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Gauteng's consumers' perception of the quality of food safety at quick service restaurants: An importance-performance application

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Dissertation submitted in fulfilment of the requirements for the degree
Master's in Consumer Science (Food Management)

in the

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DECLARATION

I, Lesego Marule, hereby declare that this dissertation for the Master's in Consumer Science: Food Management at the University of Pretoria, hereby submitted by me, is my own work and has not been previously submitted for a degree at this or any other university or tertiary institution. All reference material contained herein has been acknowledged according to the University's requirements and guidelines.

Nomzamo Marule

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December 2022

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Date

DEDICATION

Dedication to my father, mother, siblings, and close friends

I would like to thank my **father** for, once upon a time, trusting me to follow my passion and to follow my qualification to the very end. Thank you, daddy, for being patient and always engaging in conversation with me when I wanted to discuss where I am in my studies. You would always provide insight on how to push forward. Thank you for believing in our education so much that now, we thrive and will continue to pass on the baton throughout our families as your children.

To my **mother**, I am so grateful for your understanding of the process. I hit many brick walls and had many tears. You employed all resources to make this journey easier for me. You believed in my abilities even when I began to tell myself that maybe this is not for me. You have been amazing. Thank you.

To my **siblings** (Mpho Marule, Kagiso Marule and Busi Marule), you listened and listened. Even if it wasn't about my progress specifically, your year-on-year, month-by-month, and day-by-day support allowed me to take a step back and tackle all situations a little stronger. I am truly blessed to have you. I love you all.

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To you all, I have done it! Thank you all for the support throughout.

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SUMMARY

Title: Gauteng's consumers' perception of the quality of food safety at quick service restaurants: an importance-performance application

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The motivation for food consumed away from home has been noted to include time scarcity, single-person households, the increase in disposable income, women joining the workforce, and even the lack of interest or skill in food preparation. Consequently, the dependency on the foodservice sector has therefore, expanded and driven foodservice to adapt to new and health-sensitive diets, foodservices' transparency of production processes, focus on the provision of quality food products, and the provision of food that is safe for consumption. Throughout the food supply chain and specifically in foodservice, the industry has the responsibility to meet consumers' demands who anticipate the fulfilment of these demands.

The concern over food safety is real with several cases relating to the foodservice sector (Knight et al., 2007; Liu & Lee, 2018). Underreporting of cases (Ramalwa et al., 2020) implies that many who experience foodborne illness struggle to associate their experiences with the food purchased or consumed at restaurants.

Given the magnitude and growth of the quick-service restaurant (QSR) segment over the years, it is noted that it has the potential to impact the consumers who patronise this segment. Past studies record the consumers' frequent interaction with food consumed outside of the home, equating to at least 2-3 times a week. The reflection on perception and how it is unique and subjective to each person is thus important to understand.

Understanding the consumers' perceptions may aid in evaluating how consumers relate to these environments and may perceive food safety and any efforts from restaurants to provide food that is safe for consumption.

The purpose of the study aimed to investigate how consumers interact in the QSR segment, how they perceive the quality of food safety based on the importance of food safety quality cues, and how they have experienced the food safety quality cues within their consumption environments.

To achieve this, a mixed-method research approach was employed to 1) identify the food safety quality cues the consumer may encounter within a QSR environment and 2) to deploy a consumer questionnaire to evaluate the consumers' perception of the quality of food safety.

Yielding 487 responses, the results revealed that the consumers' perceptions of the quality of food safety in QSR with regard to importance were highly considered in contrast to the experience (performance) of the quality of food safety. Further analysis revealed that the sample's demographics played a role in how food safety was perceived. Findings thus have an implication on consumer food safety awareness and education.

The recommendations conclude the need for an in-depth investigation into what QSR staff are trained to do in their production and service of food, what they actually are doing during the food preparation processes, and how the consumer understands these efforts. More importantly, it is recommended to explain the above so that the best approaches are employed to assist the consumer in making fair judgments of food safety related efforts in a manner that is cognizant of demographic differences.

Keywords

perception, quality perception, quality cues, food safety, quick service restaurants, and importance-performance framework.

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Chapter 1

THE STUDY IN PERSPECTIVE

This chapter provides an introduction to the researched topic and outlines the research aspects showing the importance of the study that is discussed in subsequent chapters.

1.1 INTRODUCTION AND BACKGROUND

The formal foodservice industry is broadly defined to encompass all establishments where food is served outside the home. This industry comprises quick service, upscale, casual service, and family service restaurants (Payne-Palacio and Theis, 2016:4). The foodservice industry has been regarded as a widespread one that impacts many people's lives on a daily basis (Payne-Palacio and Theis, 2016:4). According to Olise, Okoli, and Ekeke (2015), the restaurant industry has expanded in popularity across growing cities worldwide. There is an increase in food consumed outside of the home, which has been attributed to changes in socioeconomic and social conditions as well as consumption patterns. Such changes include an increase in disposable income, the existence of women in the workforce, a greater need for convenience, and a need for larger-portioned meals at a reasonable price (Maumbe, 2012).

The foodservice industry has subsequently responded to the demands of consumers by adopting new foodservice attributes such as longer operating hours, the offering of faster, safer, and more nutritious food, food of better quality as well as the placement of restaurants in more convenient locations (Van Zyl, Steyn & Marais, 2010; Olise, et al. 2015). Along with this growth of the foodservice industry, expansion into township areas has been witnessed to enhance access to many consumers on a day-to-day basis (Maumbe, 2012; Olise, et al. 2015). This industry's growth and consumer support suggest its appeal, but in the same breath, the consumer may be impacted in various ways. Noting that there are over five thousand quick service restaurants across South Africa (BusinessTech, 2019), industry market reports indicate that food safety legislation is expected to be adhered to. Food safety practices are followed, given the potential impact of a foodborne illness (FBI) outbreak on the population (Allied Market Research, 2019).

Studies from across the world have reported that a common occurrence of illness outbreaks occur in restaurants (Knight, et al. 2007; Kaskela, Sund & Lundén, 2021). It has been observed that customers put their faith in and assign responsibility for food safety to the restaurants they frequent. This is because of the assumption that foodservice establishments are compliant with food safety legislation and follow the relevant safety practices (FAO, 1997; Knight, et al. 2007; Behrens, Vedovato, Cervato-

Mancuso & Bastos, 2015). Knight, et al. (2007) comment that consumers often blindly perceive that the food served in most restaurants is safe. This is due to consumers placing high levels of trust in the quality of the food they purchase and having confidence in the food operators who produce and distribute the food (Zang, van Klinken, Schrobback & Muller, 2021). In the consumer becoming knowledgeable they consequently have a perception that the food they purchase is of an acceptable level of quality, hygiene, and safety (Unusan, 2007; Djekic, Smigic, Kalogianni, Rocha, Zamioudi and Pacheco, 2014; Liu & Lee, 2018). Despite this level of perception, an article by Food Stuff South Africa (2013) remarks that implementing food safety protocols is dismal in South Africa. The result is, unfortunately, that many consumers have a negative experience in terms of food safety assurance and the quality in which safe food is provided.

Some of the existing research concerning this has focused on topics such as the food safety knowledge of consumers, food safety concerns of consumers, as well as the food safety culture in South Africa (Omari & Frempong, 2016; Griffith, Jackson & Lues, 2017; Sibanyoni, Tshabalala & Tabit, 2017). Other food safety related research, specifically concerning quick service restaurants has focused on food handlers' experiences and behaviours related to food safety and their extent of concern about food safety issues (Dundes & Swann, 2008; Omari & Frempong, 2016). Evidence from related studies implicates the management of food safety and food handlers' behaviours as inadequate in delivering safely produced food.

