the questionnaire, hosted on Qualtrics, was disseminated to poultry companies via email. The email package included a cover letter, a participation information sheet, and a consent form. The cover letter furnished pertinent details regarding the study's goals, objectives, and scope, assuring participants of the confidentiality of acquired information. Respondents encountering difficulties or inquiries were encouraged to communicate via the email address in the cover letter, with direct feedback through email. Notably, six participants opted for a phone-based survey, while ten respondents preferred to communicate via email and ask their questions about some questions. Following the recommendation of Weisberg et al. (1996), follow-up communication, either through phone calls or emails, was initiated with each target respondent two weeks after the initial contact to enhance the response rate. In cases where phone interviews were conducted, interviewers guided questionnaire navigation and addressed procedural queries, as suggested by Zhang et al. (2017). Explanations of certain concepts, such as the level of light reflection, conjugate Linoleic acid, and return on assets, were elucidated during phone calls.

Determining an appropriate sample size involves considering various factors and methodologies. While Confirmatory Factor Analyses (CFA) often recommend a sample size of around 100, Kline (2011) advocates for a more robust ratio of 20 participants per parameter, necessitating a minimum of 120 responses for this study. Louangrath (2017) emphasizes the association between sample size, significance level, statistical power, and the strength of the research relationship. To achieve high statistical power (e.g., 0.8), reducing the likelihood of failing to detect an effect when present,

a sample size of at least 271 is suggested (Verma & Goodale, 1995). Consequently, the target sample size for this study was conservatively set at more than 300, allowing for a margin of error, including potentially unusable questionnaires. Table 4-1 presents the required sample sizes based on desired statistical powers of 0.8 and 0.6, taking into account the effect of sample size and significance level.

Table 4.1: Effects of Statistical Power, Significance level, and Size (Forza, 2002)

	Statistic power = 0.6		Statistic power = 0.8	
	$\alpha = 0.05$	$\alpha = 0.01$	$\alpha = 0.05$	$\alpha = 0.01$
Large effect (strong association)	12	18	17	24
Medium effect (medium association)	30	45	44	62
Small effect (small association)	179	274	**271**	385

Data collection was challenging, notably influenced by external factors such as decreased corporate interest stemming from the COVID-19 pandemic, the time-intensive nature of data extraction, and companies' hesitancy to disclose sensitive information. The questionnaire's structural design mandated participants to respond to every question, resulting in minimal missing data.

A comprehensive data analysis was undertaken to ensure the absence of any systematic pattern in the missing data. Little's Missing Completely at Random (MCAR) test was employed for this purpose. Subsequently, missing data points were inputted using the Expectation Maximum (EM) method within the SPSS software. The selection of the EM method was motivated by its recognized superiority in providing less biased estimates and its applicability to ANOVA analysis and various other statistical methods. This meticulous approach aims to enhance the robustness

and reliability of the dataset, acknowledging and addressing challenges associated with missing data in a methodologically sound manner (Young et al., 2011).

4.6. Data Analysis Strategies

4.6.1. General Measurement Concepts

This subsection elucidates the statistical methodologies for evaluating the research hypotheses based on the obtained response data. The assessment of measurement instruments primarily revolves around considerations of reliability and validity (Forza, 2002). Reliability, denoting the consistency and dependability of results, implies that findings can be consistently replicated over time and across diverse conditions. In data analysis, reliability ensures stability and consistency in measurements and procedures. When scrutinizing research hypotheses, reliability indicates that collected data and employed methods yield trustworthy and replicable findings, thereby enhancing study validity (Kerlinger, 1986).

Standard methods to estimate reliability include Test-Retest, Inter-Rater, Parallel Forms, Internal Consistency, and Split-Half Reliability (Royal & Hecker, 2016). Test-retest reliability assesses measurement stability by administering the same test to participants at two different time points. Inter-rater reliability evaluates consistency in judgments made by different raters. Parallel Forms Reliability involves administering two equivalent test forms to the same group. Internal Consistency Reliability examines the correlation between items within a test. Split-half reliability assesses internal consistency by splitting a test into halves and correlating their scores. Reliability metrics gauge internal consistency, including Cronbach's alpha, split-half coefficient, average inter-item correlation, and item-total correlation. A reliability value exceeding 0.7 is deemed

acceptable (Nunnally, 1978). Content validity ensures that a measure adequately represents the entire domain, which is crucial for accurate representation in research (Almanasreh et al., 2019).

Construct validity assesses whether a measure aligns with the theoretical construct it intends to measure, while convergent validity ensures related measures exhibit a strong correlation in empirical observations. Exploratory and confirmatory factor analyses examine content and construct validities (Westen & Rosenthal, 2003). Explanatory factor analysis (EFA) explores underlying structures without priori hypotheses, which are suitable for understanding dimensions within a dataset (Howard, 2016). Confirmatory Factor Analysis (CFA) evaluates the fit of a hypothesized factor structure to observed data, confirming theoretical models (Mishra, 2016). EFA uncovers patterns, while CFA confirms theoretical models. Lastly, discriminant validity ensures measures theoretically unrelated demonstrate low correlations in empirical observations (Fornell & Larcker, 1981). This thesis adopts a significant 0.05 (p-value) level for hypothesis testing (Cooper & Schindler, 2008; Saunders et al., 2009).

4.6.2. The Measurement Concept for the Structural Equation Model (SEM)

The methodology for predicting changes in the dependent variable concerning modifications in multiple independent variables utilized multiple regression analysis (Forza, 2002). Multiple regression, a statistical approach, examines the relationship between a dependent variable and several independent variables, estimating the coefficients of the latter to anticipate changes in the dependent variable. This method proves advantageous in discerning the individual and combined impacts of multiple predictors on the dependent variable, albeit with the assumption of linear

relationships and susceptibility to multicollinearity affecting result reliability (Ngo & La Puente, 2012).

In contrast, structural equation modelling (SEM) offers a more comprehensive examination of intricate relationships between observed and latent variables. Integrating both measurement and structural models, SEM provides insights into direct and indirect effects among variables, which is especially beneficial for investigating causal relationships and testing theoretical models. SEM demands larger sample sizes and advanced statistical expertise, posing challenges for researchers who need extensive statistical training (Lei & Wu, 2007). Adhering to the framework proposed by Anderson and Gerbing (1988), a two-stage structural equation model was employed to test research hypotheses. The initial stage involved Confirmatory Factor Analysis (CFA) in AMOS 29 for construct validity assessment, considering Construct Reliability (CR) and Average Variance Extracted (AVE)—the subsequent stage employed Structural Equation Model (SEM) analysis for empirical testing of research hypotheses.

This study utilized Confirmatory Factor Analysis (CFA) to validate the measurement theory supporting the thesis, assessing the effectiveness of measured variables in representing the intended construct. CFA facilitated the examination of relationships between observed variables and their latent constructs, confirming the validity and reliability of the measurement model. The method offered a robust statistical framework to test the hypothesized factor structure, ensuring coherence within the research (Brown, 2015).

After evaluating reliability, validity, and construct fit, the study assessed the model's fit using Root Mean Square Error Approximation (RMSEA) and Standardized Root Mean Residual (SRMR). Smaller RMSEA values indicated better model fit. Additionally, the Comparative Fit Index (CFI),

Goodness-of-Fit Index (GFI), and χ^2/df ratio were considered, with recommended thresholds to gauge overall fit (Hair et al., 2010; Kline, 2011; Segars & Grover, 1993).

4.7. The Construction of the Questionnaire

In the section above, it was explained that the primary data sources for this research comprise personnel from the directing, accounting, sales, marketing, and operating departments. The underlying assumption is that individuals within the accounting department possess insights into labour, material, and service costs, total revenue and other pertinent financial aspects. Sales staff are considered well-versed in market share, pricing, and sales levels. In contrast, operational staff can provide valuable information on pre-slaughter temperature, pH levels, creating systems, and related operational details. Furthermore, individuals from the directing board of a company are presumed to furnish comprehensive information covering all relevant aspects. Acknowledging the likelihood that only some respondents may possess the requisite information to address all questions in the questionnaire, the researcher recognizes the varying capacities of participants based on their respective positions. The accuracy of responses is thus evaluated by comparing them with other participants' answers within the same company.

The questionnaire is designed to encompass a diverse array of questions, ensuring a comprehensive exploration of the context for each variable and the extraction of relevant data. In the initial stage, prototype versions of the questions underwent meticulous scrutiny and revision for language clarity, eliminating redundancy, and minimizing potential misunderstandings. The questionnaire follows a structured sequence, initiating inquiries related to quality indicators and concluding with those about financial efficiency indicators. This sequencing reflects the acknowledgement that obtaining information on quality indicators from the survey is essential, given that competition,

market share and pricing information can be acquired more easily. More quickly, the questionnaire predominantly employs closed-ended questions to capture the specific data sought by the study precisely. Consistent with prior studies, each closed question is measured on a 7-point Likert scale, and the natural points are set based on the industry average. Open-ended questions are incorporated only when predicting and providing specific closed answers deemed impractical. The questions in the questionnaire are categorized into six main sections, aligning with the conceptual model: competition indicators, encompassing the independent variables, market share indicator, price indicators, sensory and nutritional quality indicators, and, ultimately, financial efficiency indicators.

4.7.1. Sensory Quality Indicator-The Age of the Chicken Prior to Slaughter

The age at the time of slaughter plays a crucial role in determining meat quality, as it directly influences the chemical cross-bonding of collagen in the muscles. Purslow (2018) highlights that older livestock yields tougher meat, resulting in lower quality.

Table 4.2: Sensory Quality Indicator-The Age of the Chicken Prior to Slaughter

Variables	Questions	Answers
Age	Q2.1.The following questions are about poultry-meat-production companies. Therefore, please answer the questions based on your information about the poultry company you work in or the company you know and have data about. What is the chickens' average age (A) at the slaughter moment (in days) ?	L< 20
		20 ≤ L< 25
		25 ≤ L< 30
		30 ≤ L< 35
		35 ≤ L< 40
		40 ≤ L< 45
		45 ≤ L

'Age at the time of slaughter'
(See 4.4.1.1.2)

4.7.2. Sensory Quality Indicator-The Colour of the Meat

The colour of poultry meat significantly influences consumer perceptions of freshness, quality, and palatability, thus affecting purchasing decisions and sensory evaluation (Fletcher, 2002). Meat colour variations, primarily determined by the myoglobin content and oxidative state, indicate the meat's age, storage conditions, and processing methods (Barbut, 1997). These colour attributes correlate with sensory qualities such as flavour, tenderness, and juiciness, which are critical for consumer satisfaction (Hutchison et al., 2010). Consequently, understanding meat colour's biochemical and physical determinants is crucial for optimizing poultry meat quality in commercial production.

Table 4.3: Sensory Quality Indicator-The Color of the Meat

Variables	Questions	Answers
Meat Color	Q2.2. How do you evaluate the fresh meat color produced in the company in 2021?	Extremely light
		Moderately light
		Slightly light
		Normal
		Slightly dark
		Moderately dark
		Extremely dark
	Q2.3. What is the average light reflectance (L) between 580-630 wavelength mn, of the fresh meat produced in the company in 2021?	L<10%
		10%≤L<14%
		14%≤L<18%
		18%≤L<22%
		22%≤L<26%
		26%≤L<30%
		30%≤L

‘the meat brightness is an Indicator of its quality’
(See 4.4.1.1.1)

4.7.3. Sensory Quality Indicator-Carcass Temperature

Scalding and its associated temperatures play a pivotal role in determining the sensory quality of poultry meat. Specifically, the scalding temperature affects the ease of feather removal and the skin's condition, with implications for appearance and texture (Allen et al., 1998). Higher scalding temperatures can lead to skin tearing and increased fat release, impacting the meat's juiciness and flavour profile (Fletcher, 2002). Therefore, optimal scalding conditions are crucial to preserving the desirable skin and underlying meat characteristics and enhancing consumer acceptance.

Table 4.4: Sensory Quality Indicator-Carcass Temperature

Variables	Questions	Answers
Carcass Temperature	Q2.4. What is the average scalding temperature (T) in Celsius?	T<40
		40≤T<44
		44≤T<48
		48≤T<52
		52≤T<56
		56≤T<60
		60≤T
	Q2.5. What is the average scalding time (S) in seconds?	S<80
		80≤S<110
		110≤S<140
		140≤S<170
		170≤S<200
		200≤S<230
		230≤S

'The scalding temperature during Slaughter time'
(See 4.4.1.1.3)

4.7.4. Nutritional Quality Indicator-Water Spray- CAS deployment- Crate Loading deployment- Electrical Muscle Stimulation. Etc.

According to the findings of Shimokomaki and others (2017), the implementation of water spray before slaughtering is identified as a practice capable of reducing stress. The destructional role of

stress on meat nutritional quality was explored in section 4.4.1.2.1. Consequently, drawing from Shimokomaki et al.'s (2017) study, this questionnaire interprets the utilization of water showers as an indicator of nutritional quality. Furthermore, Zulkifli and others (2019) propose that controlling atmosphere slaughtering (CAS) instead of electrical stunning can mitigate stressful processes, enhancing meat's nutritional quality. Thus, based on their study, this research considers the adoption of CAS in a slaughterhouse as indicative of higher meat nutritional quality.

Barbut (2016) recommends using automatic crate loading and unloading to alleviate stress in poultry and enhance meat quality. Consequently, the employment of automatic crate loading has been considered a factor contributing to higher nutritional quality. Derrick (2017) suggests using electrical muscle stimulation to improve meat quality since, in light of his observations, the dissection of warm carcasses can lead to meat nutritional quality degradation. Therefore, this questionnaire recognizes the employment of electrical muscle stimulation technology as a nutritional quality indicator. The multiple-choice questionnaire design allows for easy comparison of the different companies' use of high-tech devices to assess the nutritional quality of their chicken meat. This approach provides a standardized and structured method for collecting data, making it easier to analyze and conclude. The questionnaire design establishes a clear and objective measure for comparison by linking the number of devices used to nutritional quality.

Table 4.5: Nutritional Quality Indicator-Water Spray- CAS deployment- Crate Loading deployment- Electrical Muscle Stimulation. Etc.

Variables	Questions	Answers
Water Shower CAS employment Crate loading Electrical Muscle Stimulation	Q3.1.Please select the devices deployed the company (you can make multiple choices).	The water spray before the shackling
		The control atmosphere slaughtering (CAS)
		Automatic crate loader and unloader

	Heart stimulator
	The cut-up muscle stimulator
	X-ray for food safty
	IQF (individual quick frozen)

deployment of water spray prior to slaughtering, taking advantage of controlled, taking advantage of automatic crate loaders, atmosphere slaughtering.'
(See 4.4.1.2.1)

4.7.5. Nutritional Quality Indicator-Pre-Slaughter Temperature

Given the research findings of Huang and others (2019), heat stress is known to induce rapid pH decline, trigger muscle rigour onset and affect nutritional quality. Given these effects, this questionnaire incorporates pre-slaughter temperature as a critical factor influencing stress to elucidate and assess meat nutritional quality.

Table 4.6: Nutritional Quality Indicator-Pre-Slaughter Temperature

Variables	Questions	Answers
Pre-slaughter Heat Stress	Q3.2.What is the average temperature (T) in the slaughterhouse reception area (Celsius)?	T<15
		15≤T<19
		19≤T<23
		23≤T<27
		27≤T<31
		31≤T<35
		35≤T
	Q3.3. What is the average humidity in the slaughterhouse reception area?	H<30
		30≤H<40
		40≤H<50
		50≤H<60
		60≤H<70
		70≤H<80
		80≤H

(See 4.4.1.2.2)

4.7.6. Nutritional Quality Indicator-Pre-Slaughter Fasting Time

By the recommendations of Xue and collaborators (2021), to mitigate rigour mortis, an extended fasting period of 8-12 hours is proposed, aiming to reduce muscle energy and postmortem metabolism. Consequently, this questionnaire includes pre-slaughter fasting time as a specific item to elucidate and assess meat nutritional quality.