Due to the extent of consumer patronage with foodservice, and QSR more specifically, understanding the consumers' point of view regarding the quality of food safety and safe food provision is motivated. Perception is understood as a subjective evaluation of events that occur around people (Steenkamp, 1990). The quality of food safety was thus explored to understand the unique evaluations consumers undergo when assessing safety in dining at/purchasing food from QSRs.

This study employed the importance-performance analysis framework (IPA), developed by Martilla and James in 1977, alongside the quality perception model. The employment of the framework and the models allowed for the consumers' perception to be understood, as it is expected that consumers possess the capability of evaluating quality subjectively and, thereafter, become aware of what is safe for them. Should the consumer perceive otherwise, i.e., unsafe food or unsafe food environments, this could play a role in the active reporting of foodservice establishments that fail to deliver quality food safety to the consumer (Bai, Wang, & Gong, 2019).

1.2 PROBLEM STATEMENT

Consumption patterns in urban societies such as Europe, the USA and Australia reported that 50% of the adults ate three or more of their meals outside of the home per week (Janssen, Davies, Richardson,

& Stevenson, 2018). With that being said, American dining out is described as an essential part of the individual's lifestyle (Lee et al., 2012). South Africans have specifically followed this movement and are showing a favourable appetite, recognising that fast food has now become more of a staple than a spoil (Maumbe, 2012). Dizolele and Simmons (2022) comment that it is believed that fast food may be a substitute when individuals have no time to cook due to being busy with work. A study conducted by Nkosi, Rathogwa-Takalani and Voyi (2020), presented that 49.3% of the sample consumed fast foods once or twice a week in the Gauteng and North West provinces of South Africa.

Along with the increase in the number of people who eat out is the increase in demand for safer products from restaurant chains. It is expected that restaurant establishments are ultimately held responsible for the food that has been handled (Knight, et al. 2007; Dundes & Swann, 2008; Bain, 2016). Despite the importance of quality food safety provisions and relevant practices, restaurants continue to lack adequate implementation of food safety policies and practices (Henson, Majowicz, Masakure, Sockett, Jones, Hart, Carr & Knowles, 2006). Liu and Lee (2018) support the observation that most foodborne illnesses are related to the food items that have been served at restaurants. Compliance legislation exists but implementation, supervision, and accountability have not been firmly directed or are still mostly voluntary, i.e., private food safety control programmes (Henson & Caswell, 1999; Badrie, Gobin & Duncan, 2006). Mashuba (2016) supports this by commenting that although relevant local health authorities are responsible for food safety control, there have been significant deficiencies in this regard. This is reinforced by Van Zyl, et al. 2010, stating that South Africa does not have the capacity to track and manage foodborne illness cases.

The failure to follow food safety protocols is alarming as statistics have indicated that approximately four hundred and twenty thousand (420 000) people lose their lives annually from consuming contaminated foods (FAO, 2018). It has been reported that the African continent particularly, experiences one hundred and thirty-seven deaths (137 000) deaths each year from the consumption of contaminated food too (Bisholo, Ghuman & Haffejee (2018). Additionally alarming is that foodborne illnesses are underreported in South Africa (Ramalwa et al., 2020).

The foodservice industry has lagged behind the food manufacturing sector in how it manages food safety and its effective implementations. Considering the importance of the consumers who drive and support this industry, as well as the importance of food safety assurance in restaurants, it is surprising that there have only been a few studies that have asked the consumers about their perceptions and experiences on this issue (Knight, et al. 2007). It is currently ambiguous what the consumer perceptions regarding food safety quality are when dining out or purchasing from quick service restaurants. This is in light of the rise in food consumption outside the home, the dependency on the

QSR industry, and the success and growth potential of the QS restaurant sector (Henson et al., 2006; Sneed and Strohbehn, 2008; Jooste, 2021). The underreporting of incidents combined with the prevalence of foodborne illness cases creates a dilemma for the South African consumer.

1.3 JUSTIFICATION FOR THE STUDY

The consumer has considered food safety assurance and its quality as an imperative attribute of the service offering at restaurants and has the perception of consuming safe food that is produced in a safe environment and according to food safety standards. In its entirety, food safety is an important global topic, as the poor quality of food safety practices compromises food availability, threatening food security (Bagherzadeh, Inamura & Jeong, 2014).

According to Statistics South Africa (2022), Gauteng serves a population of just over 16 million people and caters for a vast, growing middle class, who have experienced an increase in disposable income and have further adopted a culture of dining out. The relationship between the food safety policies and the quick service restaurants' hygiene practices versus what the consumers perceive may provide insight into whether food safety practices are being implemented in the QSR environment.

This study aimed to identify the food safety quality cues that the consumer may evaluate in the QSR environment to comprehend the consumers' perceptions of the quality of food safety. The expectation was that the results would reveal any successes or shortcomings of food safety assurance within QSRs and the extent to which consumers could perceive them based on the chosen food safety quality cues. The researcher anticipated that findings might indicate the consumers' degree of understanding of the concept of food safety and highlight any need for food safety training or education to benefit the consumer. Furthermore, this insight aimed to improve the consumers' awareness of food safety requirements within foodservice environments as a whole.

- **Consumer contribution:** It was anticipated that this research can aid in a better understanding of how consumers perceive their food and/or eating environments in their evaluations of food safety. The researcher anticipated interpreting the consumers' definitions and considerations in order to better communicate and educate the appropriate food safety-related information in a manner that the consumer will appreciate. The consumer may therefore become better equipped when making judgments on the quality of food safety offered by QSRs when purchasing food.

- **Literature and academic contribution**: Given that perception is rarely the focus in consumer-related studies, this research aimed to supplement the existing body of information using the

quality perception model. The model is one that can be further exploited by academia and in other studies to investigate how subjective evaluations are employed in making quality judgments across various consumer products and services.

This also holds true concerning the importance-performance framework and its application specifically for research in South African hospitality. Furthermore, the research aimed to contribute to the literature by filling a gap in how the research applied the mixed-method approach in Phase one and Phase two of the study as part of the research design to achieve the study's objectives.

- **Industry contribution**: No business can survive in the absence of customer satisfaction. Addressing the food safety concerns of the consumer will aid in business operations and may alert industry how to better prevent foodborne illness outbreaks and consequent medical costs, poor publicity, legal costs and loss of business, all enhancing a business' competitive advantage.

  Potential applications could be directed toward improving communication and education between consumers and the QSR industry. The industry's consideration of the consumer and how they perceive quality cues within the QSR (foodservice) environments will allow the industry to align practices to enhance the promise of assurance.

  Making use of the managers' testimonies regarding the common food safety practices in the QSRs will assist the industry in becoming aware of the efforts employed by management. This may allow the industry to evaluate areas where they can enhance staff behaviours through training programmes and in turn, change the tone in favour of the food handlers and their responsibility towards adequate food safety assurance.

1.4 RESEARCH AIM AND OBJECTIVES

1.4.1 Aim

The study aimed to investigate the consumers' perceptions of the quality of food safety in quick service restaurants (QSRs).

1.4.2 Objectives

Objective 1: *To identify cues that indicate the quality of food safety at QSRs*

The above objective was pursued to understand and align food safety quality cues as stipulated in different sources of literature and as they exist in the QSR environment for the compilation of the quantitative consumer questionnaire.

Objective 2: *To investigate the consumers' perception of the quality of food safety at QSRs*

- Objective 2.1**:** To investigate and describe consumers' perceived importance of food safety quality cues at quick service restaurants
- Objective 2.2: To investigate and describe consumers' perceived performance of food safety quality cues at quick service restaurants

As the main focus of the study, the above objectives sought to bridge the gap as well as address the research problem that existed considering past studies and the literature concerning consumers' perceptions of food safety.

Objective 3: *To critically evaluate the consumers' perceptions of the quality of food safety in QSRs*

- Objective 3.1: To evaluate the consumers' perceptions of the quality of food safety in QSRs through IPA matrix interpretations in order to identify areas of concern.
- Objective 3.2: To explore the consumers' perceptions of the food safety quality cues in QSRs in terms of possible differences across demographic categories with the aim to identify areas of concern.

As the last objective of the study, the above sought to assess any specific and unique findings and interest areas from the analysis of the consumers' perceptions of the quality of food safety.

1.5 STUDY AREA

The study was conducted across quick service restaurants in the Gauteng province, South Africa (Figure 1.1). It included locations throughout various shopping centres, shopping malls, gas stations, and the University of Pretoria campus for the collection of the data.

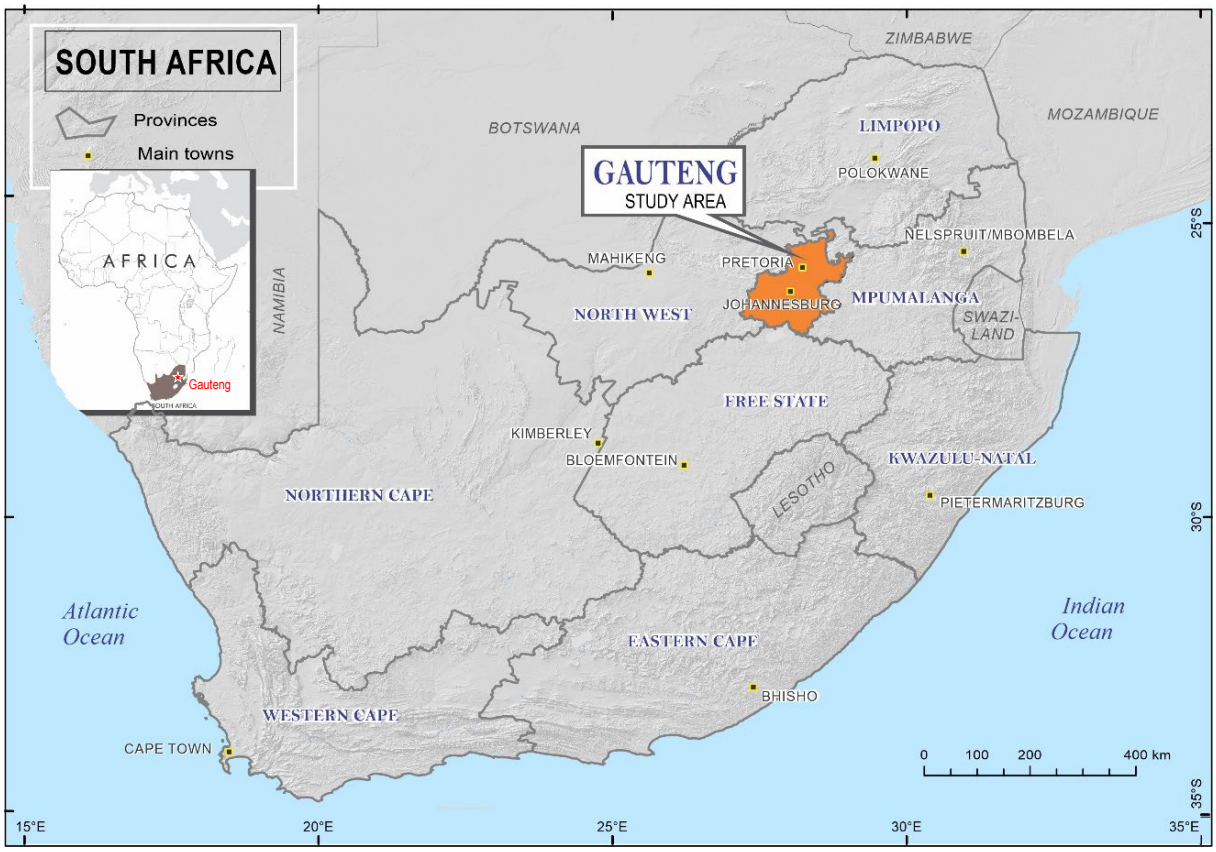

FIGURE 1.1: ORIENTATION: GAUTENG (STUDY AREA) WITHIN SOUTH AFRICA

1.6 RESEARCH DESIGN AND METHODOLOGY

This study included both exploratory (exploring the constructs of food safety to compile quality cues for the consumer survey) and descriptive (describing the perceptions of consumers and areas of concern) investigations. The researcher decided on a mixed-method research approach to support the study's two phases. The study was cross-sectional in nature, as it collected data from a specific population at a particular point in time (July 2017 to May 2018).

1.6.1 Data collection and analysis

Phase 1 - Identification of potential food safety quality cues

During Phase 1, a literature study on past research of food safety policies, guidelines, and legislation, as well as qualitative research techniques (semi-structured interviews and observations) was employed. The qualitative techniques specifically gathered evidence from QSR managers on how the staff followed and enforced food safety policies in their stores. The above tasks allowed the researcher to identify food safety quality cues to be used in the consumer survey.

The non-probability convenience sampling technique concluded with thirty-five (35) participants from QSRs. The data were captured and stored in the Qualtrics programme. Thematic analysis was carried out to categorise themes from the managers' answers. Managers' responses, alongside the peruse of the literature, supported each other in the final creation of the consumer questionnaire comprising the relevant food safety quality cues.

Phase 2** - **Implementation of a consumer questionnaire

Phase 2 encompassed a structured consumer survey (quantitative). This approach gathered consumer data on how they rated the food safety quality cues (identified in Phase 1) in terms of the cues' importance relevant to the individual consumer and in terms of the performance of the cues based on the consumers' experience.

Non-probability convenience sampling was applied and yielded four hundred and eighty-seven (487) respondents. The data were collected through paper-based, self-administered questionnaires in QSR stores with assistance from trained field workers. The paper-based questionnaires were captured into Qualtrics by the researcher. Additionally, online and social media platforms (Facebook, WhatsApp, and email) were used to distribute the questionnaires electronically. Finally, all the data were captured electronically and stored in the Qualtrics programme.

The Qualtrics programme allowed for initial data examination. After the data collection process was concluded, the data were further analysed using the IBM SPSS (version 26) software. A total of five hundred and fifty-one (551) questionnaires were collected, with 487 (88.4%) of the questionnaires being acceptable for data analysis. The data analysis for this particular phase included descriptive and inferential statistics. Descriptive statistics allowed for calculating the mean ratings and standard deviations from the data and relate to the importance and performance ratings. These ratings abetted in the presentation of the quantitative information on the importance-performance matrix.

For additional interpretation of the data and to gain insight into how demographics may significantly affect the consumers' perceptions of the quality of food safety, t-test, and analysis of variance (ANOVA) were conducted.