Table 4.7: Nutritional Quality Indicator-Pre-Slaughter Fasting Time

Variables	Questions	Answers
Pre-slaughter Fasting Time	Q3.4. What is the average pre-slaughter fasting time (F) in hours	F<5
		5≤F<6
		6≤F<7
		7≤F<8
		8≤F<9
		9≤F<10
		10≤F

(See 4.4.1.2.2)

4.7.7. Nutritional Quality Indicator-Chilling Type

In accordance with the findings presented by Handley and others (2018), who contend that water chilling has certain disadvantages compared to air chilling, including water uptake, dilution effects on nutritional components, and increased drip loss, it is asserted that employing an air chiller is superior to a water chiller. Consequently, each company's chilling type has been regarded as an item within this questionnaire to elucidate and assess meat quality.

Table 4.8: Nutritional Quality Indicator-Chilling Type

Variables	Questions	Answers
Chilling Method and carcass temperature	Q3.5. What is the water chiller's length (L) deployed by the company in meter (if it doesn't exist, choose L < 6)?	L<6
		6≤L<12
		12≤L<18
		18≤L<24
		24≤L<30
		30≤L<36
		36≤L
	Q3.6. What is the air chiller's length (L) deployed by the company in meter (if it doesn't exist, choose L < 500)?	L<500
		500≤L<1000
		1000≤L<1500
		1500≤L<2000
		2000≤L<2500
		2500≤L<3000
		3000≤L
	Q3.7. What is the average deep carcass temperature {T) in Celsius at the time of packaging?	T<4
		4≤T<5.5
		5.5≤T<7
		7≤T<8.5
		8.5≤T<10
		10≤T<11.5
		11.5≤T

'Type if chiller employed by The company to process chicken Meat'
(See 4.4.1.2.5)

4.7.8. Nutritional Quality Indicator-PH level

The pH level of poultry meat is crucial in determining its nutritional quality. Optimal pH levels preserve essential nutrients, such as proteins and vitamins, susceptible to degradation under extreme pH conditions. Elevated pH levels can increase microbial growth and enzymatic activity, potentially reducing the meat's nutritional value and safety (Barbut, 2015). Moreover, the pH influences meat's water-holding capacity, affecting water-soluble vitamins and minerals retention.

Proper management of pH levels is essential for maximizing the retention of these nutrients, thus maintaining the nutritional quality of meat (Hopkins et al., 2014)

Table 4.9: Nutritional Quality Indicator-PH level

Variables	Questions	Answers
PH Level	Q3.8. What is the average fresh Meat's PH level?	PH<5.1
		5.1≤PH<5.4
		5.4≤PH<5.7
		5.7≤PH<6
		6≤PH<6.3
		6.3≤PH<6.6
		6.6≤PH

'The level of PH immediately after Slaughter tome'
(See 4.4.1.2.3)

4.7.9. Nutritional Quality Indicator-Single Amino Acids

Considering the direct influence of poultry feed nutrition on fatness and carcass yield, as emphasized by Mueller et al. (2020). The impact of fatty acid ingredients, such as polyunsaturated fatty acids (PUFA) and linoleic acids (CLA), on carcass fat and protein content, as highlighted by Abdollahi et al. (2018), the inclusion of questions related to amino acid consumption has been considered in this questionnaire. According to Carmona et al. (2019), adding amino acids to poultry diets increases protein and lowers fat content.

Table 4.10: Nutritional Quality Indicator-Single Amino Acids

Variables	Questions	Answers
Single Dietary Amino Acids	Q3.9. What is the average proportion of protein (P) in poultry's diet?	P<16
		16≤P<18
		18≤P<20
		20≤P<22

		22≤P<24
		24≤P<26
		26≤P
	Q3.10. What is the average proportion of Conjugate Linoleic Acid (CLA) in the poultry's diet?	CLA<0.9
		0.9≤CLA<1.2
		1.2≤CLA<1.5
		1.5≤CLA<1.8
		1.8≤CLA<2.1
		2.1≤CLA<2.4
		2.4≤CLA

'The amount of amino acids and protein Contents in the poultry diet'
(See 4.4.1.2.4; 4.4.1.2.5)

4.7.10. price Indicator

The inclusion of specific questions on the prices of frozen bulk drumsticks and frozen bulk wings in the questionnaire is fundamentally justified by their relevance as indicators of market trends and consumer preferences within the poultry industry. These products represent significant segments in poultry consumption, and their pricing can reflect broader economic conditions, supply chain dynamics, and shifts in consumer demand (Sims, 2017). Understanding their price variability helps analyse the economic factors influencing poultry meat markets, facilitating strategic insights for producers and marketers regarding pricing strategies and market positioning (Ukum et al., 2018).

Table 4.11: price Indicator

Variables	Questions	Answers
Price	Q4.1. What was the average frozen bulk drumstick price (P) €/kg in 2021 (for the major brand)?	P<1.2
		1.2≤P<1.3
		1.3≤P<1.4
		1.4≤P<1.5
		1.5≤P<1.6
		1.6≤P<1.7
		1.7≤P
	Q4.2. What was the average frozen bulk wings price (P) €/kg in 2021 (for the major brand)?	P<1.5
		1.5≤P<1.6

1.6≤P<1.7
1.7≤P<1.8
1.8≤P<1.9
1.9≤P<2.0
2.0≤P

(See 4.4.4)

4.7.11. Price Indicator-whole chicken price

The inquiry into whole chicken prices under each company's top three brands is essential to discern differential pricing strategies and brand positioning within the poultry market. Such questions allow for evaluating how branding influences consumer perception and pricing disparities in a competitive market (Grewal et al., 1998).

Table 4.12: Price Indicator-Type of the brand

variables	Questions	Answers
Price & brand	Q4.3.Please specify the status of the three major brands (whole chicken) produced in the company, the production share (S) of each of them, and the average price (P) in 2021 (A national brand belongs to the company, while a private brand refers to the products the company produces under the name of other companies like supermarkets' brands).	

	Is it a PRIVATE or NATIONAL brand (write 1 for Private and 2 for national brand)?	The average price (1.20<P≤1.80) for whole chickens in Euro sold under this brand name in 2021 (wholesale).
Brand 1		
Brand 2		
Brand 3		

Whole chicken price
'Either generic or branded product'

(See 4.4.4)

4.7.12. Market Share Indicator-Market Share

In the context of competition and market concentration, market share can be extrapolated from the research of Hirschman (1945) and Pavic et al. (2016). It represents the percentage of total industry sales attributable to a specific company. Calculating market share involves dividing the company's sales over a given period by the total industry sales during the same timeframe (Anderson, 2021).

Table 4.13: Market Share Indicator-Market Share

Variables	Questions	Answers
Market Share	Q5.1. What was the market share (M) of the company in the country it is based in 2021?	M<2%
		2%≤M<5%
		5%≤M<8%
		8%≤M<11%
		11%≤M<14%
		14%≤M<17%
		17%≤M

'Percent of total sales by a Particular company'
(See 4.4.5)

4.7.13. Competition – Total Revenue

This variable constitutes the total revenue, which is crucial for gauging PCM and profit elasticity as competition indicators. Numerous researchers, including Collins and Preston (2020), Spierdijk and Michalis (2017), and Mansurbek (2020), have employed this method as a competition indicator.

Table 4.14: Competition – Total Revenue

Variables	Questions	Answers
Total Revenue	Q6.1. What was the total revenue (R) of your company in 2021 (million Euro)?	R<30
		30≤R<130
		130≤R<230

		230≤R<330
		330≤R<430
		430≤R<530
		530≤R

'The revenue from sales'
(See 4.4.2.1 & 4.4.2.3)

4.7.14. Competition - Net Income

Net income (NI), or earnings, is derived by subtracting all costs, including cost of goods, administration cost, depreciations, and interests, from the sales revenue. NI serves as a primary metric for assessing the profitability of a business (Voinea, 2017). The question formulated based on this concept is presented in the table below:

Table 4.15: Competition - Net Income

Variables	Questions	Answers
Profit	Q6.2. What was the net income (profit) of the company in 2021?	N<3
		3≤N<13
		13≤N<23
		23≤N<33
		33≤N<43
		43≤N<53
		53≤N

'The difference between the Sales revenue and all costs'
(See 4.4.2.3, 4.4.2.1)

4.7.15. Competition Indicator-Cost of Labour

Boone (2008) suggests that the cost of labour indicates competition in his Profit Elasticity model, a concept also utilized for a similar purpose in other models like PCM (Soares, 2020). The cost of labour encompasses all payments made by a company to its workforce within a specific period (Cooper & Willis, 2009).

Table 4.16: Competition Indicator-Cost of Labor

Variables	Questions	Answers
Cost of Labor	Q6.3. What was the total salary (S) the company paid to its employees in 2021. Here employees refer to all kinds of human resources, including contractors (million Euro)?	S<5
		5≤S<25
		25≤S<45
		45≤S<65
		65≤S<85
		85≤S<105
		105≤S

'Total payments of a company to its labors'
(See 4.4.2.1 & 4.4.2.2 & 4.4.2.3)

4.7.16. Competition Indicator-Cost of Material

Bruno (1984) defines the cost of material as the expenditure on materials required to manufacture a product within a specific period. Several perspectives, including those of Kehrig and Vincent (2017), Spierdijk and Michalis (2017), Collins and Preston (2020), and Mansurbek (2020), have employed the cost of material as a competition indicator in PCM and Profit Elasticity models. While these studies explored different contexts, the insights derived from these models provide valuable perspectives that can be beneficial in the context of this study.

Table 4.17: Competition Indicator-Cost of Material

Variables	Questions	Answers
Cost of Material	Q6.4. What was the total raw material cost (R) of the company in 2021 (Million Euro)?	R<15
		15≤R<75
		75≤R<135
		135≤R<195
		195≤R<255
		255≤R<315
		315≤R

'Total cost of materials to Manufacture a product'
(See 4.4.2.1 & 4.4.2.3)

4.7.17. Competition Indicator-Cost of Energy

Cost of energy encompasses any utility cost associated with energy, including electricity, fuel oil, gasoline, natural gas, or other sources required for manufacturing a product (Darling et al., 2011). Boone (2008) and Huang, Chiang, and Chao (2017) have integrated energy cost into calculating PCM and Profit Elasticity ratios as competition indicators.

Table 4.18: Competition Indicator-Cost of Energy

Variables	Questions	Answers
Cost of Energy	Q6.5. What was the total energy cost (E) of the company including gas, electricity etc. in 2021 (Euro)?	E<1.5
		1.5≤E<6.5
		6.5≤E<11.5
		11.5≤E<16.5
		16.5≤E<21.5
		21.5≤E<26.5
		26.5≤E

'total cost of energy to Manufacture a product'
(See 4.4.2.1 & 4.4.2.3)

4.7.18. Competition Indicator-Cost of Services

The cost of services pertains to all direct costs linked to a company's providing services to clients (Dulebenets, 2018). Like other indicators mentioned in the preceding sections, Boone (2008) and Huang, Chiang, and Chao (2017) employ the cost of services in calculating PCM and Profit Elasticity ratios as competition indicators.

Table 4.19: Competition Indicator-Cost of Services

Variables	Questions	Answers
Cost of Services	Q6.6. What was the total service cost (S) in Million Euro in 2021?	S<0.5
		0.5≤S<1.5

	(all costs associated with building, supporting, and delivering your services.Examples of service cost components include software, license fees, client support and data center charges)	1.5≤S<2.5
		2.5≤S<3.5
		3.5≤S<4.5
		4.5≤S<5.5
		5.5≤S

'total services costs rendered to clients'
(See 4.4.2.1 & 4.4.2.3)

4.7.19. Competition Indicator-Number of Employees

Johari and Jha (2020) regard labour productivity in every company as a signal of market competition. Michael and others (2009) utilise the number of employees as a measure of market competition intensiveness.

Table 4.20: Competition Indicator-Number of Employees

Variables	Questions	Answers
Number of Employees	Q6.7. What was the number of Employees (E) in 2021?	E<250
		250≤E<1250
		1250≤E<2250
		2250≤E<3250
		3250≤E<4250
		4250≤E<5250
		5250≤E

'total employee number'
(see 4.4.2.2)

4.7.20. Financial Efficiency Indicator-Return on Assets

Assets are regarded as resources with economic value that companies or countries possess or control for future profit expectations (Fano, 2017). Due to the dynamic nature of assets, many studies use average assets. Return on assets assets is a standard component for calculating firms' financial performance (Steven & Bragg, 2022).

Table 4.21: Financial Efficiency Indicator-Total Capital Value

Variables	Questions	Answers
Return on Assets	Q7.1. What was the return on assets (ROA), in 2021?	ROA < 2
		2 ≤ ROA < 4.5
		4.5 ≤ ROA < 7
		7 ≤ ROA < 9.5
		9.5 ≤ ROA < 12
		12 ≤ ROA < 14.5
		14.5 ≤ ROA

‘Return on Assets (ROA) ’
(see 4.4.3.1)

4.7.21. Profitability Indicator-Return on Equity

Shareholder's equity represents the dollars shareholders would receive if they liquidated all their assets after paying off all debts (Belmonte, 2015). It encompasses all the capital invested in the firm, including retained earnings. Return on equity is the standard component of a firm's financial performance (Shah et al., 2021).

Table 4.22: Profitability Indicator-Total Equity

Variables	Questions	Answers
Total equity	Q7.2. What was the company's return on equity (ROE) , in 2021 (Equity represents the shareholders' stake in the company, identified on a company's balance sheet. The equity calculation is a company's total assets minus its total liabilities)?	ROE < 18
		18 ≤ ROE < 20.5
		20.5 ≤ ROE < 23
		23 ≤ ROE <25.5
		25.5 ≤ ROE < 28
		28 ≤ ROE < 30.5
		30.5 ≤ ROE

‘Return on Equity (ROE) ’
(see 4.4.3.3)

4.8. The Obstacles of Conducting the Survey

As highlighted in the preceding chapter, examining constructs in this study necessitates an investigation into their correlations. Following the conceptual framework, this research is intricate

due to the extensive number of variables and disparities between the observation unit and the unit of analysis. The study does not encompass multiple measures over an extended period but focuses on variables at a specific time and is not characterized as cross-sectional research. Retrospective data is gathered from various companies within the poultry industry to explore correlations among the constructs outlined in the conceptual framework. The data for this research is derived from questionnaires designed to elicit information from individuals employed in poultry companies. Consequently, the study is susceptible to subjectivity, although the substantial number of participants mitigates this risk. Despite scientists and researchers striving for fact-based, unbiased data, complete objectivity is challenging in this study due to several inherent difficulties:

- Indicators introduced in this research, though attempting to represent corresponding variables, need to catch up in capturing the full spectrum of the constructs. For instance, the construct of 'quality' involves various indicators such as meat colour or amino acid consumption. However, only limited aspects of the spectrum can be captured. Similar challenges exist for other variables in the study.
- Obtaining relevant data, including sales information, market share, cost of material, and dietary protein content, proves challenging. Such data either lacks existence in independent databases or respondents are unwilling to share it.
- The study hinges on the high cooperation of participants, with difficulties in taping respondents into the survey.

To enhance data validity, this research involves at least three individuals from critical departments in each company, including the directing board, accounting department, sales and marketing department, and operating department.

4.9. Chapter Summary

This chapter commenced by delineating the chosen research design. Subsequently, the research strategies for hypothesis testing were expounded, elucidating the selection of data sources and the design of the questionnaire. In the segment dedicated to questionnaire design, detailed explanations were provided for construct measurements and scale development, along with an overview of the questionnaire development procedure. It is imperative to highlight that all items incorporated in this research were adapted from pertinent literature to alleviate concerns about the reliability and validity of the constructs. Moreover, the questionnaire underwent a rigorous assessment process to ensure its efficacy and validity before formal utilization in this study.