1.7 THE UNIT OF ANALYSIS

The unit of analysis consisted of adults (18 and older) male and female consumers. The respondents resided in the Gauteng province, consumed food from identifiable QSRs, and were required to have had a recent purchase from identifiable QSRs (3 months). No restrictions were placed on population group, income, or education level.

1.8 ETHICS

As with most institutions, the University of Pretoria has set and adheres to a code of conduct for conducting social research. Ethical clearance was sought from the Ethics Committee of the Faculty of Natural and Agricultural Sciences to scrutinise the study and examine the study's relevance. Although this study was part of a more extensive research project, the perusal ensured that this study would adhere to all ethical practices before it was implemented. Ethical clearance (EC170912-150) was granted.

The questionnaire for this study was distributed together with a cover letter, which communicated the aim of the study. It further stated that each consumer's participation was strictly voluntary and that their confidentiality would be retained. It was important to ensure that all sources were referenced, and that plagiarism was avoided by including a signed plagiarism declaration (see 'DECLARATION', p. i of this document).

1.9 PRESENTATION AND STRUCTURE OF THE RESEARCH

This dissertation consists of six chapters, and they are presented as follows:

***Chapter 1*: The study in perspective**

This chapter introduces the background of the study by discussing its context, the problem statement, and the justification. The research objectives are provided along with the research design and methodology.

***Chapter 2:* Theoretical model**

This chapter discusses the theoretical model applied in the study. This refers to the quality perception model and is conferred in depth to provide an understanding as to why it is an appropriate view for this study.

***Chapter 3:* Literature review**

This chapter presents an extensive literature review. The primary constructs relevant to the research are discussed. These constructs relate to food safety, the foodservice industry, and specifically, the quick service restaurant industry.

***Chapter 4:* Research design and methodology**

Chapter four expands on the research approach and methodology, discussions relating to the sampling procedure, data collection, operationalisation, conceptual framework, and questionnaire development, specifically regarding the IPA framework. Lastly, the quality of the data and the ethical considerations are discussed.

***Chapter 5:* Results and discussion**

This chapter presents the findings of each phase of the study and discusses the data collected.

Chapter 6: **Conclusions and recommendations**

The chapter commences with a summary of major findings, followed by the evaluation of the study. It is envisioned that the conclusions will provide a comprehension of food safety from the consumers' interpretations and lead to better discussions on understanding quality perception. The influence of demographics is also crucial in guiding consumer education. The limitations of the study and recommendations for future research discussions conclude the chapter.

1.10 DEFINITIONS

TERMS AND CONCEPTS		
Term or concept	**Definition**	**Reference**
Food safety	The conditions and measures are necessary to ensure the safety of food from being contaminated at any point during harvesting, processing, storage, distribution, transportation and preparation; encompass the efforts that aim to contain and prevent the harmful consumption of contaminated food.	(Department of Health, 2018)
Foodborne illness	An incident where two or more people experience the same illness after eating the same food.	(Payne-Palacio and Theis, 2016)
Perception	The complex evaluation of the significance of stimuli reaching our receptors; the attempt to identify objects and relationships in the external world.	(Cant, Brink & Brijball, 2006)
Quality cues	Informational stimuli that the consumer can discover through their senses prior to consumption; cues provide the basis for inferring the characteristics of the object in consideration.	(Steenkamp, 1990)
Quality perception	An idiosyncratic value judgement with respect to fitness for consumption that is based upon the conscious/or unconscious processing of quality cues in relation to relevant quality attributes within the context of significant personal and situational variables.	(Steenkamp, 1990)
Quick service restaurants (QSR)	Those consisting of units mainly engaged in providing foodservices ready to be taken away for immediate consumption.	(Cousins and Weekes, 2020)

1.11 SUMMARY

This chapter provided an introduction to the topic being researched and outlined the aspects of the research that will be discussed in subsequent chapters. The importance of the study was justified. The following chapter relays the theoretical model chosen for this study.

Chapter 2

THEORETICAL MODEL

This chapter outlines the theoretical model that it supports. The explication of the quality perception model guided the investigation and further facilitated insight into the reviewed literature. The chapter provides an overview of the concepts related to the quality perception model and emphasises its applicability, assumptions, and process.

2.1 BACKGROUND

This research made use of the quality perception model. The purpose of the theoretical model was to provide guidance throughout the study to clearly understand concepts and definitions and connect this study with the existing body of knowledge. The model embraces aspects of the cue utilisation theory to investigate consumers' perception of the quality of food safety in quick service restaurants (QSRs). Following this model enabled the researcher to explore what food safety means to the consumer and how they evaluate the quality of food safety. The theory of perception will now be discussed to aid in comprehending the quality perception model.

2.1.1 Understanding perception

The standard and simplified expression to define perception is "How we see the world around us…". This quote is elaborated on by saying that any two individuals can be exposed to the same stimuli, yet their perceptions of the events will not be the same (Schiffman & Kanuk, 2010:179). Qiong (2017) comment that perception is an approximation of reality. This awareness is supported by Arnould, Price and Zinkhan (2004:29), who remarked that when one perceives something, one personally gives meaning to (sensory) stimuli.

Perception is said to deal with the attempt to identify objects and relationships in the external world (Coren, Ward & Enns, 2004). The authors state that through experiences in life, that certain objects or conditions have a high probability of being related to one another. A transactional viewpoint preserves that any current perceptual experience consists of a complex evaluation of the significance of stimuli reaching the receptors. According to Solomon and Bamossy (2016), we live in a world overflowing with sensory sensations. Sensory stimuli involve input from our sensory receptors, allowing us to feel, taste, touch, hear and see. Additionally, Solomon and Bamossy (2016) continue to state that perception is the process by which stimuli are selected, organised and interpreted.

It is noted by Qiong (2017) that as human beings, we enjoy the ability to hear, see, smell, touch and taste. Through this process of sensing, our perception allows us to be aware of the presence of all kinds of stimuli and assign meanings to them. The study of perception, therefore, focuses on what we add or take away from these sensations as we assign meaning to them.

2.1.2 The perceptual process

Solomon and Bamossy (2016) comment that people do not perceive a single stimulus in isolation; our brains tend to relate incoming sensations to the imagery of other events or sensations already in our memory based on some fundamental principles. An example could be when an individual enters a quick service restaurant and observes the physical setting, picks up scents from the kitchen or even hears commentary regarding the food. All the above can happen simultaneously based on motives and expectations. The following stages of perception below are classified by Arnould, Price and Zinkhan, (2004).

a) *Pre-attentive processing*

   In the first stage of the perceptual process, preconscious monitoring occurs of all the sensory channels for events that may require a shift in attention (Arnould et al., 2004:308-318).

b) *Selection*

   At this stage, the consumer will begin to filter the stimuli, some of which they may choose to become immune to. Here, the consumer will select a small collection of stimuli for the sake of conscious processing (Arnould et al., 2004). Motives and subjective evaluation of the importance of stimuli are essential in this stage. The motives/current needs of the consumer will lead to an increasing or decreasing level of awareness and exposure to stimuli. Customer expectations are also present at this stage as people usually see what they expect to see, and this is based on familiarity and previous experiences.

c) *Organisation*

   During the organisation process, numerous stimuli are placed into groups to be perceived as unified wholes. These units allow for sense-making and are additionally tied to the individual's general knowledge. According to Arnould et al. (2004), the categories are functional, shaped by context and have the ability to simplify life for the individual. With the selection and filtering of stimuli mentioned in the above example, the individual may proceed to categorise stimuli based on previous exposure to concepts or ideas (related to food safety).

d) *Interpretation*

   According to Arnould et al. (2004), the interpretation stage is intertwined with the organisation stage as they both involve the process of making sense and seeking comprehension. At this stage,

previous experiences and the application of learned associations come into play. Schiffman and Kanuk (2010:183), state that when processing stimuli and finding some to be highly ambiguous, individuals interpret them to serve and fulfil personal needs and motives. Perceptual inferences will therefore be made if the individual has incomplete information (Arnould et al., 2004). The individual will make further integration with prior knowledge to interpret the stimuli ultimately. This process is known as elaboration.