Moving forward to the data collection strategy section, the study's sample, data collection methodology, and sample size were meticulously detailed. Throughout this process, the questionnaire was distributed to 1,200 potential respondents, acquiring 382 usable responses and illustrating a 32% response rate. The concluding section of this chapter delineated the statistical strategies earmarked for data analysis. Fundamental measurement concepts utilized in this research, including reliability and validity, were explicated. Additionally, measurement concepts pertinent to Structural Equation Modeling (SEM), such as Confirmatory Factor Analysis (CFA), Composite Reliability (CR), Average Variance Extracted (AVE), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Standardized Root Mean Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA), were also elucidated.

Chapter 5

Survey Application and Results

5.1. Introduction

The survey's main objective was to investigate the impact competition has on companies' financial efficiency concerning other factors such as price, market share, and quality by testing the relationship between those constructs. The survey also aimed to determine how structure conduct performance (SCP) theory explains the relationship between the constructs. These are achieved by evaluating the following:

1. the interplay between competition, market share, and price;
2. the impact of price on financial efficiency;
3. the impact of competition on financial efficiency;
4. Moreover, it is where the optimum level of competition lies.

This chapter contains four sections. Section 5.2 provides general descriptive statistics for respondents' and firms' characteristics. Subject screening in sections 5.3 and 5.4 presents the analysis of the interplay between constructs through a between-subject analysis of structural

equation modelling (SEM) tests. Section 5.5 presents the results of an SEM on all of the gathered data. Combined samples (including different firms and countries) are employed to investigate the relationships. The final section is dedicated to MATLAB analysis, demonstrating how different weights assigned to the primary constructs alter the effect of competition on accumulative company performance. This section investigates four distinct scenarios and presents them graphically. Section 5.6 summarizes the survey results and related findings.

5.2. General Descriptive Statistics

This section presents the demographic characteristics and details of the respondents' response rate. The respondents' information includes job title, gender, age, country, and level of knowledge of the topic. The research data collection phase, which began in September 2022 and was completed in August 2023, took an extended period due to several key factors:

1. Targeted Respondents: The research required surveying top managers from leading poultry companies. These individuals are often extremely busy and have limited availability, significantly extending the time needed to arrange meetings and gather responses.

2. Sensitive Information: The survey sought to obtain sensitive and proprietary information, which respondents were initially reluctant to share. This necessitated multiple rounds of communication to build trust and ensure confidentiality, further extending the data collection timeline.

3. Global Scope: The survey covered poultry companies across all five continents. Coordinating with respondents across different time zones and regions presented logistical

challenges. Additionally, the global nature of the survey meant that conducting in-person visits to many of these companies was not feasible, resulting in a reliance on remote communication methods, which are typically more time-consuming.

4. Post-COVID-19 Context: Data collection occurred during the tail end of the COVID-19 pandemic, a period when many companies were still operating under varying degrees of restrictions. These restrictions and ongoing disruptions in everyday business operations limited access to confident respondents and contributed to delays.

5. Ethical Considerations and Approvals: Given the sensitive nature of the information being collected, obtaining ethical clearances and approvals from company and institutional review boards added additional complexity and time to the process.

6. Response Rate: In surveys targeting high-level executives, response rates can be lower, requiring additional follow-ups and sometimes alternative engagement methods to ensure a representative sample, which extends the overall timeline.

These factors combined to create a complex and time-intensive data collection process, justifying the duration of the phase.

5.2.1. Demographic Characteristics

Regarding job titles, 14 % were from the accounting department, 9 % from customer service, 9 % from managing board, 21 % from operation, 5 % from quality control, 18 % from sales and marketing, and 24 % from other departments. 43 % of participants were female and 57 % were men. Regarding ages, 13 % were 18 - 24, 40 % were 25 - 34, 35 were % 35 - 44, 10 % were 45 - 54, and 2 % were over 54. 12 % evaluated their knowledge of the food industry as fair, 24 % as

good, 27 % as very good, 29 % as excellent, and 8 % as exceptional. 3 % of the participant were from Australia, 4 % Brazil, 4% Canada, 3 % China, 3 % Denmark, 3% Germany, 3% Mexico, 4 % UK, 3% France, 2 % Netherland, 18 % India, 3 % Indonesia, 3 % Japan, 3 % Keniya, 5 % Malaysia, 4 % Nigeria, 4 % Pakistan, 3 % Philippine,3 % Poland, 3 & South Africa, 3 % South Koria, 3 %, 3 % Thailand, and 8 % from the US. The preliminary analysis of the responses indicates that the participating firms are relatively equally distributed within the five continents, which allows for generalizing the findings. The study population is 382 participants involved in the poultry industry. As noted above, India has the highest % of participants, with 18 %, and France represents the smallest, with 2 %. Table 10 displays the detailed demographic characteristics.

Table 5.1: Descriptive Analyzes

Characteristics	Frequency	Percentage (%)
Job Title		
Accounting	55	14
Customer service	35	9
Managing board	34	9
Production line	81	21
Quality control	18	5
Sales and marketing	67	18
other	92	24
Sex		
male	216	56
female	164	44
Age		
18 -24	48	13
25 -34	154	40
35 - 44	135	35
45 -54	38	10
> 54	7	2
Knowledge evaluation		
fair	45	12
good	89	23
Very good	106	27
excellent	112	30
exceptional	30	8

Country		
Australia	13	3
Brazil	15	4
Canada	14	3
China	11	3
Denmark	13	3
Germany	12	3
Mexico	13	3
England	17	4
France	13	3
Netherlands	10	2
India	70	18
Indonesia	14	3
Japan	14	3
Kenya	12	3
Malaysia	20	5
Nigeria	14	4
Pakistan	15	4
Philippines	12	3
Poland	12	3
South Africa	14	3
South Korea	12	3
Thailand	12	3
United States	30	8

5.2.2. Response rate

The survey questionnaire was sent to respondents via Qualtrics. Out of 1200 questionnaires sent to the companies, 382 were responded to. There were no invalid or blank questionnaires since respondents were forced by design to respond to all questions and could also ask questions on the telephone line. Thus, the overall response rate was 31 per cent, which is reasonably high compared to similar studies in the marketing field and is acceptable (Frohlich, 2002). This high rate can be justified by mentioning that the repentances were usually reached via phone in advance and convinced to participate in the research. The participants were also asked to share the questionnaire link with their colleagues to use the snowball effect.

5.3. Data Screening

5.3.1. Normality

The skewness and kurtosis tests are conducted to assess the normality of the data (expressed variables). Skewness, which relates to the tailedness of the distribution, and kurtosis, which pertains to the peakedness of the distribution, are critical indicators of data distribution. If the data follows a normal distribution, parametric tests will be applied to investigate and validate the hypotheses; otherwise, non-parametric statistical methods will be utilized. The outcomes of the normality test for the variables are presented in Table 4.2. According to these techniques, if the skewness value falls between -2 and +2, the data exhibits a customarily distributed pattern in both the right and left tails. A kurtosis value of -7 to +7 signifies a normal distribution.

A close examination of the data implies that the skewness test is predominantly violated, whereas the kurtosis values remain mainly within the realm of normality. In simpler terms, the data displays vertical normal distribution but not so much horizontal normality. Specifically, the multivariate value is 29.32, indicating an atypical data distribution. Consequently, this study employs non-parametric data analysis (bootstrap) through SEM.

Table 5.2: Normality Figures

Variable	skew	c.r.	kurtosis	c.r.
C1	0.751591	5.997048	-0.490548	-1.957076
C2	-0.563992	-4.500169	-0.816197	-3.256274
C3	-0.044650	-0.356267	-1.089850	-4.348032
MS	0.234487	1.871006	-1.119426	-4.466029
Pl	0.457734	3.652321	-0.943975	-3.766055
P2	0.452545	3.610920	-0.974826	-3.889138
P3	0.530197	4.230518	-0.922999	-3.682370
P4	0.303602	2.422481	-0.953977	-3.805956
P5	0.281202	2.243751	-1.045389	-4.170653
SQ1	-0.184383	-1.471217	-1.189722	-4.746480
SQ2	-0.001993	-0.015902	-1.009082	-4.025803
SQ3	-0.139960	-1.116764	-0.959954	-3.829804

SQ4	-0.069386	-0.553640	-1.055887	-4.212536
SQ5	-0.092765	-0.740186	-1.056277	-4.214093
NQ1	0.197273	1.574067	-0.871055	-3.475137
NQ2	0.396623	3.164709	-0.799161	-3.188309
NQ3	0.224493	1.791264	-0.931027	-3.714399
NQ4	0.426659	3.404371	-0.482869	-1.926441
NQ5	0.314498	2.509423	-0.934198	-3.727050
NQ6	0.093429	0.745481	-0.405367	-1.617240
NQ7	0.134090	1.069920	-0.537155	-2.143016
NQ8	-0.005300	-0.042287	-0.361557	-1.442459
NQ9	0.241697	1.928535	-0.188640	-0.752594
NQ10	0.235412	1.878387	-0.794855	-3.171130
F1	-0.083010	-0.662346	-1.415827	-5.648539
F2	-0.152636	-1.217902	-1.467381	-5.854217
Multivariate			114.498922	29.323945

5.3.2. Missing data

Empirical research often encounters incomplete datasets, an issue addressed in various studies such as Pallant (2007), which acknowledges that complete data collection could be more achievable. Schafer and Olsen (1998) pinpoint several reasons for the prevalence of missing data, including the sensitive nature of specific questions, participants' misunderstanding of the questions, and their lack of sufficient knowledge to provide answers.

A primary challenge in empirical studies is addressing these missing values, as Unnebrink and Windeler (2001) noted. In structural equation modelling (SEM), including confirmatory factor analysis (CFA) and SEM conducted through tools like AMOS, the preferred method for handling missing data is maximum likelihood estimation (MLE). MLE is advantageous because it utilizes all available data without discarding any, providing a robust alternative to traditional methods that might exclude incomplete responses (Baraldi & Enders, 2010). This technique employs a log-likelihood function to measure the congruence between the observed data and theoretical models, striving to find parameter estimates that reduce the discrepancies between them. Baraldi and

Enders (2010) explain that this process seeks to identify parameter values that most likely result in the observed sample data, optimizing the fit between the model and the data points.

This approach ensures that empirical research can be conducted effectively even with incomplete datasets, utilizing advanced statistical techniques to enhance the accuracy and reliability of the findings.

5.3.3. Common Method, Non-Response, and Late Response Bias

Standard method bias significantly challenges the validity of findings in behavioural research. This bias results from standard method variance (CMV), which refers to the amount of spurious covariance shared among variables (Podsakoff et al., 2003). The study used a standard latent factor test for the proposed model to test for the potential existence of a standard method bias about statistical remedies after conducting the survey (Podsakoff et al., 2003). standard method variance (CMV) is a primary concern if a single factor accounts for most of the total variance. A principal components factor analysis was conducted on all measurement items in this research, and the result can be found in Table 5.3.

Table 5.3: common factor latent test

base model
CMIN

Model	NPAR	CMIN	DF	CMIN/DF
Default model	72	615.2083	279	2.205048
Saturated model	351	0	0	
Independence model	26	8609.43	325	26.49056

The model with common factor
CMIN

Model	NPAR	CMIN	DF	CMIN/DF
Default model	73	615.2083	278	2.212979
Saturated model	351	0	0	
Independence model	26	8609.43	325	26.49056

The difference in Chi-square values between the base and standard factor models is 615.2083 - 615.2083 = 0. At one degree of freedom and 5% level of significance, the Shi-Square value is 3.84 (MacKenzie & Podsakoff, 2012), while here, the difference between Shi-Square values is $0 < 3.84$, suggesting the model has no problem with common method bias.

Non-participation bias is a noteworthy error in survey-oriented research (Dillman, 2007). This bias emerges when the characteristics of survey participants markedly deviate from those who abstained (e.g., unit non-participation, item non-participation), primarily about the pivotal attributes pertinent to the study. This investigation adopted an uncomplicated approach, as Gerbing and Anderson (1988) recommended, to scrutinize the presence of non-participation bias in the study. The study's sample underwent examination to ascertain whether firms that chose not to participate differed substantially from their participating counterparts concerning crucial corporate features (e.g., sales and employee count). The comparison revealed no statistically significant disparities, indicating the absence of non-participation bias.

Armstrong and Overton (1977) advocated gauging the potential of late response bias. Participants were categorized into two cohorts: prompt respondents and delayed respondents. Prompt respondents encompassed those who reacted within the initial three months, whereas delayed respondents were companies that responded after this timeframe. Through t-tests (table 5.4), it was

evidenced that there existed no marked differentiation at the 0.05 threshold between early and delayed respondents in terms of distinct survey frameworks, with one exception in competition.

Table 5.4: T Test

		F	Sig.	t	df
Competition	Equal Variances Assumed	6.364	.012	3.312	380
	Equal Variances Not Assumed			3.624	208.589
Sensory Quality	Equal Variances Assumed	1.143	.286	-.918	380
	Equal Variances Not Assumed			-.889	164.380
Price	Equal Variances Assumed	6.814	.009	.522	380
	Equal Variances Not Assumed			.490	155.792
Financial Efficiency	Equal Variances Assumed	2.000	.158	-.826	380
	Equal Variances Not Assumed			-.794	762.195
Nutritional Quality	Equal Variances Assumed	.916	.339	.003	380
	Equal Variances Not Assumed			.003	181.461
Market Share	Equal Variances Assumed	5.912	.015	-1.032	380
	Equal Variances Not Assumed			-1.098	196.661

5.4. The Impact of Competition on Firms' Performance

Items such as return on assets (ROA) and return on equity (ROE) have been considered to measure financial performance. Three preliminary competition measurement methods were applied: labour production ratio, profit elasticity, and price-cost margin. This research aimed to develop an accumulative approach covering higher competition dimensions as a multi-dimensional construct through those methods. All questions were on a 1 to 7 Likert scale. The seven Likert scale was chosen to offer higher choices to the respondents and receive more accurate answers than the five Likert scale.

5.4.1. Measurement Scale

One aspect of the survey is how companies perform under various competition levels. Competition in a market refers to the dynamic interaction among multiple sellers or producers who offer similar

or substitute goods or services to consumers. It involves rivalry and contest among these participants as they vie for consumers' attention, patronage, and purchases. Competition can take various forms, and its intensity can vary depending on factors such as the number of competitors, the degree of differentiation in products, and the ease of entry and exit in the market. Different levels of competition include perfect competition, monopolistic competition, oligopoly, monopoly, and monopsony (Ritz, 2018). Three approaches are incorporated in this research to measure competition: labour production ratio, profit elasticity, and price cost margin. Respondents were asked to indicate items leading to calculating competition in the market. Using a seven-point Likert scale, items include total revenue, labour costs, energy and services, net value added, etc. The mean of ranges has been utilized to calculate competition level through the formulas described in chapter four (4.4.2). In total, seven indicators have been used to calculate competition. The data from question 4.7.14 (net income) and question 4.7.19 (number of employees) have been put in the formula noted in section 4.4.2.2 to estimate the labour production ratio. The data from questions 4.7.13, 4.7.15, 4.7.16, 4.7.17, and 4.7.18 (total revenue, salary, raw material cost, energy cost, service cost) are in formulas noted in sectors 4.4.2.1 and 4.4.2.3, respectively to calculate price cost margin and profit elasticity. Since converting numerical results to Likert scale values allows for a consistent presentation across all survey items and maintains the ordinal nature of the data, the numerical data achieved through the formula has been converted into seven Likert numbers, ensuring the distribution matched the questionnaire's Likert scale's range.

Market share represents the portion or percentage of the total sales or revenue captured by a particular company, product, or brand within a specific market (4.4.5). Measuring a company's position and influence within a given industry or market segment is crucial. In this research, market

shares include only one observed variable (see Table 5-2). Respondents were asked to "indicate how big the market share of the company they work in is."

A pricing strategy represents a deliberate and well-thought-out approach that a business or organization adopts to determine the prices of its products or services. It is a fundamental component of the overall marketing strategy and plays a significant role in shaping a company's competitive position, revenue generation, and customer perception (see 4.4.4). Respondents were asked to "indicate what the products' prices sold by the company were" in terms of responding rapidly using a seven-point Likert scale (close-ended questions in specific intervals) to indicate price variables. Five observed variables indicate price: drumsticks, wings, and prices for the three top brands of whole chicken (see Table 5-5).

The nutritional quality of poultry meat refers to the composition and content of essential nutrients, vitamins, minerals, and other bioactive compounds in meat derived from domesticated birds such as chickens, turkeys, ducks, and other fowl. This quality assessment encompasses the nutritional value poultry meat offers consumers in their diet (see 4.4.1.2). Respondents were asked to "Indicate how well the company's nutritional quality" using a seven-point Likert scale (1 = poor and 7 = excellent). Ten observed variables used to indicate nutritional quality, including pre-slaughter fasting time, deployed devices, reception temperature and humidity, water and air chillers length, deep carcass temperature, carcass's PH, protein, and Conjugate Linoleic Acid (CLA) of the poultry's diet (see table 4-5).

The sensory quality of poultry meat refers to the sensory attributes and characteristics that can be perceived by the human senses—primarily taste, smell, texture, appearance, and sometimes sound—when evaluating and consuming meat from domesticated birds like chickens, turkeys, ducks, and other fowl (see 4.4.1.1). Sensory quality assessment provides valuable information

about the meat product's overall sensory experience and palatability. Respondents were asked to "Indicate how well the company's sensory quality" using a seven-point Likert scale (1 = poor and 7 = excellent). Five observed variables were used to indicate sensory quality, including poultry age at the time of slaughter, meat colour, meat's light reflectance, scalding temperature, and scalding time (see Table 5-5).

A firm's financial efficiency represents its ability to effectively and optimally manage its financial resources to generate maximum output or value while minimizing waste, costs, and inefficiencies. It reflects how well a company utilizes its financial assets and resources to generate profits, cash flows, and returns for its stakeholders, considering revenue generation and cost management (see 4.4.3). Respondents were asked to evaluate the company's efficiency through observed variables such as return on asset (ROA) and return on equity (ROE) To indicate the financial efficiency variable. For this purpose, a seven-point Likert scale (see Table 5-2) has been applied.

5.4.2. Model Design

To examine the impact of competition on companies' performance, the study crafted a model to explore the interconnections between competition and corporate conduct and performance. The SEM diagram, illustrated in Figure 5-1 and created using Amos 29.0 software, embodies this model. The research framework and hypotheses, which were meticulously delineated in Chapter 3, serve as the backbone of this study. A path analysis was devised to examine specific relationships using this significant framework. The process of validating measurements encompasses two sequential phases. Confirmatory factor analysis (CFA) was initially employed to assess reliability and validity. Subsequently, a structural equation model (SEM) was executed to scrutinize the proposed hypotheses.

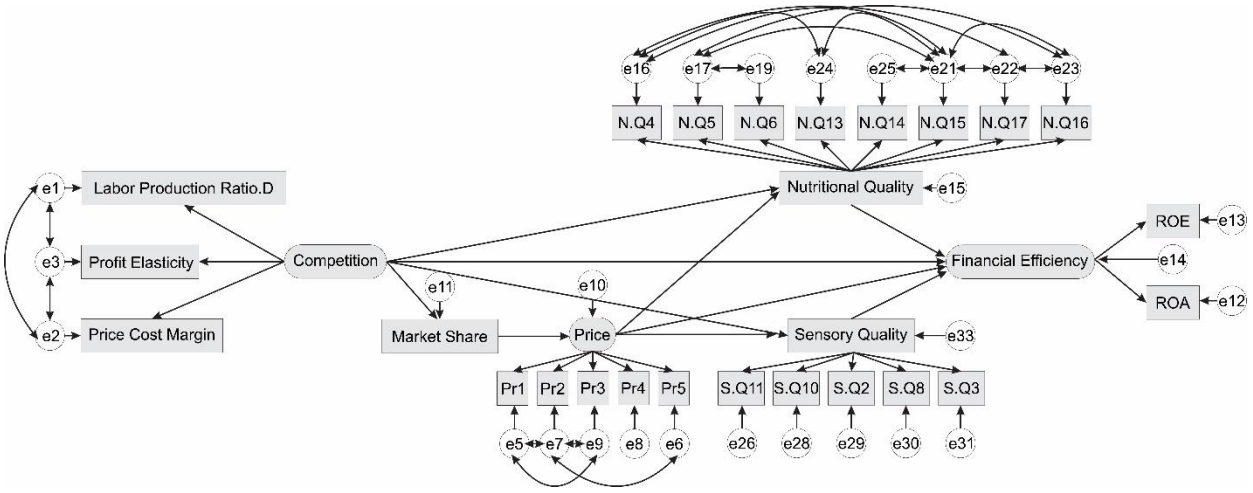

Figure 5.1: SEM Model by Amos

5.4.3. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was instrumental in achieving multiple objectives within the study's measurement model:

1. The analysis, conducted with meticulous precision, allowed for a thorough refinement of construct measurements, addressing potential issues and outliers while ensuring clarity and relevance of indicators. This step, marked by its meticulousness, enhances the precision of the measurement instruments, thereby reinforcing the methodology's robustness. The constructs' reliability was evaluated through measures such as Cronbach's alpha and composite reliability, affirming the measurement model's internal consistency and overall reliability.

2. Establishing construct validity was a key focus, involving an in-depth assessment of convergent validity through factor loadings and average variance extracted and discriminant validity through comparisons of AVE with squared correlations.

Finally, the absence of cross-loadings and uncorrelated errors was confirmed to fortify the theoretical measurement model, ensuring that each indicator contributed distinctly to its intended construct. The application of CFA not only refined measurement precision but also ensured the reliability and validity of the constructs, laying a solid foundation for subsequent analyses. Utilizing the Confirmatory Factor Analysis (CFA) methodology, the theoretical measurement model is fortified with heightened reliability and validity, evidenced through favourable model fit indices like the Goodness of Fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA). This comprehensive CFA procedure affirms the model's robustness and unlocks valuable diagnostic insights, thereby highlighting the value of the CFA methodology.

These diagnostic insights play a crucial role in the iterative process of refining and optimizing model fit indices, guiding nuanced adjustments to the underlying measurement theory. Following best practices, the study embraced a diagnostic approach as Hair et al. (2010) advocated, encompassing a thorough examination of critical elements, including path estimates, standardized residuals, modification indices, and specification searches. Embracing this diagnostic framework facilitates an exploration of the model's intricacies, enabling the identification and rectification of potential vulnerabilities or disparities. Path estimates are scrutinized to ensure the precision of proposed relationships among constructs, while standardized residuals provide a holistic assessment of the model's overall fit. Modification indices serve as navigational tools, directing targeted refinements to ensure optimal alignment between the measurement model and empirical data. The meticulous integration of the diagnostic approach within the CFA process corroborates the model's integrity. It is a proactive strategy, offering a blueprint for ongoing enhancement and fine-tuning of the study's measurement framework.

Table 5.5: Original model, constructs, items, and loading values

Item	Codes	factor loading
Labor Production Ratio	C1	0.41
Profit Elasticity	C2	0.80
Price Cost Margin	C3	0.76
Market Share	MS	1
drumstick price	P1	0.85
Wings Price	P2	0.86
Whole chicken price brand 1	P3	0.80
Whole chicken price brand 2	P4	0.89
Whole chicken price brand 3	P5	0.88
Age	SQ1	0.95
meat color	SQ2	0.85
light reflectance	SQ3	0.88
scalding temperature	SQ4	0.80
scalding time	SQ5	0.88
deployed devices	NQ1	0.74
reception temperature	NQ2	0.76
reception humidity	NQ3	0.76
pre-slaughter fasting time	NQ4	0.67
The water chiller’s length	NQ5	0.60
Air chiller’s length	NQ6	0.60
Deep carcass temperature	NQ7	0.78
meat's PH	NQ8	0.73
Poultry's diet protein	NQ9	0.73
Poultry's diet conjugates linoleic Acid (CLA)	NQ10	0.78
ROA	F1	0.92
ROE	F2	0.92

5.4.3.1. Path Estimates

Hair et al. (2010) state that contrasting estimated loadings is a straightforward approach to identifying potential issues with a measurement theory. Following this approach, any loading value below 0.5 is recommended for removal from the model. A loading should ideally be a minimum of 0.5, preferably 0.7 or greater. Consequently, items with loadings below 0.7 on their corresponding constructs were emitted to achieve favourable model fit indices during the CFA analysis.

Firstly, all of the observed variables were entered into the CFA model. As can be seen in Table 5.1, the loading estimates for some items were less than the ideal cut-off point (0.7). The fit indices for the first model were GFI = 0.853, CFI = 0.930, RMSEA = 0.073, and RMR: 0.0792. Valuable data would be deleted if all item measures with insignificant factor loadings were removed from the scale. Thus, other methods, such as standardized residual and modification indices, have been applied before deleting them to improve the model fit.

5.4.3.2. Standardized Residual and Modification Indices

The measurement model can be further assessed using standardized residuals and modification indices. Hair et al. (2010) state that standard residuals under 2.5 pose no significant concerns, while values exceeding 4.0 indicate unacceptable error levels. Modification indices allow researchers to refine the study's measurement model. Typically, modification indices of approximately four or higher suggest that enhancing the fit is possible by freeing the corresponding path (Hair et al., 2010). As the initial refinement stage did not apply to improve the model fit in this study, the modification indices utilization of standardized residuals was applied.

Table 5.6: modification indices covariances

	M.I.	Par Change
NQ8 <--> NQ9	115.325630	.399456
NQ8 <--> NQ7	15.136961	.159862
C1 <--> C3	40.530490	-.616117
NQ2 <--> NQ9	8.338545	-.161719
NQ2 <--> NQ8	13.370518	-.208970
NQ2 <--> NQ3	17.103018	.323515
NQ2 <--> NQ4	4.961599	-.168820
NQ1 <--> NQ4	5.188068	-.132545
NQ6 <--> NQ9	5.686537	-.112117
NQ6 <--> NQ8	14.357511	-.181802
NQ6 <--> NQ5	4.627208	-.166723
NQ6 <--> NQ1	12.800824	.198417

P2 <--> P5	14.616461	-.164121
P2 <--> P1	9.332322	.123763
C2 <--> C3	64.648480	.491105
C2 <--> C1	11.077639	-.291309

Table 5.6 indicates adjustments to some threshold violations within the model involving specific items such as C1 – C3, NQ1 – NQ4, and others, showing significant values like 40.53 for C1 – C3 and 115.20 for NQ8 – NQ9. These adjustments were made following the application of modification indices, which addressed the disqualified covariances. This method significantly enhanced the model's fit indices, resulting in acceptable values (GFI = 0.880, CFI = 0.958, RMSEA = 0.057), although the GFI was still slightly below the preferred threshold of >0.90.

To further refine the Global Fit Index (GFI), the lowest loading estimates, as shown in Table 5.5, were removed, including items like NQ5, NQ4, C1, and NQ6, with loadings of 0.60, 0.67, 0.41, and 0.60 respectively. Despite removing these items, the integrity of the constructs for nutritional quality and competition remained intact. The nutritional quality construct, for instance, still adequately covers aspects such as deployed devices, reception temperature, and humidity. The removal of item C1 similarly did not detract from the robustness of the competition construct.

Additionally, the confirmatory factor analysis (CFA) model underwent further revisions by eliminating the observed variables with disqualified loadings, as documented in Table 5-5, which outlines the original model indicators, and Table 5.7, which details the modified model, including updated codes and loadings. Following these refinements, the model's fit indices improved markedly, with the retested measurement model showing a GFI of 0.927, a CFI of 0.982, and an RMSEA of 0.041, indicating a more precise alignment with the empirical data. This purification process preserved and possibly enhanced the content validity, offering more accurate and reliable insights for ongoing and future research endeavours.

Table 5.7: modified model, constructs, items and loading values

Structure	Item	Codes	factor loading
Competition	Profit Elasticity	C2	0.80
	Price Cost Margin	C3	0.76
Market Share	Market Share	MS	1
Price	drumstick price	P1	0.85
	Wings Price	P2	0.86
	Whole chicken price brand 1	P3	0.80
	Whole chicken price brand 2	P4	0.89
	Whole chicken price brand 3	P5	0.88
Sensory quality	age	SQ1	0.95
	meat color	SQ2	0.85
	light reflectance	SQ3	0.88
	scalding temperature	SQ4	0.80
	scalding time	SQ5	0.88
Nutritional Quality	deployed devices	NQ1	0.74
	Conjugate Linoleic Acid (CLA)	NQ10	0.78
	Reception humidity	NQ3	0.76
	reception temperature	NQ2	0.76
	Deep carcass temperature	NQ7	0.78
	meat's PH	NQ8	0.73
	Poultry's diet protein	NQ9	0.73
Financial Performance	ROA	F1	0.92
	ROE	F2	0.92

5.4.4. Model Fit Evaluation

Confirmatory factor analysis (CFA) was conducted using the AMOS software to evaluate the proposed measurement models. During this analysis, factor loadings for each variable were closely examined, leading to the removal of four items—NQ4, NQ5, NQ6, and C1—due to their insufficient factor loadings, which were below the threshold of 0.7. This adjustment was necessary to enhance the model's reliability and validity.

Several fit indices were calculated, including CMIN/df, GFI, CFI, TLI, SRMR, and RMSEA, to determine the model's overall adequacy. These indices were evaluated against standard benchmarks for acceptable fit levels, as recommended by Ulman (2001), Hu and Bentler (1998),

and Bentler (1990). The results from these indices indicated that the model performed well, aligning within the acceptable ranges.

Specifically, the six-factor model encompassing competition, market share, price, sensory quality, nutritional quality, and financial performance demonstrated robust statistical adequacy. The outcomes, detailed in Table 5.8, showed the following fit indices: CMIN/df = 1.63, GFI = 0.927, CFI = 0.983, TLI = 0.978, SRMR = 0.0747, and RMSEA = 0.041. These results underscore the model's good fit to the data, confirming the constructs' representational validity.

Table 5.8: model fit criteria

Fit indices	Recommended value	Source(s)	Obtained value
P	insignificant	Bagozzi & Yi (1988)	0
CMIN/df	3 to 5	Ulmann 2001, Schumacker & Lomax 2001	1.63
GFI	>.0.9	Hair et. Al (2010)	0.927
CFI	>.0.9	Bentler (1990)	0.983
TLI	>.0.9	Bentler (1990)	0.978
SRMR	<.0.08	Hu & Bentler (1998)	0.0747
RMSEA	<.0.08	Hu & Bentler (1998)	0.041

Various methods can be utilized to evaluate a model's accuracy, reliability, and validity, focusing on measurement precision. This study assessed construct validity by examining convergent and discriminant validity, as recommended by Hair et al. (2010). To validate the construct's reliability, composite reliability (CR) was employed. Consequently, the statistical analysis provided robust evidence supporting reliability, discriminant, and convergent validity.

5.4.5. Reliability and Construct validity

Ensuring the reliability and validity of a measurement model is paramount in empirical research, with various established methods available to assess these crucial dimensions. This study's construct validity and reliability evaluation drew on recommended methodologies, providing a robust foundation for the subsequent statistical analysis. Construct validity, a cornerstone of measurement model evaluation was comprehensively addressed by examining convergent and discriminant validity, following the guidelines by Hair et al. (2010). The assessment of convergent validity involved scrutinizing factor loadings, average variance extracted (AVE), and composite reliability (CR) within each construct. Hair et al. (2010) argue that convergent validity is established when substantial factor loadings, AVE exceeds a designated threshold (typically 0.5), and CR demonstrates internal consistency. In this study, the utilization of CR, calculated as the ratio of the squared sum of factor loadings to the sum of the squared factor loadings and error variances, contributed to the confirmation of construct reliability.

The methodological approach employed in this study aligns with the recommendations of previous scholars in the field, but it also has practical implications. Confirmatory Factor Analysis (CFA) was the statistical tool to provide empirical evidence supporting the measurement model's reliability, discriminant, and convergent validity. CFA allows for the simultaneous estimation of multiple interrelated constructs, aiding in assessing their relationships and the overall model fit. The significance of this approach lies in its ability to statistically confirm the proposed structure of the model and ascertain the adequacy of the chosen measurement indicators. By conducting a CFA, the study employed path estimates, standardized residuals, modification indices, and specification searches to scrutinize and refine the measurement model (Brown, 2015).