Other authors have similarly defined perception, mainly to direct marketing efforts. This is the case with Hawkins, Mothersbaugh and Best (2007:238-261), who explains the perceptual process in terms of sensory stimulation in print advertisements. Cant, Brink and Brijball (2006:114-116) regard the perceptual process in four stages: exposure, attention, interpretation and memory. Exposure and attention refer to the identification and selection of the stimuli and interpretation, involving how a consumer assigns meaning to the stimuli. Both authors support that two people can see or hear the same event yet still interpret it differently (Cant et al., 2006). For the sake of this study, the explanation by Arnould et al. (2004) assists in the practical application and understanding of the perceptual process and supports the quality perception model developed by Steenkamp (1990).

In light of the discussion above, the quality perception model was found appropriate for this research and for further application of the importance-performance analysis. This model was applied throughout the measuring instrument to collect and analyse the data (to be discussed in depth in Chapter 4, Phase 2 of the study). According to Ophuis and Van Trijp (1995) quality perception process modelling offers a useful basis for exploring the importance of several quality cues and their interactions in forming quality perceptions.

2.2 THE QUALITY PERCEPTION MODEL

The quality perception model is presented in this section to provide the lens through which the consumers' perceptions of the quality of food safety at QSRs were examined. The quality perception model was developed to identify the use of consumers' perceptions of quality that may aid in marketing strategies. Ophuis and Van Trijp (1995) support that leading marketing strategy authors have recognised quality as a core concept in building customer value and satisfaction. Quality has been identified as an important variable for both producers and consumers (Steenkamp, 1990).

Actual quality has been defined by Kureemun and Fantina (2011) in the following way: "The degree of compliance of a process or its outcome with a predetermined set of criteria, which are presumed essential to the ultimate value it provides."

For the consumer, Kureemun and Fantina (2011:8) state that the customer's perception element of quality has its own particular definition and form of measurement. This definition carries subjectivity and is more specifically described as "the level of perceived value reported by the customer who benefits from a process or its outcome" (Kureemun & Fantina, 2011:8). The authors maintain that perceived quality is in the mind of the believer. Steenkamp (1990) drives the application of this model by stating that it is necessary to study quality from the consumer's point of view as, ultimately, it is the consumer who decides which products/services to purchase. It is emphasised that perceived quality is used instead of quality, as quality judgements depend on the consumers' perceptions, needs, and goals (Steenkamp, 1990). This view is supported by Kenyon and Sen (2011), stating that the perception of quality is related to a customer's experiences with a product's performance or benefits.

The quality perception model has previously been applied in research related to the food industry in studying intrinsic and extrinsic quality cues of meat (Kyrstallis, Chryssochoidis & Scholderer, 2007), the quality perception and food safety of beef (De Carlos, Garcia, de Felipe, Briz & Morais, 2005; Bredahl, 2004), the quality perception and acceptance of dairy products (Grunert, Bech-Larsen & Bredahl, 2004) and the quality perception of highly satisfied restaurant customers (Namkung & Jang, 2007). These different researched variables show the applicability of the model for this study in that it allowed for the exploration and account for consumer assessment processes.

The quality perception model and final definition were constructed by Steenkamp, which is illustrated in Figure 2.1:

…It is an idiosyncratic value judgement with respect to fitness for consumption which is based upon the conscious and/or unconscious processing of quality cues in relation to relevant quality attributes within the context of significant personal and situational variables (Steenkamp, 1990:317).

Figure 2.1 is discussed below, with reference to assumptions of the model and related concepts such as cues utilisation and attribute beliefs.

2.2.1 Assumptions and concepts of the model

While developing quality perception definitions, Steenkamp, (1990) mentions the assumptions of the theoretical model:

a. Perceived quality involves preference, which implies evaluative judgement such as favourable disposition, liking or affect.
b. Perceived quality is personal, implying that it differs amongst subjects.

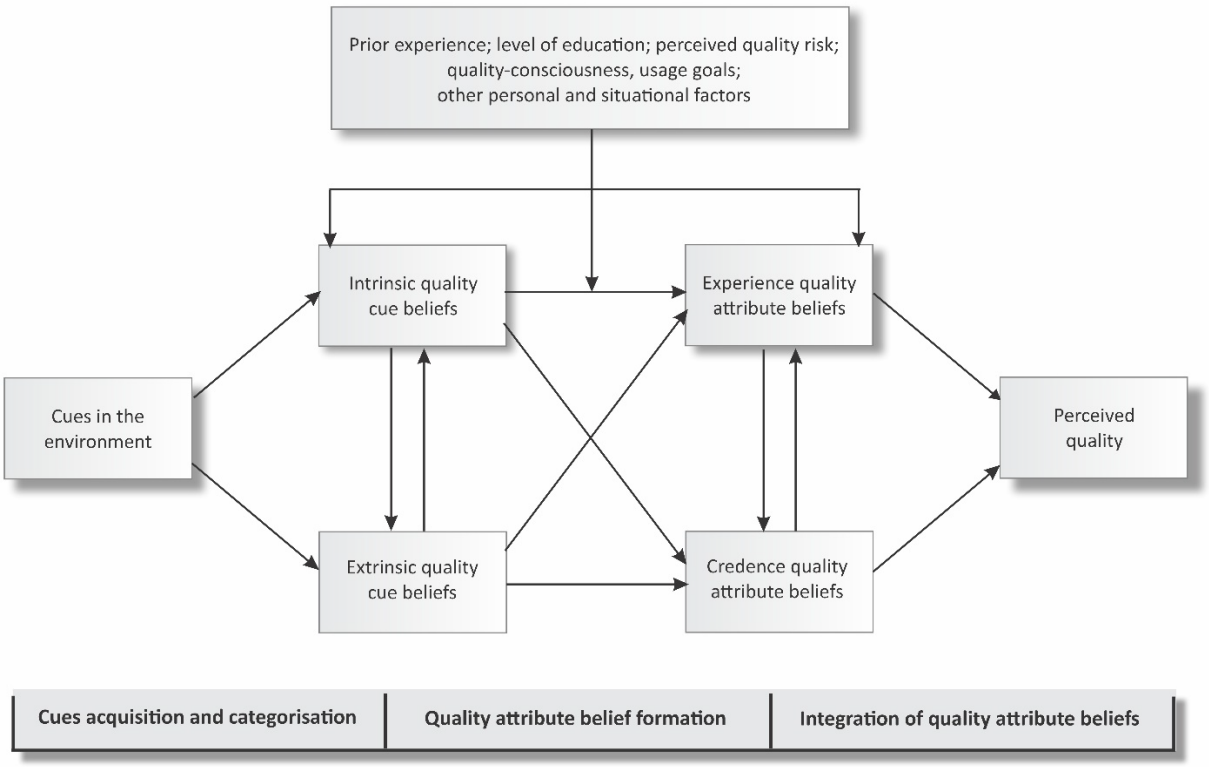

FIGURE 2.1: QUALITY PERCEPTION MODEL (STEENKAMP, 1990)

c. Perceived quality is situational in that it depends on the context in which the rate is evaluated.
d. Perceived quality resides not solely in the product's acquisition but in its consumption.
e. A product is not valued for its own sake but because it provides services that are valued by the subject.