Integrating these methodological elements, guided by established scholars such as Hair et al. (2010) and Brown (2019), not only strengthens the theoretical framework but also provides a comprehensive validation of the measurement model's reliability and construct validity.

5.4.5.1. Composite Reliability

Reliability, denoting a construct's stability or consistency over time, is a pivotal aspect of measurement model evaluation (O'Leary-Kelly & Vokurka, 1998). This study gauged reliability using two established metrics: Cronbach's alpha and Composite Reliability (CR). For a measurement model to be deemed reliable, the CR, also termed construct reliability, ideally should surpass 0.7, aligning with the recommendation by Bagozzi et al. (1991). The CR computation employed the formula proposed by Bagozzi et al. (1991), underscoring the model's internal consistency. The choice of this method in this PhD thesis reflects a commitment to robust construct measurement. The utilization of CR aligns with the scholarly consensus on its efficacy in evaluating the reliability of the measurement model, ensuring the trustworthiness of the study's findings.

$$CR = \frac{\left(\sum_{i=1}^{n} \lambda_i\right)^2}{\left(\sum_{i=1}^{n} \lambda_i\right)^2 + \sum_{i=1}^{n} \delta_i} \quad (5\text{-}1$$

The λ_i indicates the standardized factor loadings. δ_i depicts the error variance terms for construct, and i represents the number of items. This formula calculated CR for the variety control strategy (table 5.9). The variety control strategy construct met all three criteria for Composite Reliability (CR) (CR > 0.7), demonstrating satisfactory stability. Subsequently, an examination of CRs across all six constructs revealed values of 0.745 for competition, 0.745 for sensory quality, 0.858 for

nutritional quality, 1.00 for market share, and 0.921 for financial efficiency. These findings align with the recommended standards, particularly the guideline by Bagozzi et al. (1991), which suggests that CR values ideally exceed 0.7. The collective results affirm that each construct in the proposed model exhibits acceptable internal consistency, meeting the requirements of composite reliability (CRs > 0.894). This methodological choice ensures a robust reliability assessment in the context of the study's objectives (O'Leary-Kelly & Vokurka, 1998; Bagozzi et al., 1991).

5.4.5.2. Convergent Validity

Convergent validity is a crucial aspect of assessing the reliability and validity of measurement instruments in research. According to Hair et al. (2010), convergent validity refers to the extent to which two measures of the same construct are positively correlated. In other words, it assesses whether different methods of measuring the same concept produce similar results. This concept is particularly relevant when dealing with multi-item scales and constructs in social sciences and business research.

Studies commonly rely on two key indicators to evaluate convergent validity: factor loading and average variance extracted (AVE). Factor loading represents the strength and direction of the relationship between an observed variable and its underlying latent construct in a measurement model. Hair et al. (2010) suggest that standardized loading estimates for all items in the model should ideally surpass the threshold of 0.7 to ensure adequate convergence. However, a more lenient threshold of 0.5 is considered acceptable. Factor loading can be interpreted as the correlation between an item and the construct it is intended to measure. High factor loadings indicate that the item effectively captures the construct's variance. Studies commonly inspect factor loadings during confirmatory factor analysis (CFA) to ensure that each item contributes

meaningfully to the latent construct (Brown, 2015). The average variance extracted (AVE) assesses the variance captured by the latent construct relative to the measurement error (Hair et al., 2010). AVE is calculated by squaring the standardized factor loadings and then averaging these values for each construct. Higher AVE values suggest that a more significant proportion of the variance is attributable to the construct rather than measurement error.

Ensuring convergent validity is crucial as it enhances confidence in the robustness of the measurement model, indicating that the items are effectively measuring the intended construct and not unrelated factors. The calculation of AVEs can be performed using the formula recommended by Bagozzi et al. (1991) as follows:

$$AVE = \frac{\sum_{i=1}^{n} \lambda_i^2}{\sum_{i=1}^{n} \lambda_i^2 + \sum_{i=1}^{n} \delta_i} \quad (5\text{-}2$$

The λ_i indicates the standardized factor loadings. δ_i depicts the error variance terms for a construct, and i represents the number of items. The construct for the variety control strategy successfully meets all three criteria for convergent validity, as evidenced by an Average Variance Extracted (AVE) greater than 0.5. This calculation was applied across six constructs: competition, price, sensory quality, nutritional quality, market share, and financial efficiency, which resulted in AVE scores of 0.60, 0.74, 0.65, 0.51, 1.00, and 0.85, respectively. According to the standards set by Bagozzi et al. (1991) and Hair et al. (2010), the AVE for all constructs ranged from 0.51 to 1.00, surpassing the minimum acceptable level of 0.5.

Furthermore, all item loadings within the model were above 0.7 and statistically significant at the 0.01 level, reinforcing the constructs' convergent validity. This indicates a strong alignment of items with their respective constructs, confirmed by their factor loadings exceeding 0.7 and

satisfactory AVE values. Details on factor loadings, error variance terms, composite reliabilities (CRs), AVEs, and overall fit indices are provided in Table 5.9.

Table 5.9: confirmatory factor analysis for reliability and validity

Structure	Item	Codes	Factor loading	CR	AVE
Competition	Profit Elasticity	C2	0.80	0.77	0.64
	Price Cost Margin	C3	0.76		
Price	drumstick price	P1	0.85	0.934	0.75
	Wings Price	P2	0.86		
	Whole chicken price brand 1	P3	0.80		
	Whole chicken price brand 2	P4	0.89		
	Whole chicken price brand 3	P5	0.88		
Sensory quality	Age	SQ1	0.95	0.91	0.67
	meat color	SQ2	0.85		
	light reflectance	SQ3	0.88		
	scalding temperature	SQ4	0.80		
	scalding time	SQ5	0.88		
Nutritional quality	deployed devices	NQ1	0.74	0.93	0.55
	Conjugate Linoleic Acid (CLA)	NQ10	0.78		
	Reception humidity	NQ3	0.76		
	reception temperature	NQ2	0.76		
	Deep carcass temperature	NQ7	0.78		
	meat's PH	NQ8	0.73		
	Poultry's diet protein	NQ9	0.73		
Financial performance	ROA	F1	0.92	0.921	0.85
	ROE	F2	0.92		

5.4.5.3. Discriminant Validity

Discriminant validity, as defined by Hair et al. (2010, p. 778), signifies how distinct a construct is from other variables. The study followed the procedures delineated by Fornell and Larcker (1981) to confirm discriminant validity. This approach involves comparing a construct's Average Variance Extracted (AVE) with the square of the correlation estimate between that construct and any others in the model. It is essential for the AVE to consistently exceed the squared inter-construct correlation estimates (SIC) to establish discriminant validity.

This research revealed that the correlation of sensory and nutritional quality with competition (0.82, 0.86) is above the squared root of AVE (0.80). This issue could be resolved by removing the indicators with lower loading factors (below 0,75); however, since the deviation is insignificant and nutritional and sensory quality are considered quality, it has been decided not to remove them. Table 5.10 illustrates correlations between each construct's latent variables and AVEs with means and standard deviations.

Table 5.10: inter - construct correlation estimates and related AVEs

	competition	Price	Sensory Quality	Nutritional Quality	Market Share	Financial Efficiency
Competition	0.80					
Price	0.78	0.87				
Sensory Quality	0.82	0.76	0.87			
Nutrition Quality	0.86	0.74	0.86	0.75		
Market Share	0.61	0.41	0.65	0.73	1	
Financial Efficiency	0.27	0.64	0.69	0.39	0.44	0.93

5.5. Chapter Summary

This section presents the results from the analysis of the collected data, starting with an in-depth descriptive examination that includes demographic information and characteristics related to the response rate. It then addresses initial concerns associated with survey research, such as issues with normality, missing data, and potential biases. Structural Equation Modeling (SEM) was applied to investigate the effect of competition on the company's operational capabilities. This modelling also aimed to identify ways to lessen negative impacts on these capabilities. The results

of Confirmatory Factor Analysis (CFA) conducted using AMOS 29 are also shared here, assessing the scales used in the research model for dimensionality, reliability, and validity, including convergent and discriminant validity.

The SEM analysis evaluated the impact of competitive intensity on the firm. Confirmatory Factor Analysis was further used to reinforce the methodology's robustness. This comprehensive approach ensures a robust understanding of how competition influences firm performance and strategic adjustment, providing critical insights for business strategy optimization.

Chapter 6

Hypothesis Testing

6.1. Introduction

The preliminary research question investigates the interplay between competition and critical elements such as quality, price, market share, and financial efficiency. The independent variable is competition, while the mediator and dependent variables encompass market share, price, sensory quality, nutritional quality, and financial efficiency.

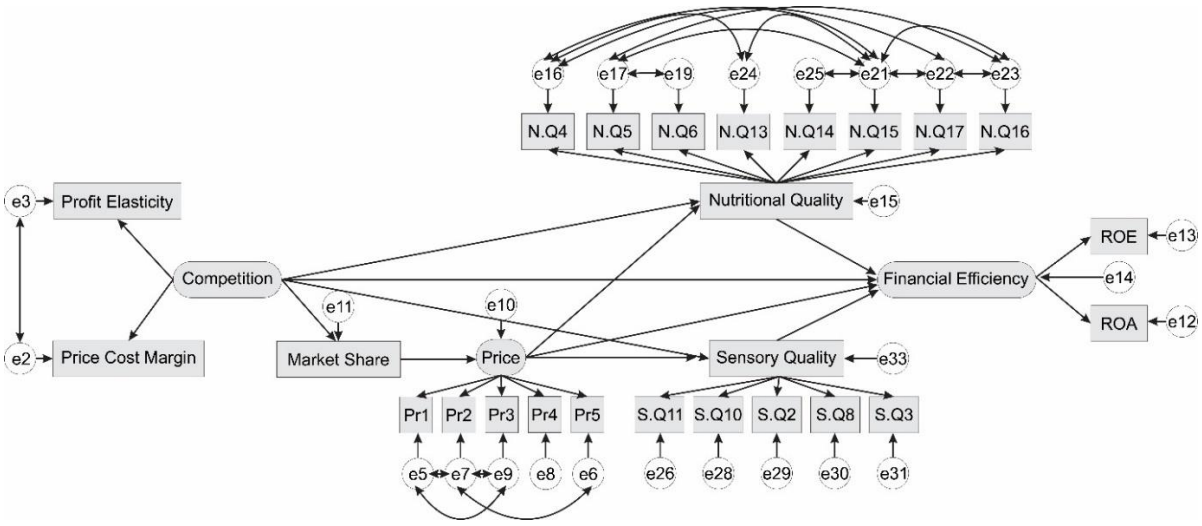

Figure 6.1: Improved Structural Equation Model

The research aims to develop an aggregated measurement covering the dimensions of these constructs based on a comprehensive literature review. The resulting measurements will be analyzed through regression analysis, where changes in dependent variables are associated with and dependent on variations in competition as an independent variable. Although the model primarily employs a linear regression approach, recognizing the relationships' nonlinear nature necessitates exploring relationships under a nonlinear regression model (Rhinehart, 2016). The outcomes from linear or nonlinear regression models are presented graphically as two-dimensional graphs (section 6.4), with variables plotted on the axes, anticipating predominantly curved graphs to identify optimum points.

Confirmatory analyses (CFAs) were a crucial part of this study. They were conducted to scrutinize the conceptual framework variables and test the discriminant validity of indicators. Multiple CFA indices were used to assess data suitability, including RMSEA, Chi-Square, CFI, GFI, SRMR, NFI, IFI, and CMIN. The study leans towards RMSEA due to its sensitivity to sample size, favouring values ≤ 0.05 for optimal fit. Internal consistency was evaluated through composite reliability (CR), indicating reliability for indicator variables. The Average Variance Extracted (AVE) exceeding the 0.5 threshold ensures data validity.

The data analysis in this study is robust, adopting the Maximum Likelihood (ML) method. This method is particularly suitable for fixed effects, ensuring the reliability and validity of our findings. The hypotheses were tested from the conceptual framework chapter, making necessary adjustments or exclusions to ensure the relevance of the indicators.

In summary, the research employs a rigorous analytical approach, combining regression analysis, confirmatory analyses, and data modification steps to examine relationships between variables and refine the conceptual framework and structural model.

6.2. Structural Equation model results

Table 6.1 displays the results of a structural equation model, a statistical method used to test the relationships among variables. Competition is a significant negative predictor of market share ($p < .001$). Competition is a significant negative predictor of Price ($p < .001$). Market share is a significant positive predictor of Price ($p < .001$). Competition is a significant positive predictor of sensory Quality ($p < .001$). Price is a significant negative predictor of sensory Quality ($p < .001$). Competition is a significant negative predictor of nutritional Quality ($p < .001$). Price is a significant positive predictor of nutritional Quality ($p < .001$). Competition is a non-significant positive predictor of financial efficiency ($p = 0.38 > 0.05$). Sensory Quality is a significant positive predictor of financial efficiency ($p < .001$). Price is a significant positive predictor of nutritional Quality ($p < .001$). Nutritional Quality is a significant positive predictor of financial efficiency ($p = .049 < .05$). Price is a significant negative predictor of financial efficiency ($p < .001$).

Table 6.1: Regression Weights

			Estimate	P	Label
Competition	--- >	Market Share	- 0.860806	< 0.001	par_4
Market Share	--- >	Price	0.673402	< 0.001	par_7
Competition	--- >	Sensory Quality	0.387289	< 0.001	par_2
Competition	--- >	Nutritional Quality	- 0.44474	< 0.001	par_3
Price	--- >	Sensory Quality	- 0.5128	< 0.001	par_8
Price	--- >	Nutritional Quality	0.330225	< 0.001	par_9
Price	--- >	Financial Efficiency	- 0.62769	< 0.001	par_10
Nutritional Quality	--- >	Financial Efficiency	0.666725	0.049	par_11
Sensory Quality	--- >	Financial Efficiency	0.939847	< 0.001	par_12
Competition	--- >	Financial Efficiency	0.169379	0.381	par_36

6.3. Indirect Effects

The findings in Table 6.2 indicate that competition has a notable negative indirect impact on pricing. Consequently, market share acts as a negative mediator between competition and pricing. Conversely, the data reveal a significant positive indirect influence of competition on the sensory quality of products. In this instance, price and market share are positive mediators, enhancing the connection between competition and sensory quality. Additionally, competition adversely affects nutritional quality through a significant negative indirect effect, with price and market share as harmful mediators in this relationship.

Furthermore, the analysis demonstrates a positive indirect effect of competition on financial efficiency, with sensory quality, price, market share, and nutritional quality collectively mediating this positive correlation. On the other hand, market share has a significant negative indirect effect on sensory quality, with price negatively mediating this relationship. Regarding nutritional quality, market share exhibits a significant positive indirect effect, with price again as a positive mediator.

Regarding financial efficiency, the results indicate a significant negative indirect effect of market share, where price, sensory quality, and nutritional quality negatively mediate this relationship. Lastly, the impact of price on financial efficiency is significantly negative, mediated negatively by both sensory and nutritional quality.

These findings underscore the complex interplay between market dynamics and product characteristics, highlighting the role of mediating variables in shaping business outcomes.

Table 6.2: Indirect Effects

	Competition	Market Share	Price	Nutritional Quality	Sensory Quality	Financial Efficiency
Market Share						
Price	- 0.579669*					
Nutritional Quality	- 0.191421*	0.222375*				
Sensory Quality	0.297255*	- 0.345322*				
Financial Efficiency	0.583077*	- 0.598975*	-0.261785*			

6.4. The Trad-offs between Competition and Performance Factors

In this research, SPSS was utilized to analyze the relationships outlined in the conceptual framework, calculating the formulas and measuring the fit of each with R-squared values. A higher R-squared value indicates a stronger correlation between variables, reflecting a more accurate model fit. From the evaluated models, which included linear and quadratic equations, the model yielding the highest R-squared was selected for further analysis. The primary goal is determining the optimal point in the competition landscape where the model predicts the lowest price alongside the highest market share, sensory quality, nutritional quality, and financial efficiency, fulfilling society's welfare and firms' interests.

$$z=y1+y2+y3+y4+y5; \quad (6\text{-}1$$

Where:

$$y1=w1*(6.54-0.76*x) \quad (6\text{-}2$$

$$y2=w2* - 0.03\ X^2 +1.36\ X – 0.6 \quad (6\text{-}3$$

y3=w3*(-0.28+1.36*x-0.05*x.^2) (6-4

y4=w4*(7.38-1.01*x) (6-5

y5=(7*w5)./(8.05-1.59*x+0.08*x.^2) (6-6

X represents competition, y1 nutritional quality, y2 financial efficiency, y3 sensory quality, y4 market share, and y5 price. W_i represents the weight of each construct.

Table 6.3: Linear and Quadratic R squares reflecting the constructs relationships.

Items	Equation	R Square
Competition - financial efficiency	linear	0.548
	quadratic	0.596
Competition – market share	linear	0.467
	quadratic	0.467
Competition - price	linear	0.525
	quadratic	0.604
Competition – sensory quality	linear	0.552
	quadratic	0.655
Competition – nutritional quality	linear	0558
	quadratic	0.558

According to Table (6.3), there is no significant difference between the linear and quadratic R squares of the competition-market share and competition-nutritional quality equations; therefore,

the linear equation has been chosen to reflect those relationships. However, the quadratic R squares for competition-financial efficiency, competition-price, and competition-sensory quality are significantly higher than the linear R square. Therefore, the quadratic formula is applied to them.

Table 6.4: The linear and quadratic equations reflecting the relationship between constructs.

Variables		Formula
X = Competition	Y = Financial Efficiency (linear)	Y = 1.15 X – 0.23
	Y = Financial Efficiency (Quadratic)	Y = - 0.03 X^2 +1.36 X – 0.6
	Y = Market Share (linear)	Y = - 1.01 X + 7.38
	Y = Market Share (quadratic)	Y = - 0.01 X^2 – 1.08 X +7.5
	Y = Price (linear)	Y = - 0.95X +6.9
	Y = Price (quadratic)	Y = 0.08 X^2 – 1.59 X + 8.05
	Y = Sensory Quality (linear)	Y = 0.96X +0.4
	Y = Sensory Quality (quadratic)	Y = - 0.05X^2+1.36X – 0.28
	Y = Nutritional Quality (linear)	Y = - 0.76 X +6.54
	Y = Nutritional Quality (quadratic)	Y = - 004X^2 – 0.73X +6.49

Four hypothetical scenarios have been considered to evaluate the accumulative effect of competition. Since, contrary to expectations and literature reviews, the nutritional quality of poultry meats decreases as competition increases, Table 6.5 reflects the scenarios in which the weight of nutritional quality (W1) gradually increases to reflect the significance of this declining effect on company performance.

Table 6.5: Hypothetical scenarios with various weights for each construct

	W1	W2	W3	W4	W5
Scenario No. 1	1	1	1	1	1
Scenario No.2	2	1	1	1	1
Scenario No. 3	3	1	1	1	1
Scenario No. 4	4	2	1	2	3

Figure 6.2 illustrates the first scenario where all items have equal weight. According to Figure 6.2, increasing competition has an accumulative effect and is beneficial. However, from six degrees upward, the slope of the graph increases significantly, suggesting a more satisfactory effect is expected for the highest competition level in the market.

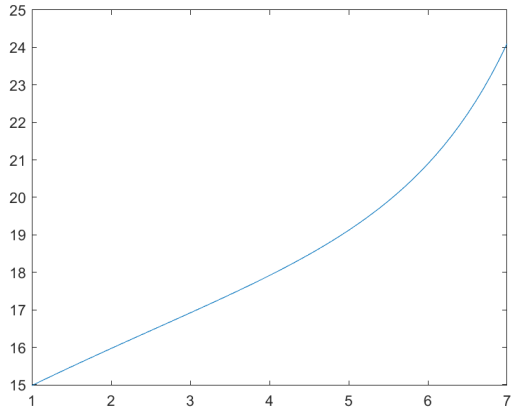

Figure 6.2: Accumulative relationship (scenario 1)

Figure 6.3 represents the second scenario where all items were weighted one while nutritional quality has a double weight equal to two. This scenario reflects the same result as scenario one,

with tiny differences. The slope of the graph is less than scenario one for lower competition levels from one to five, and the slope increases significantly from five degrees upward. If the nutritional quality is twice the weight of the other items, a low level of competition cannot be productive and bring significant accumulated outcomes. Keeping the competition level somewhere between five and seven degrees is better.

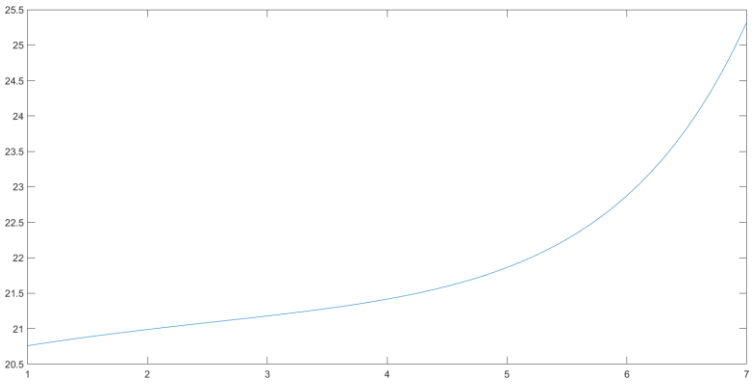

Figure 6.3: Accumulative relationships (scenario 2)

Figure 6.4 suggests that if we increase the importance of nutritional quality by weighing three, while the other items were weighted one, the result will be significantly different. In this scenario, the medium level of competition is unproductive and serves neither the firms' interest nor society. The accumulated outcome is more sophisticated, either with less incentive or very tough competition.

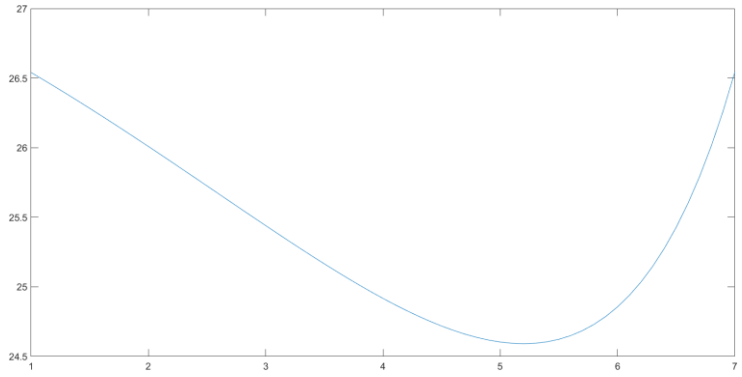

Figure 6.4: Accumulative relationship (scenario 3)

Lastly, figure 6.5 simulates the scenario where nutritional quality (W1) is weighted four, financial efficiency (W2) is weighted two, sensory quality (W3) is weighted one, market share (W4) is weighted two, and price (W5) is weighted three. This scenario reflects a close outcome to scenario two. The difference is that increasing competition harms the accumulated outcome in the lower competition levels from one to four, and the competition increase positively affects the accumulative outcome only after level four. This scenario suggests that a lower competition level has a destructive effect on the accumulative outcome. The positive effect appears only in competitions higher than four, and the positive effect significantly increases upward.

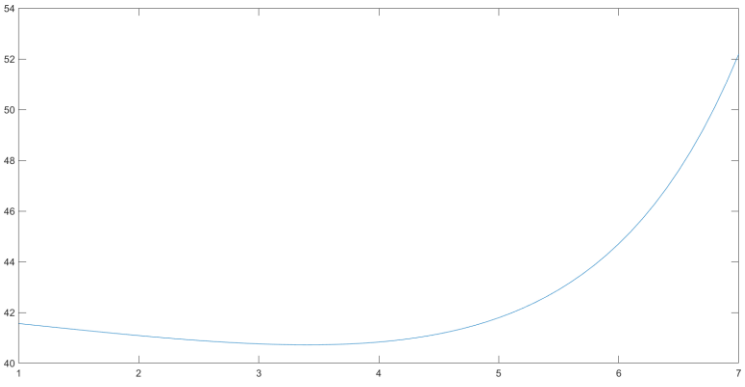

Figure 6.5: accumulative relationship (scenario 4)

6.5. Chapter Summary

This section elucidated the findings derived from the data analysis. It commenced with a comprehensive structural equation result encompassing demographic details and the regression weights. Subsequently, initial concerns about the interplays, such as the indirect effect of competition on price, quality and financial efficiency, were outlined. Lastly, structural equation modelling (SEM) was utilized to examine the hypothesis developed in chapter three.

Table 6.6: Hypothesis test results

Hypothesis	Description	Estimated Coefficient	Supported/Rejected
Hypothesis 1a (H1a)	Higher competition in the poultry market is negatively associated with the market share of individual firms.	*-0.86 (direct)*	*supported*
Hypothesis 1b (H1b)	Higher competition in the poultry industry leads to a decrease in market share, subsequently resulting in a strategic adjustment of prices, with firms lowering prices to counter market share losses.	*-0.57 (indirect)*	*supported*
Hypothesis 2a (H2a)	Higher competition leads to improved sensory quality in poultry meat as firms try to enhance the overall consumer experience in response to competitive pressures.	*0.38 (direct)*	*supported*
Hypothesis 2b (H2b)	Higher competition in the poultry industry leads to lower market share, subsequently to maintain the market share companies reduce prices and improve sensory quality	*0.30 (indirect)*	*supported*
Hypothesis 2c (H2c)	The competition-driven landscape in the poultry industry, characterized by a focus on precision nutrition and innovative processing, ultimately enhances the nutritional quality of poultry meat.	*-0.44 (direct)*	*Rejected*
Hypothesis 2d (H2d)	Higher competition in the poultry industry leads to lower market share, subsequently to maintain the market share companies reduce prices and improve nutritional quality	*-0.19 (indirect)*	*Rejected*

Hypothesis 3a (H3a)	A lower price leads to better financial efficiency in the poultry industry.	*-0.63 (direct)*	*supported*
Hypothesis 3b (H3b)	Higher sensory quality of chicken meat is positively correlated with increased financial efficiency in the poultry market.	*0.93 (direct)*	*supported*
Hypothesis 3c (H3c)	Higher nutritional quality of chicken meat is positively correlated with increased financial efficiency in the poultry market.	*0.67 (direct)*	*supported*
Hypothesis 3d (H3d)	In the poultry industry, lower prices impact both sensory and nutritional quality, and higher quality in these dimensions mediates the relationship between price and financial efficiency, contributing to the overall economic health of poultry companies.	*-0.26 (indirect)*	*supported*
Hypothesis 4 (H4)	Higher competition positively influences better financial efficiency in the poultry industry.	*0.58 (indirect)*	*supported*
Hypothesis 5 (H5)	The optimal point of competition varies based on the emphasis given to each firm's conducts and performance factors—market share, price, sensory quality, nutritional quality, and financial efficiency.		*supported*

Chapter 7

Discussion of Results

7.1. Introduction

This chapter delves deeper into the findings from the empirical analysis presented in Chapters 5 and 6, aiming to provide a comprehensive discussion that explicitly links these findings to the research questions introduced at the beginning of the thesis. These research questions revolve around understanding the impact of competition on financial efficiency, the mediating role of company conduct, and how market structure influences this conduct within the poultry industry. Moreover, this chapter will explore how the findings contribute to a broader understanding of the Structure-Conduct-Performance (SCP) theory, specifically in the poultry industry's context, which has unique market dynamics and challenges.

7.2. Impact of Competition on Price

The research findings reveal that market structure profoundly impacts companies' conduct within the poultry meat market. This section examines how increased competition forces companies to alter their behaviour, particularly in pricing and market share.

The study identifies a significant relationship between heightened competition and changes in pricing strategies. Heightened competition correlates with reduced companies' market share, as evidenced by a substantial estimated coefficient of -0.86. This reduction in market share compels firms to adjust their pricing strategies, typically lowering prices to maintain competitiveness and prevent further market share erosion. This adjustment directly responds to the pressure exerted by competitive forces, reflecting the need for firms to balance immediate financial pressures with long-term market positioning.

The SCP theory suggests that competitive market structures significantly influence firms' conduct, particularly in setting prices (Porter, 1980). The findings support this by showing that companies in more competitive environments must strategically lower prices to remain viable, even at the expense of profit margins. The negative relationship between competition and market share also highlights the challenging environment in which these firms operate, where retaining market share becomes increasingly tricky as competition intensifies.

Furthermore, the study delves into the indirect impact of competition on pricing, revealing the complex interplay between these factors. The research shows that the negative effect of competition on market share subsequently influences firms' pricing strategies. As firms strive to maintain or enhance their market share amidst increased competition, they often lower prices. While effective in the short term, this strategy can lead to significant long-term challenges, including reduced profitability and potential market saturation. The indirectly estimated coefficient of -0.58 underscores the significant role competition plays in shaping pricing dynamics through its impact on market share. This finding suggests that companies are engaged in a delicate balancing act, where they must weigh the benefits of competitive pricing against the potential

drawbacks of reduced margins. This intricate balance is a testament to the complex and often unpredictable nature of market forces in the poultry industry.

These findings validate the SCP theory by illustrating the complex relationship between market structure, firm conduct, and performance in the poultry industry. The research highlights firms' strategic challenges in aligning their pricing and market share objectives with competitive pressures. This understanding contributes to a more detailed exploration of SCP theory, particularly in how competitive strategies influence market dynamics and pricing within the poultry industry. Moreover, the findings suggest that firms operating in highly competitive environments must be agile and responsive to market changes, constantly adjusting their strategies to maintain a competitive edge.

7.3. Impact of Competition on Quality

This section examines the effect of competition on two critical aspects of product quality: sensory quality and nutritional quality. Both are essential components of a company's conduct and are significantly influenced by the competitive pressures within the market.

7.3.1. Impact of Competition on Sensory Quality

The research result, which examines the impact of competition on poultry meat's sensory quality using profit elasticity (PE) and price cost margin (PCM), reveals a significant finding. It was found that increased competition is associated with improved sensory quality (0.39 estimated coefficient). This finding aligns with economic theories that suggest intensified market pressures

compel producers to enhance product attributes to remain competitive (Porter, 2008; Yeung & Coe, 2015). In competitive markets, where price setting is constrained, differentiation through non-price attributes like sensory quality becomes crucial (Nevo, 2001).

The correlation between heightened competition and factors like lower slaughter age and improved meat colour underlines the complex relationship between market forces and production decisions. These improvements are part of broader efforts to meet consumer expectations and innovate production processes, such as optimizing scalding temperature and time to maintain profitability while enhancing product quality (Hartley et al., 2013). Such strategies are essential for producers to differentiate their products in markets where consumers highly value visual appeal and sensory attributes. These dynamics support the Structure-Conduct-Performance (SCP) theory, which posits that market structure influences firm behaviour and performance. It suggests that heightened competition drives producers to improve product attributes and operational efficiencies, leading to better market performance (Porter, 1980).

This study also delves into the indirect effects of competition on sensory quality. Despite reduced market share and lower product prices, intensified competition still leads to higher sensory quality of chicken meat. This paradoxical relationship underscores the SCP theory's perspective that competitive markets prompt firms to enhance sensory quality as a differentiator. The strategic trade-offs firms make under competitive pressure, such as focusing on cost-efficiency alongside sensory enhancement, have significant implications for the poultry industry. Firms are motivated to minimize costs and maximize performance, investing in processing improvements and diversifying product lines to cater to varying sensory preferences. This commitment to continuous quality improvement and stringent quality control measures highlights the competition's role in

promoting a culture of excellence within the poultry industry, incentivizing firms to innovate and optimize their operations.