The five (a. to e.) assumptions above are related to the quality of food safety for the sake of this study in the following context:

1) **Perceived quality involves preference**, which implies evaluative judgement such as favourable disposition, liking or affect.
   a. The perception of the quality of food safety is based on the comprehension of food safety and what the consumer believes it to encompass, according to levels of personal tolerance/acceptance. This personal level of tolerance/acceptance will not necessarily translate to being the same for another individual.
2) **Perceived quality is personal,** implying that it differs amongst subjects.
   a. Each individual goes through a unique perception process that may be influenced by their knowledge, past experiences or expectations.
3) **Perceived quality is situational** in that it depends on the context in which the quality is evaluated.

a. Studies indicate varying expectation levels of food safety compliance in different establishments; therefore, the quality evaluation will differ in every situation. This statement is further supported by Choi and Almanza (2012), by stating that foodservice establishments are inspected differently. In some cases, others may not be required to be inspected at all if they qualify as "not-for-profit". In the context of the consumer, Alimi and Workneh (2016) conducted a study regarding consumers' willingness to pay for safety assurance in purchasing street food. Conclusions made noted that differences existed between the cause factors shaping consumers' perception of food safety issues and the premises for purchase intentions.

4) **Perceived quality** resides not solely in the **product's acquisition** but also in its **consumption**.
   a. As discussed below, some food safety quality cues were not accessible for evaluation at the time of purchase but instead only during and even after consumption. Subsequently, food safety evaluations and judgments will continuously be made.
5) **A product** is not valued for its own sake since it **provides services that are valued by the subject**.
   a. Consumers will make choices, evaluations and judgements of the quality of food safety based on where they believe their interests are taken care of beyond the primary consumption of the product. This argument relates to credence characteristics, discussed in Section 2.2.1.3.

Ophuis and Van Trijp (1995) refer to the four 'P's of quality, being Perception, Product, Person and Place (Figure 2.2). Ophuis and Van Trijp (1995) state that the overall perceived quality judgement is formed on the basis of visible or invisible product characteristics that may have been actually experienced or are believed by the consumer to be associated with the evaluated product.

FIGURE 2.2: FOUR P'S OF QUALITY (adapted from OPHIUS and VAN TRIJP, 1995)

The product, person and place imply the relativity and specificity of the perceived quality. Different product categories will have various components of perceived quality. Ophuis and Van Trijp (1995) provide an example by stating that the fat content (whether desirable or not) may be a quality cue for meat. Still, the same cue is irrelevant when considering fruits and vegetables. Regarding the person factor, perceived quality is subjective, based on a consumer's own judgement. Consumers differ in their perceptual abilities, personal preferences

and experience levels. The last factor, place, relates to context. The intended purpose of usage affects perceived quality, referred to as usage goal (see Section 2.2.1.4).

To understand how a consumer arrives at a judgement of quality perception, it is essential to comprehend how they form quality attribute beliefs. Furthermore, it becomes critical to distinguish between quality cues and quality attributes. The quality cues and quality attributes are interdependent concepts related to the quality perception model, which play a role in reaching quality judgements for the consumer.

2.2.1.1 Quality cues and attributes

Quality cues and quality attributes are illuminated in this theory. Quality cues are considered informational stimuli consumers can discover through their senses before consuming. These cues are related to the quality "signals" of a product/service (Steenkamp, 1990). This is in line with the perceptual process as well as cue utilisation. Burnkrant (1978:724) states that "cues can provide a basis for inferring the characteristics of the object in consideration".

The quality attributes, on the other hand, are the functional and psychological benefits or consequences provided by the product or service. The attributes are considered unobservable prior to consumption, as they represent what the product or service is perceived as doing or providing for the consumer (Steenkamp, 1990). It is, henceforth, the cues that the consumer observes and the attributes that the consumer seeks to obtain through purchase. Furthermore, a cue is valued because of its perceived relationship with quality attributes. Steenkamp (1990) additionally states that at the point of purchase, the consumer will make use of quality cues in choosing other product/service alternatives. Most important in this theory and relevant to the study, is that the quality cues are important only to the extent to which they are perceived to be a means to achieve certain ends (i.e., food safety assurance) that are valued by the consumer.

2.2.1.2 Intrinsic and extrinsic characteristics of quality cues

In conceptualising the quality perception model, Steenkamp (1990) explains that quality cues can further be categorised as intrinsic or extrinsic. The intrinsic characteristics of quality cues refer to the "physical" product itself. Ophuis and Van Trijp (1995) describe this by stating that intrinsic refers to a product characteristics that cannot be changed or experimentally manipulated. Furthermore, these product characteristics are closely related to the physical product. Examples of meat may relate to its colour or amount of fat (Bredahl, 2004). Regarding food safety and its subjective evaluation, an intrinsic characteristic may relate to the food's physical state of the food, i.e., the smell or appearance.

When referring to the extrinsic characteristics of a product/service, Ophuis and Van Trijp, (1995) state that these are also related to the product but are not physically part of it. Common extrinsic characteristics of quality often include price, country of origin and brand name (Krystallis, et al., 2007). In the context of food safety assurance, there may be a belief that foodservice establishments from a particular country (having identified with the brand) practice food safety behaviours more reliably than a foodservice establishment originating from another country or a brand that they may be unfamiliar with. The general belief related to intrinsic characteristics is that they are more important in the quality perception process than extrinsic cue characteristics. However, when no additional information is available during evaluation, and one has to judge the quality of two similar products, Ophuis and Van Trijp, (1995) comment that extrinsic characteristics will become more important.

2.2.1.3 Experience or credence characteristics of quality attributes

Keeping in mind that the quality attributes are those sought by the consumer, yet not necessarily observable, it goes to say that some attributes can be considered experience-based because they may have been learned on the basis of an actual experience (Steenkamp, 1990). Kenyon and Sen (2011) uphold that experience properties can be evaluated after purchase and during the actual consumption or use of the product/service. Regarding the quality of food safety, this relates to seeking and experiencing the overall attribute of consuming safe food served hot in a clean establishment. This is an attribute not intrinsic to the product but rather aligned with the belief that food should be served hot and in a clean environment.

On the other hand, other quality attributes cannot be determined even after normal use or without consulting an expert and will therefore be considered credence-based. Considered vague and relatively subconscious, the information people receive and process in their environments relates to the credence property of quality attributes. Credence properties may not be verified even after purchase or consumption (Ford, Smith & Swasy, 1988). Krystallis, et al. (2007) provide the example with the credence characteristic of meat, being in the safety of the production processes and the quality of the final product. With regards to this study, it may be the belief that eating from a particular foodservice establishment (perhaps franchised) is better due to the sourcing of ingredients in a safe manner and maintaining the cold chain, therefore, the specific foodservice establishment will definitely provide safer food. These are bits and pieces of information regarding a certain product or service that aid in forming a perception about it.