7.3.2. Impact of Competition on Nutritional Quality

In contrast to the positive impact on sensory quality, the study reveals a significant negative correlation between competition and nutritional quality, with a loading factor of -0.44. This suggests that the competitive environment might drive firms to adopt practices that compromise the nutritional content of their products. For example, the pressures to maintain cost efficiency can lead to reduced usage of advanced technological applications and adjustments in dietary compositions, which are crucial for maintaining nutritional quality (Simmons et al., 2006; Nagpal et al., 2007; Shokryazdan et al., 2017).

This finding challenges traditional interpretations of SCP theory, which typically associates increased competition with enhanced consumer welfare. Contrary to these expectations, the results indicate that heightened competition can lead to a decline in nutritional quality. This marks a significant departure from the theory's assumption that competition inherently boosts consumer welfare. The study suggests that firms prioritize cost reductions over maintaining high nutritional standards when faced with intense competitive pressures. This strategic choice is often driven by the need to offer lower prices to price-sensitive consumers, which, while effective in maintaining market share, can lead to a deterioration in product quality.

Furthermore, the negative indirect effect of competition on nutritional quality, with an estimated coefficient of -0.19, implies that firms might use cheaper feed ingredients or alter poultry diets as a cost-saving measure. While beneficial in the short term, these strategies can have long-term repercussions on product quality and consumer trust. The focus on cost-cutting to remain

competitive highlights a critical tension between profitability and quality that firms must navigate in highly competitive markets.

The study contributes to SCP theory by emphasizing the trade-offs firms must navigate between different aspects of product quality in competitive markets. Competition drives improvements in sensory quality, but it may also lead to compromises in nutritional quality, suggesting that the SCP framework requires refinement to understand these dynamics better. The findings highlight the importance of strategic decision-making in maintaining overall product quality while managing costs in competitive environments. This contribution to SCP theory is particularly relevant in industries like poultry, where product quality is a significant factor in consumer decision-making.

7.4. Price – Financial Efficiency Relationship

This section explores how companies' conduct—specifically pricing mediates the relationship between market structure and financial efficiency. The findings reveal that how firms adjust their conduct in response to competitive pressures is crucial in determining their financial outcomes.

The research shows that competition significantly influences companies' pricing strategies and market share, which, in turn, impacts their financial efficiency. For instance, as competition intensifies, companies are often compelled to reduce prices to maintain market share, which can erode profit margins. However, the study also reveals that firms prioritize enhancing sensory quality over nutritional quality in response to these pressures. This strategic focus on sensory quality is driven by its more substantial positive impact on financial efficiency, as reflected by the estimated coefficient of 0.93, compared to 0.67 for nutritional quality.

By strategically managing pricing, market share, and product quality, firms can mitigate some negative financial impacts of increased competition. For example, firms that focus on improving sensory quality can command higher prices, offsetting potential losses from reduced margins due to lower market share. This finding underscores the importance of conduct as a mediator between market structure and financial outcomes, highlighting the complex interplay between these variables.

The study also suggests that firms must adopt a dynamic approach to managing their conduct in response to changes in market structure. This includes continuously monitoring market trends, adjusting pricing strategies, and investing in product quality enhancements that align with consumer preferences. Effectively mediating the relationship between competition and financial efficiency through strategic conduct is crucial to long-term success in competitive markets. Moreover, the findings indicate that firms more adept at balancing these factors tend to achieve better financial outcomes. This highlights the critical role of management in navigating the complexities of competitive markets, where the ability to adapt to changing market conditions quickly can make the difference between success and failure.

The study enhances SCP theory by demonstrating how firm conduct mediates the relationship between competition and financial efficiency. The findings provide a more nuanced understanding of the mechanisms through which market structure influences financial performance, particularly in industries where competition is intense and firms must carefully balance multiple aspects of conduct to optimize outcomes. This contribution is precious in the context of the poultry industry, where the competitive landscape is constantly evolving, and firms must remain agile to maintain their competitive advantage.

7.5. Impact of Competition on Financial Efficiency

This section directly addresses how increased competition impacts companies' financial efficiency. The research shows that while direct competition does not have a statistically significant direct effect on financial efficiency, it profoundly influences firm performance through indirect mechanisms, as indicated by an estimated coefficient of 0.58.

The SCP theory suggests that less concentrated markets lead to heightened competition, pushing firms to adopt strategies that enhance performance, such as pricing adjustments and quality improvements (Weiss, 1978). This study finds that in the poultry industry, firms tend to prioritize sensory quality over nutritional quality because improvements in sensory quality have a more pronounced positive impact on financial efficiency (0.93) compared to nutritional quality (0.67).

Firms strategically reallocate resources to enhance sensory quality, which helps compensate for potential negative financial impacts from reduced nutritional quality, thereby optimizing overall financial efficiency. This behaviour aligns with the SCP theory's assertion that competitive markets drive firms to focus on operational efficiency, even if this does not directly translate into higher profitability. Conversely, in more concentrated markets, firms achieve higher profits but with less emphasis on efficiency, as they face reduced pressure to improve operations or respond dynamically to consumer preferences (Ferguson, 1994). The study further highlights the importance of strategic resource allocation in enhancing financial efficiency in competitive markets. Firms that invest in improving sensory quality often offset the negative impacts of competition on profit margins by commanding higher prices for higher-quality products. This strategy helps maintain financial efficiency and strengthens the firm's market position by building consumer loyalty and trust. Additionally, the research suggests that firms operating in less concentrated markets must be particularly vigilant in managing their cost structures to remain

competitive. This includes continuously seeking opportunities to optimize operations, reduce waste, and improve productivity. The ability to effectively manage these aspects of the business is critical to maintaining financial efficiency in the face of increasing competition.

The study supports SCP theory by demonstrating that market structure influences firm behaviour, affecting financial efficiency. The findings highlight the importance of strategic conduct in shaping financial outcomes in competitive markets. By focusing on how firms adjust their strategies in response to competition, this research enriches the understanding of the intricate dynamics between market structure, conduct, and financial performance in the poultry industry. This contribution is particularly relevant in industries where competition is intense, and firms must remain agile and responsive to maintain their competitive edge.Top of Form

7.6. Chapter Summary

The primary objective of this chapter was to examine and contrast the outcomes derived from the statistical analysis of the research data. The chapter began by elucidating the implications of competition on companies' conduct and performance, drawing insights from the variables that define the central concepts. It then explored the direct and indirect connections between these constructs, as outlined in the conceptual framework, explicitly linking the findings to the research questions and demonstrating how they contribute to a deeper understanding of SCP theory in the context of the poultry industry.

Chapter 8

Conclusions

8.1. Introduction

This chapter provides a comprehensive summary of the research conducted, emphasizing the outcomes and significance of the work. It begins by revisiting the research questions initially presented in Chapter 1, then delineates the principal discoveries and contributions of the research. Lastly, it acknowledges the limitations inherent in this study and offers insights for potential future research endeavours.

8.2. Research Findings from Research Questions

The primary purpose of this research was to assess the impact of competition on business conduct and performance in the poultry industry and to evaluate how different aspects of company conduct mediate these effects. A conceptual model was introduced to examine the cumulative performance of companies (CCP) within competitive environments. This research contributes significantly to the management of poultry companies and the theoretical understanding of the Structure-Conduct-Performance (SCP) framework.

As detailed in Chapter 2, the literature review identified numerous strategies for managing the trade-offs between competition and company conduct, providing the foundation for the hypotheses and framework presented in Chapter 3. The key research questions addressed were:

Q.1.1. How does an increase in competition affect companies' financial efficiency?

Q.1.2. How can companies' conduct (price, market share, and quality) mediate the relationship between market structure and financial efficiency?

Q.2. How does market structure impact companies' conduct?

Q.3.1. Is there an optimum point of competition for the best trade-off between price, quality, market share, and financial efficiency?

Q.3.2. How does competition affect the firm's cumulative performance factor (CCP)?

An empirical investigation was conducted using an online questionnaire, engaging 382 participants from 115 manufacturing firms across 23 countries (see Table 5.1). The statistical analyses produced fresh and distinct outcomes connected to the research questions as follows.

8.2.1 Impact of Competition on the Companies' Financial Efficiency Performance

Research Question Q.1.1 sought to determine the relationship between competition and financial efficiency. The study revealed that competition does not have a substantial direct effect on financial efficiency. Instead, competition's influence is primarily indirect, mediated through other variables, specifically price, market share, and quality.

The findings show that market share plays a significant intermediary role (addressing Q.1.2). Companies facing increased competition tend to experience a reduction in market share, forcing them to lower prices to remain competitive. Although pricing is responsive to changes in market share, these reductions are marginal and do not fully counterbalance the market share loss. The analysis also revealed that companies improve sensory quality to attract customers, even at the cost of reducing nutritional quality. While both sensory and nutritional quality positively impact financial efficiency, sensory quality has nearly twice the effect of nutritional quality on financial outcomes. This strategic emphasis on sensory quality highlights a key mediating role that conduct (in the form of product quality) plays in maintaining financial performance under competitive conditions.

Thus, the research provides strong evidence for Q.1.2, showing that price, market share, and quality (particularly sensory quality) are key mediators in the relationship between competition and financial efficiency.

8.2.2. Impact of Competition on Quality

Research Question Q.2 asked how market structure, particularly competition, impacts company conduct. The research findings provide a clear answer: Competition drives companies to enhance sensory quality at the expense of nutritional quality. This dual effect reflects the complex nature of competition, as companies must respond to consumer preferences for visually appealing products and to the financial constraints imposed by heightened competition.

The findings show that companies invest in sensory quality—such as appearance, taste, and texture—as a competitive strategy, often achieved through genetic selection, specialized feeding

regimes, and advanced processing techniques. However, this comes at a cost to nutritional quality, as companies adopt practices that reduce nutrient density in favour of higher yields and reduced costs. This response is particularly evident in companies that lower production costs by increasing fat content and compromising nutritional value.

This result directly ties back to Q.2, demonstrating how competitive market structures shape company conduct, leading to strategic trade-offs between enhancing sensory appeal and reducing nutritional content. The interplay between these variables reveals the firms' adaptation to market conditions, as outlined in the SCP framework, highlighting how conduct evolves in response to structural changes in the market.

8.2.3. An Optimum Point of Competition for the Best Trade-off between Price, Quality, Market Share, and Efficiency

Research Questions Q.3.1 and Q.3.2 addressed the existence of an optimum point of competition for balancing price, quality, market share, and financial efficiency. They explored the cumulative effects of competition on company performance.

The model developed in this study introduced a flexible framework where companies can assign different weights to various performance factors, allowing decision-makers to adjust their strategies based on their priorities. The results of the four hypothetical scenarios demonstrate that the optimum point of competition depends on the relative importance assigned to factors such as nutritional quality, sensory quality, price, and market share.

For instance, in scenarios where nutritional quality is prioritized, companies only benefit from competition at higher intensity levels, as moderate competition leads to declines in cumulative

performance due to the sacrifice of nutritional quality. This finding is critical for Q.3.1, as it shows that the optimum point varies depending on which performance factors are given more weight.

Moreover, the model highlights how cumulative company performance (CCP) is affected by competition, confirming Q.3.2. When a balance is maintained across all performance factors, competition can enhance CCP even at higher levels of competitive intensity. However, if decision-makers prioritize more than one aspect (e.g., nutritional quality), they risk undermining other areas, such as market share or financial efficiency, particularly in environments with high competition.

The analysis strongly supports Q.3.2 by demonstrating how competition affects CCP through carefully weighting factors, thus allowing for optimized strategies based on industry-specific goals and market conditions.

8.3. Contribution and Implication of the Study

8.3.1. Theoretical implications

This research makes several significant theoretical contributions, particularly to the Structure-Conduct-Performance (SCP) framework, a foundational model in industrial organization economics. By applying the SCP theory to the poultry industry, this study enhances our understanding of the intricate relationships between market competition, firms' conduct, and their performance outcomes.

The SCP theory posits that market structure influences firm conduct, affecting performance. This research supports this core premise by demonstrating that heightened competition is associated with changes in firms' pricing strategies and product quality, ultimately impacting financial

efficiency. However, the findings also suggest that the SCP framework can be expanded to account for the complex and sometimes contradictory strategies firms employ in response to competition. For instance, the study reveals that firms often prioritize sensory quality improvements over nutritional quality to enhance financial efficiency under competitive pressure. This strategic choice challenges the traditional SCP view that competition universally leads to better overall performance. Instead, it shows that firms strategically sacrifice certain aspects of product quality (e.g., nutritional content) to maintain competitiveness in other areas (e.g., sensory appeal and pricing).

Furthermore, the research highlights the role of firm conduct as a mediator between market structure and performance. The finding that competition influences financial efficiency indirectly through its effects on pricing, market share, and quality adds a new layer of complexity to the SCP model. This suggests that firm conduct is not merely a response to market structure but also a dynamic process that shapes and is shaped by competitive pressures.

These insights indicate that the SCP theory could be further refined to better capture firms' adaptive and strategic behaviours in competitive markets. Future research could explore how different industries and market conditions influence the balance between various aspects of conduct and performance, providing a more comprehensive understanding of the SCP framework's applicability across different contexts.

8.3.2. Managerial implications

The findings of this research offer several practical implications for managers and policymakers in the poultry industry, as well as for broader applications in similar competitive markets.

Strategic Decision-Making:

Managers can leverage the insights from this study to enhance their strategic decision-making processes. The research suggests that while competition poses challenges, it also creates opportunities for firms to differentiate themselves through quality improvements, particularly sensory attributes. Companies can maintain or even grow their market share despite competitive pressures by investing in technologies that enhance product appeal. Additionally, the findings highlight the importance of balancing sensory and nutritional quality to optimize financial efficiency, suggesting that firms should carefully consider their target market's preferences and priorities.

For policymakers, the study underscores the need for regulations that safeguard product quality in competitive markets. The research shows that while competition can drive innovation and improvements in sensory quality, it can also lead to a decline in nutritional quality. Therefore, policymakers should consider implementing standards that ensure products meet specific nutritional criteria, even as companies strive to improve their sensory appeal. This would help maintain consumer welfare and prevent the erosion of product quality in the face of competitive pressures. Both managers and policymakers should view competition as both a challenge and an opportunity. Effective collaboration between industry stakeholders and regulatory bodies is crucial for understanding market dynamics and crafting balanced policies that promote healthy competition without compromising product quality. This collaborative approach is essential for fostering a competitive environment that benefits consumers and producers.

The study also highlights the significant influence of supermarkets as the major player causing high concentration over suppliers in the poultry market, particularly in the context of competitive pricing and quality standards. Regulatory frameworks that ensure fair trade practices and maintain

high-quality standards are necessary to counterbalance the bargaining power of supermarkets and prevent quality compromises. These measures are critical for sustaining a healthy and competitive market that delivers value to consumers.

In summary, the research advocated for strategic management. It informed policymaking to leverage the benefits of competition while mitigating its risks, thereby ensuring the sustainability of the poultry industry and its alignment with broader societal goals.

Table 8.1: Summary of Research Contributions and Implications

Summary of Research Contributions and Implications

Research	The impact of competition on the companies' financial performance considering the impact of mediator factors
Contributions	• How does an increase in competition affect companies' financial efficiency? • How can companies' conduct (price, market share, and quality) mediate the relationship between market structure and financial efficiency?
implications	• Provide a better theoretical understanding of the potential impact of competition on the financial efficiency of companies and the impact of mediator factors on this relationship. • Managerial implications for the adoption of different approaches under different competition levels • Provide guidance on how to gain higher financial efficiency under competition
Research	The Impact of competition on the product quality in the poultry industry
Contributions	• How does market structure impact quality?
Implications	• Establish how competition impacts sensory and nutritional quality. • Explain how sensory and nutritional quality react differently to competition.