2.2.1.4 Quality perception model and the formation of quality attribute beliefs

Three cognitive processes are involved in forming consumers' quality attribute beliefs, and subsequently applying quality cues to attain the attributes (Steenkamp, 1990). These include descriptive, informational and inferential belief formation.

Descriptive belief formation

These beliefs about quality attributes are considered to be the result of direct observation of the characteristics of a product/service, mainly through any of the senses. In a simple setting, a consumer may try out a brand before purchasing it and thereafter be able to form descriptive beliefs about the brand's rating. This process is based on the experience of quality attributes (Section 2.2.1.3) without having to use the quality cues (Steenkamp, 1990). In reality, however, consumers lack the motivation or the opportunity to try out brands before purchasing. Experiencing the brand, furthermore, will not provide information on credence attributes, and the consumer may not feel entirely sure about the experience attributes. Descriptive belief formation alone is insufficient for quality perception processing, as the beliefs about any experienced cues may say nothing about the desired quality attributes. The other cognitive processes will therefore fill this gap. In the context of the temperature of certain foods, for example, they may not explicitly need to be hot or cold, and thus descriptive belief formation with regards to temperature may be invalid with reference to the quality of food safety.

Informational belief formation

This process involves forming quality attribute beliefs by accepting information about the attributes as provided by external sources such as friends and advertisements. The probability of accepting the information is additionally influenced by the source, the message, and receiver variables (source credibility, vividness and comprehensibility of the information) (Steenkamp, 1990).

Inferential belief formation

Inferential beliefs are beliefs about the product or service that are not obvious in the environmental information. Inferential belief in the quality perception model is based on prior beliefs, activated from memory, concerning the perceived relationship between a cue and an attribute. Prior beliefs are organised in the memory, also based on prior knowledge about the product/ service category, and general rules are often embedded in the cultural environment and/or on stereotypes. Steenkamp (1990) states that prior beliefs can be expected to be more powerful in inferential quality belief formation than new information. People may misinterpret new information in line with their prior beliefs, especially if these beliefs are strong. Over time nonetheless, prior beliefs may be modified

because of repeated disconfirming observations (Steenkamp, 1990). Consumers may engage in inferential processes more frequently than any of the three types of quality belief formations.

With all the concepts discussed above, Steenkamp formed the quality perception model. This model assists in describing how consumers form perceptions about quality using cues relating to attributes sought. It is emphasised that a great deal of the cognitive activity involved in quality perception formation will be automatic, like the perceptual process, occurring without much conscious awareness. Steenkamp (1990) states that the quality perception process is a continuous process that involves cue acquisition and categorisation, quality attribute belief formation and the integration of quality attribute beliefs (See Figure 2.2). The processes are, overall, influenced by personal and situational variables.

2.2.1.5 Subject-object interaction

In making quality judgements, Steenkamp (1990) remarks that they entail a subject-object interaction since an individual consumer forms the quality judgement. Perceived quality judgements are described as emerging in a contextual setting comprising comparative, personal and situational factors.

Comparative factors arise when the perceived quality of a brand may be affected by the competitive context of other available brands.

Personal factors refer to important personal variables that also affect the quality perception process, including subject involvement, the extent of prior knowledge, levels of education and quality consciousness. Involvement refers to the motivation to process information about the product. Steenkamp (1990) explains that high-involvement individuals engage in more, are more elaborate, and are better at information processing. In addition, they tend to attach more importance to product-related information and produce more product-related thoughts and inferences. It is further assumed, then, that those individuals who are high-involvement consumers make use of more quality cues, attach more importance to intrinsic quality cues and will generate more quality attribute beliefs in the quality perception process. When applying prior knowledge, Steenkamp (1990) states that it is an important factor in the consumer's ability to process information. Regarding levels of education, it is believed that poorly educated individuals tend to be less competent in information processing and will use less information in decision processing. Steenkamp (1990) continues to state that the poorly educated will display fewer cue interactions.

Situation variables have been renowned for including usage goals and time pressure. Usage goals generally refer to the purpose of a product/service and that their quality will vary with the degree to

which they are specialised to suit specific purposes. The usage goal may affect which quality cues are used and which quality attributes are likely to be relevant in overall quality judgements (Steenkamp, 1990). The integration of usage goals enables one to make intersubjective quality comparisons based on the degree to which the brand fulfils its usage goals for different consumers. Time pressure relates to the time available to make quality judgements as this will affect the opportunity to process quality related information (Steenkamp, 1990).

2.2.2 Summary of the quality perception model

With reference to this study, the quality attributes sought by consumers were related to the four (clean, separate, cook, chill) food safety pillars, which, when fulfilled, accomplish the assurance of food safety. These are discussed in Chapter 3.

Concerning this model, customers will judge products and services on the basis of a variety of cues that they associate with the assurance of food safety (Schiffman & Kanuk, 2010:180). Such cues regarding food safety may relate to how the food looks or smells, the state of cleanliness at the food establishment, the attire and hygiene of the staff, the presence of food safety certificates, or hand washing basins, to name a few. These and so many other cues triggered by sensory stimuli may lead to evaluating food safety cues at a QSR in forming a perception of the quality of food safety. In a study conducted by Henson et al. (2006), investigating the observable cues that consumers use to assess the safety of food found that respondents indeed relied heavily on their own assessment of food safety.

The importance of each food safety cue, as per a consumer's personal evaluation, will imply their perceptions of food safety quality when dining at/purchasing from a quick service restaurant. Henson et al. (2006) further comment by saying that the relative importance of the particular cues differs according to gender, age, and level of education in the perceptions of restaurant food safety.

The importance-performance analysis (IPA) framework developed by Martilla and James (1977) was appropriate for collecting and analysing data alongside the quality perception model. This framework was suitable for practical usage, and it further supports assumptions and concepts of the quality perception framework. The IPA framework will be discussed in depth in Chapter 4, as it is closely related to the measuring instrument as a collection tool and has further implications for data analysis.

2.3 CONCLUSION

This section discussed the theoretical model applied in the study. The model was chosen after careful consideration, confirming the appropriateness of the study's objectives. The study objectives are discussed in Chapter 3, which concludes with the indication of the importance-performance analysis framework applied for data collection and analysis and will be discussed in Chapter 4.

Chapter 3

LITERATURE REVIEW

This chapter presents the literature review and sets the background for the research investigation, providing an overview of the relevant constructs presented in this study. The main themes discussed include food safety, its definition and application in research, and the foodservice industry with specific reference to the quick service restaurant (QSR) industry.

3.1 INTRODUCTION

In the previous chapter, the researcher discussed the theoretical model applied to the study. This quality perception model explains how quality perception is a subjective evaluation process.

Chapter 3 reviews the literature and clarifies the relevant constructs that contribute to the research. This research topic deals with food safety and related perceptions, specifically within South Africa. Having clarified the topic, this research will now elaborate on food safety in the context of consumer perceptions. The concept of quality cues mentioned in Chapter 2 is considered here to accentuate the food safety quality cues. The final sections in this chapter relate to the quick service restaurant as a segment of the foodservice industry as the main focus area.

3.2 FOOD SAFETY

The following section discusses food safety and its characterisation, the state of food safety and its practice. Lastly, food safety is addressed in line with its interaction in the foodservice industry.