	• Criticize the major theory on how competition impact quality. • Provide a structural procedure to support the management of the trade-off between sensory and nutritional quality under different competition levels.
Research	The optimum point of competition to reach to an optimized conduct and performance
Contributions	• Theory testing regarding to how market structure impact the conduct and performance of the firm
	• Provide bases for a more comprehensive theory
Implications	• Provide appropriate strategy under different weights of the performance factors. • Improve managers' and policy-maker authorities' understanding of the impact of competition on the companies' cumulative performance and the significance role of factor weights play in between. • introduce a model that empowers decision-makers to input their preferred weights for various performance factors, including price, market share, sensory quality, nutritional quality, and financial efficiency to explore how competition affects company performance based on their chosen weightings and identify the optimal level of competition within these dynamic relationships

8.4. Limitations and future Research Directions

While making significant contributions to the existing body of literature on the structure-conduct-performance (SCP) theory within the poultry meat industry, this study acknowledges certain limitations that can affect the generalizability and depth of its findings. Initially, the research was confined to the poultry manufacturing industry across twenty-three specific countries. This selection limits the broader applicability of the results due to variations in competitive, environmental, and economic contexts across different regions. The sample segmentation based

on countries did not reveal pronounced distinctions, likely due to subtle variances in economic scale, production capacity, and governmental interventions such as subsidies. Future studies could extend this research to a broader range of countries and incorporate diverse economic conditions to enhance the robustness and generalizability of the findings.

Although efforts were made to mitigate common method bias, the potential for such bias cannot be entirely discounted. Additionally, the study employed three competition metrics—price-cost-margin, import quotas, and profit elasticity—to assess competition. Despite this methodological diversity, alternative metrics such as concentration ratios and the Herfindahl concentration index could provide different perspectives on competitive dynamics.

A notable limitation of this research is the exclusion of the hygiene dimension of food quality, which forms the triad commonly used to assess food industry standards alongside sensory and nutritional quality. Including hygiene quality in future studies could offer a more comprehensive evaluation of quality within the industry.

This study also deliberately simplified the model by excluding variables such as branding types, transparency levels, product variety, transportation cost disparities, marginal utility of income, and elasticity of demand. These omissions were made to maintain focus and manageability but represent essential areas for future inquiry. For instance, the impact of marginal utility of income, a concept central to 19th-century price theory, could significantly influence consumer choices, product prices and corporate strategies in the poultry market (Allen et al., 2017; Castro & Araujo, 2019). Additionally, the dynamics between generic and branded products and their impact on pricing strategies warrant further investigation. Historical data suggests that generic brands are often perceived as lower quality than national brands, affecting market pricing and consumer choice (Chapman et al., 2012; Lexchin & Walmer, 1993).

Looking ahead, there is a rich vein of research opportunities in exploring how firms can optimize their conduct to enhance performance indicators such as return on assets (ROA), return on investment (ROI), and return on equity (ROE). Utilizing genetic algorithms could refine the precision in establishing the optimal level of engagement with conduct and performance factors influenced by competition. However, integrating equations of individual relationships between factors to calculate optimal trade-offs could only sometimes yield perfect solutions.

In sum, future research could benefit from adopting both quantitative and qualitative methodologies to explore how marginal utility affects firm conduct and performance, the impact of brand differentiation on competition, and the potential for genetic algorithms to optimize firm strategies in the poultry market. Employing field-based studies, longitudinal case studies and case surveys could provide deeper insights into the dynamic interplay between market structure, conduct and performance in shaping industry outcomes. These efforts would address the gaps identified in this study and expand the theoretical and practical applications of the SCP framework in diverse market contexts.

8.5. Chapter Summary

The conclusion of this study was dedicated to elucidating the central discoveries, primary contributions, and prospective limitations linked with this investigation. This chapter commenced by addressing the findings concerning the research inquiries presented in Chapter 1. Subsequently, it expounded upon the principal contributions and ramifications of this research. Lastly, it provided an in-depth exposition of the principal research constraints and insight into potential avenues for future research endeavours.

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Appendixes

a. Questions form

Introduction

Before taking part in this survey, please take your time and carefully read the Consent form and Participants Information Sheet from the below links:

Participants information sheet
Consent form

Do you agree with the terms and conditions of this survey?

- ○ Yes
- ○ No

What is the country your company is based in?

In what sector are you working?

- ☐ Sales & Marketing
- ☐ Accounting
- ☐ Managing Board
- ☐ Production & Operation
- ☐ Quality Control
- ☐ Customer Service
- ☐ Other

sensory quality

The following questions are about poultry-meat-production companies. Therefore, please answer the questions based on your information about the poultry company you work in or the company you know and have data about.
What is the average age (A) of the chickens at the slaughter moment (in days)?

- ○ L < 20
- ○ 20 ≤ L < 25
- ○ 25 ≤ L < 30
- ○ 30 ≤ L < 35
- ○ 35 ≤ L < 40
- ○ 40 ≤ L < 45
- ○ L ≥ 45

How do you evaluate the fresh meat colour produced in the company?

- ○ Extremely light
- ○ Moderately light
- ○ Slightly light
- ○ Normal
- ○ Slightly dark
- ○ Moderately dark
- ○ Extremely dark

What is the average light reflectance (L), between 580-630 wavelength mn, of the fresh meat produced in the company?

- ○ L < 10%
- ○ 10% ≤ L < 14%
- ○ 14% ≤ L < 18%
- ○ 18% ≤ L < 22%
- ○ 22% ≤ L < 26%
- ○ 26% ≤ L < 30%
- ○ L ≥ 30%

What is the average scalding temperature (T) in Celsius?

- ○ $T < 40$
- ○ $40 \leq T < 44$
- ○ $44 \leq T < 48$
- ○ $48 \leq T < 52$
- ○ $52 \leq T < 56$
- ○ $56 \leq T < 60$
- ○ $T \geq 60$

What is the average scalding time (S) in seconds?

- ○ $S < 80$
- ○ $80 \leq S < 110$
- ○ $110 \leq S < 140$
- ○ $140 \leq S < 170$
- ○ $170 \leq S < 200$
- ○ $200 \leq D < 230$
- ○ $S \geq 230$

nutritional quality

Please tick (✓) the devices Deployed by the company (you can make multiple choices).

- ☐ The water spray before the shackling
- ☐ The Control Atmosphere Slaughtering (CAS) system
- ☐ Automatic crate loader & unloader
- ☐ Heart stimulator
- ☐ The muscle stimulator before the cut-up section
- ☐ X-ray for food safety
- ☐ IQF

What is the average temperature (T) in the slaughterhouse reception area (celsius)?

- ○ T <15
- ○ 15 ≤ T < 19
- ○ 19 ≤ T < 23
- ○ 23 ≤ T < 27
- ○ 27 ≤ T < 31
- ○ 31 ≤ T < 35
- ○ T ≥ 35

What is the average humidity (H) in the slaughterhouse reception area?

- ○ H < 30%
- ○ 30% ≤ H < 40%
- ○ 40% ≤ H < 50%
- ○ 50% ≤ H < 60%
- ○ 60% ≤ H < 70%
- ○ 70% ≤ H < 80%
- ○ H ≥ 80%

What is the average pre-slaughter fasting time (F) in hours?

- ○ F < 5
- ○ 5 ≤ F < 6
- ○ 6 ≤ F < 7
- ○ 7 ≤ F < 8
- ○ 8 ≤ F < 9
- ○ 9 ≤ F < 10
- ○ F ≥ 10

What is the water chiller's length (L) deployed by the company in meter (if it doesn't exist, choose L < 6)?

- ○ L < 6
- ○ 6 ≤ L < 12

- ○ $12 \leq L < 18$
- ○ $18 \leq L < 24$
- ○ $24 \leq L < 30$
- ○ $30 \leq L < 36$
- ○ $L \geq 36$

What is the air chiller's length (L) deployed by the company in meter (if it doesn't exist, choose $L < 500$)?

- ○ $L < 500$
- ○ $500 \leq L < 1000$
- ○ $1000 \leq L < 1500$
- ○ $1500 \leq L < 2000$
- ○ $2000 \leq L < 2500$
- ○ $2500 \leq L < 3000$
- ○ $L \geq 3000$

What is the average deep carcass temperature (T) in Celsius at the time of packaging?

- ○ $T < 4.0$
- ○ $4.0 \leq T < 5.5$
- ○ $5.5 \leq T < 7.0$
- ○ $7.0 \leq T < 8.5$
- ○ $8.5 \leq T < 10$
- ○ $10 \leq T < 11.5$
- ○ $T \geq 11.5$

What is the average fresh meat PH level?

- ○ $PH < 5.1$
- ○ $5.1 \leq PH < 5.4$
- ○ $5.4 \leq PH < 5.7$
- ○ $5.7 \leq PH < 6.0$
- ○ $6.0 \leq PH < 6.3$

- ○ 6.3 ≤ PH < 6.6
- ○ PH ≥ 6.6

What is the average proportion of protein (P) in poultries' diet?

- ○ P < 16%
- ○ 16% ≤ P < 18%
- ○ 18% ≤ P < 20%
- ○ 20% ≤ P < 22%
- ○ 22% ≤ P < 24%
- ○ 24% ≤ P < 26%
- ○ P ≥ 26%

What is the average proportion of Conjugate Linoleic Acid (CLA) in the poultries' diet?

- ○ CLA < 0.9%
- ○ 0.9% ≤ CLA < 1.2%
- ○ 1.2% ≤ CLA < 1.5%
- ○ 1.5% ≤ CLA < 1.8%
- ○ 1.8% ≤ CLA < 2.1%
- ○ 2.1% ≤ CLA < 2.4%
- ○ CLA ≥ 2.4%

Price

What was the average frozen bulk drumstick price (P) €/kg in 2021 (for the major brand)?

- ○ P < 1.2
- ○ 1.2 ≤ P < 1.3
- ○ 1.3 ≤ P < 1.4
- ○ 1.4 ≤ P < 1.5
- ○ 1.5 ≤ P < 1.6
- ○ 1.6 ≤ P < 1.7
- ○ P ≥ 1.70

What was the average frozen bulk wings price (P) €/kg in 2021 (for the major brand)?

- ○ P < 1.5
- ○ 1.5 ≤ P < 1.6
- ○ 1.6 ≤ P < 1.7
- ○ 1.7 ≤ P < 1.8
- ○ 1.8 ≤ P < 1.9
- ○ 1.9 ≤ P < 2
- ○ P ≥ 2.0

Please specify the status of the three major brands (whole chicken) produced in the company, the production share (S) of each of them, the quantity and the average price in 2021 (please read the below table from left to right, chronologically).

	Please choose the Brand Status		The average price for this brand in 2021 (whole chicken)
	National Branded	Private Label	(Euro)
Brand No 1	○	○	
Brand No 2	○	○	
Brand No 3	○	○	

Market Share

What was the market share (M) of the company in the country it is based in 2021?

- ○ M < 2%
- ○ 2% ≤ M < 5%
- ○ 5% ≤ M < 8%
- ○ 8% ≤ M < 11%
- ○ 11% ≤ M < 14%
- ○ 14% ≤ M < 17%

competition

What was the total revenue (R) of your company in 2021 (in million Euros)?

- ○ $R < 30$
- ○ $30 \leq R < 130$
- ○ $130 \leq R < 230$
- ○ $230 \leq R < 330$
- ○ $330 \leq R < 430$
- ○ $430 \leq R < 530$
- ○ $R \geq 530$

What was the net income (profit) of the company in 2021 (millions EUR)?

- ○ $NI < 3$
- ○ $3 \leq NI < 13$
- ○ $13 \leq NI < 23$
- ○ $23 \leq NI < 33$
- ○ $33 \leq NI < 43$
- ○ $43 \leq NI < 53$
- ○ $NI \geq 53$

What was the total salary (S) the company paid to its employees in 2021. Here employees refer to all kinds of human resources, including contractors (in million Euros)?

- ○ $S < 5$
- ○ $5 \leq S < 25$
- ○ $25 \leq S < 45$
- ○ $45 \leq S < 65$
- ○ $65 \leq S < 85$
- ○ $85 \leq S < 105$
- ○ $S \geq 105$

What was the total raw material cost (R) of the company in 2021 (in Million Euros)?

- ○ $R < 40$
- ○ $40 \leq R < 70$
- ○ $70 \leq R < 100$
- ○ $100 \leq R < 130$
- ○ $130 \leq R < 160$
- ○ $160 \leq R < 190$
- ○ $R \geq 190$

What was the total energy cost (E) of the company including gas, electricity etc. in 2021 (million Euro)?

- ○ $E < 1.5$
- ○ $1.5 \leq E < 6.5$
- ○ $6.5 \leq E < 11.5$
- ○ $11.5 \leq E < 16.5$
- ○ $16.5 \leq E < 21.5$
- ○ $21.5 \leq E < 26.5$
- ○ $E \geq 26.5$

What was the total service cost (S), in Million Euros, in 2021?
(all costs associated with building, supporting, and delivering your services. Examples of service cost components include software, license fees, client support and data center charges)

- ○ $S < 0.5$
- ○ $0.5 \leq S < 1.5$
- ○ $1.5 \leq S < 2.5$
- ○ $2.5 \leq S < 3.5$
- ○ $3.5 \leq S < 4.5$
- ○ $4.5 \leq S < 5.5$
- ○ $S \geq 5.5$

What was the number of employees (E) in 2021?

- ○ E < 250
- ○ 250 ≤ E < 1250
- ○ 1250 ≤ E < 2250
- ○ 2250 ≤ E < 3250
- ○ 3250 ≤ E < 4250
- ○ 4250 ≤ E < 5250
- ○ E ≥ 5250

Financial Efficiency

What was the company return an assets (ROA), in 2021?

- ○ ROA < 2
- ○ 2 ≤ ROA < 4.5
- ○ 4.5 ≤ ROA < 7
- ○ 7 ≤ ROA < 9.5
- ○ 9.5 ≤ ROA < 12
- ○ 12 ≤ ROA < 14.5
- ○ C ≥ 14.5

What was the company's return on equity (ROE) , in 2021 (Equity represents the shareholders' stake in the company, identified on a company's balance sheet. The equity calculation is a company's total assets minus its total liabilities)?

- ○ ROE< 18
- ○ 18 ≤ ROE < 20.5
- ○ 20.5 ≤ ROE < 23
- ○ 23 ≤ ROE < 25.5
- ○ 25.5 ≤ ROE < 28
- ○ 28 ≤ ROE < 30.5
- ○ 30.5 ≤ ROE

b. Matlab code for Simulation

```
w1=4; % competition-Nutrition's weight
w2=2; %competition-Finance's weight
w3=1; %competition-Sensory's weight
w4=2; %competition-Market Share's weight
w5=3; % Competition-Price's weight


x=1:0.1:7;

y1=w1*(6.54-0.76*x) % competition-Nutrition, slope: 0.76
y2=w2*(-0.03*x.^2+1.36*x-0.6) % competition-Finance, slope: 1.15
y3=w3*(-0.28+1.36*x-0.05*x.^2) % competition-Sensory, slope: 1.26
y4=w4*(7.38-1.01*x) % competition-Market Share, slope: 1.01
y5=(7*w5)./(8.05-1.59*x+0.08*x.^2) % Competition-Price, slope: 1.43

z=y1+y2+y3+y4+y5;

xIndex = find(z == max(z), 1, 'first')
maxXValue = x(xIndex)

plot(x,z);
```

c. Top Countries for Poultry Meat

Table c.1: Top countries for producing poultry meat (FAO, 2019)

Countries	Metric tons
United States	22,857,595
China	21,195,172
Brazil	14,136,961
Russia	4,606,359
India	4,231,647
Indonesia	3,539,313
Mexico	3,514,701
Poland	2,558,110
Japan	2,297,897
Iran	2,291,989
Argentina	2,248,442
Turkey	2,201,894
United Kingdom	1,946,110
Myanmar	1,823,475
South Africa	1,815,548
Thailand	1,774,613
Peru	1,762,856
Malaysia	1,716,704
Colombia	1,693,178
France	1,659,500
Spain	1,630,610
Germany	1,543,866
Pakistan	1,523,155
Canada	1,503,587
Philippines	1,466,371
Egypt	1,454,856
Ukraine	1,410,346
Italy	1,357,905
Australia	1,278,293