3.2.1 The current context of food safety

Food safety assurance efforts are spread across the globe amongst each participant in the food supply chain. Food safety efforts refer to conditions and measures required to ensure the safety of food from being contaminated at any point during harvesting, processing, storage, distribution, transportation and preparation (WHO, 2018). According to Lawley, Curtis and Davis (2012) the term food safety has no universally accepted definition but states that it can be usefully defined as the practice of ensuring that foods cause no harm to the consumer. Payne-Palacio and Theis (2016) regard the term to encompass efforts that aim to contain and prevent the harmful consumption of contaminated food. In another definition, food safety includes ensuring safe food when handled, prepared and consumed according to its intended use (Food and Agricultural Organisation, 1997).

3.2.2 Discussion of food safety attributes and cues

Five main pillars of food safety have been noted to contribute to the foundation of safe food (Hygiene Food Safety Organisation, 2019). These pillars were identified as personal hygiene, temperature, control cleaning and sanitising food storage, and food handling. Other food safety guidelines refer to raw materials, hygiene conditions, adequate food safety practices, operations, utensils and equipment, and water supply as areas of critical concern for food safety assurance (Hooker and Murano, 2001). For the sake of this study (in line with the literature review below and the qualitative phase of the study), the pillars are narrowed down to four main aspects; personal hygiene and staff behaviour, temperature control of food, cross-contamination/pathogen presence and raw materials/ingredients, which are substantiated below.

The purpose of food safety overall aims to prevent foodborne illness occurrences. The quality attributes stem from the above four pillars of food safety, and the quality cues are introduced for further discussion. These attributes and emerging cues assist in evaluating and judging the perceived quality of food safety. Main headings refer to quality attributes sought by consumers in their purchasing and consumption of food that is assumed to be safe, as well as sourced and prepared according to food safety regulations and guidelines.

3.2.2.1 Personal hygiene and staff behaviour

Personal hygiene and staff behaviour refer to a food handler (staff member) who is any person involved in a business and specifically handles or is involved in the preparation of food accordingly (Knowles, 2012: 251). Furthermore, a food employee/food handler is defined as someone who works with unpackaged food, food equipment, and kitchen utensils or is in contact with food contact surfaces (Motarjemi, Huub, Lelieveld & Desmarchelier, 2014). Within the regulations governing general hygiene requirements for food premises, the transport of food and related matters, the Department of Health (2018:6) state that this is "a person who in the course of his or her normal routine work on food premises, directly handles or comes into contact with packaged or unpackaged food, food equipment and utensils, or food contact surfaces and is therefore expected to comply with food hygiene requirements". Food handlers can expose food to hazards; therefore, it is recommended that they be trained (Knowles, 2012:251). Protective clothing such as gloves, hats/hair nets and approved footwear must be worn to protect and prevent hazards from occurring. If food handlers are dressed this way, the consumer may perceive the adherence to food safety practices, thus using attire, for one, as a quality cue. Protective clothing is provided to protect the worker from hazards and prevent contamination of the workplace from materials the worker may bring from their personal clothing

(Motarjemi & Lelieveld, 2014). According to Motarjemi et al. (2014), those who work with food have been associated with spreading foodborne diseases. In analysing the settings for outbreaks, 46.1% are said to have come from foodservice facilities, followed by catered events (15.4%), the household (10.2%), schools and child-care centres (6.0%) and lastly, healthcare facilities (5.3%). Outbreaks are attributed to large groups of people's frequent and continuous exposure to a pathogen, mainly through contaminated foods. When food employees are involved in such outbreaks, it is usually due to infection. Issues such as where bare hands were in contact with food, failure to wash hands properly, the inadequate cleaning of processing or preparation equipment or utensils and food workers' abuse of temperature could be the cause (Motarjemi & Lelieveld, 2014). The motivation to provide workers with adequate infrastructure and training is to become knowledgeable about their behaviour and that any mistakes in the foodservice environment may have consequences resulting in contamination. Practices for prevention, including reinforcing proper handwashing, should be supported, monitored, and enforced by management.

3.2.2.2 Temperature control of food

The temperature danger zone refers to temperatures between 6 to 63 degrees Celsius, ideal for growth, as even a small number of bacteria will grow between these temperatures. Temperature control aims to prevent or eliminate the growth of bacteria. Knowles (2012:164) states that temperature control can be used to slow down the food decomposition rate to prolong the life of food products. Incorrect temperature handling of food comprises the temperature of the food when received during delivery to its storage (i.e., chilled, frozen, dry), the preparation of the food (cooking to the correct internal temperature for specific foods like meats) and its serving/holding temperatures over time. Temperature requirements span from delivery vehicles to controlling temperature within the various storage areas (Knowles, 2012:161-164). According to Lawley, et al. (2012), bacterial growth is most rapid at temperatures around 37 degrees Celsius. Most bacteria are killed at a temperature above 75 degrees Celsius, considering the food is cooked for more than 10 to 30 minutes (Lawley, et al., 2012). Bacterial growth may cease or proceed in temperatures below 5 degrees Celsius but may be slow. Food storage and temperature controls are imperative as, according to Lawley et al. (2012), some food illness cases are caused by careless monitoring and control of temperature. Knowles (2012:164) states that temperature monitoring systems in place should include the requirement for manual readings that can be recorded. In compliance with temperature guidelines, the most secure manner is to prevent and eliminate pathogen growth in foods.

3.2.2.3 Cross-contamination/pathogen presence

Cross-contamination refers to the accidental transfer of bacteria or other contaminants, from one surface or substance to another, especially due to unsanitary handling procedures (Merriam-Webster, 2020). The Hygiene Regulation R.683 refers to it as the process by which contaminants, allergens or bacteria are unintentionally transferred from food, substances, objects, or facilities to other food, substances, objects or facility with a potentially harmful effect (Department of Health, 2018). It alerts an important consideration in the assurance of food safety, which is the physical setting of the foodservice establishment. The integrity of the building and the surrounding environment further influence the access of pests, microorganisms, dust, and polluted air to the products being produced on the premises for consumption. Motarjemi et al. (2014:52) elaborate that the chances of such contaminations will depend on the establishment's environment. In the event of reconstruction or maintenance conducted during production, for example, the safety of the food and processing operations may be severely challenged. Along with the physical establishment, Motarjemi et al. (2014) state that to prevent/restrict cross-contamination, restrooms and disposal systems must not be directly connected to production areas. As part of the establishment, there must be a means for cleaning and disinfecting premises, equipment and contact surfaces, and employee hands (Knowles, 2012:235). It is vital to keep premises clean as there is contact with food. Knowles (2012:235) lists contact surfaces to include knives, utensils, food containers and the hands of staff. Furthermore, in the event of food build-up, pests may be attracted, which poses the threat of spreading contamination. This issue and the presence of other unwanted organisms are observable by consumers, allowing them to make general evaluations of store cleanliness. Knowles (2012) states that the cleaning procedures followed by an establishment should be extended from food hygiene to cover other health and safety, such as spills. The cleaning procedures themselves should not create risks to health and safety either.

3.2.2.4 Raw material/ingredients

Products passed down the food supply chain must be safe and free of toxins, bacteria and other hazards for food to be safely consumed. In evaluating raw ingredients/commodities and, eventually, final products, Motarjemi et al. (2014) state that there are certain mandatory specifications the law requires throughout the food chain. Clarke (2010) supports this statement that food safety standards may be of various types, including numerical standards that define the required characteristics of products. This extends to contaminant limits or maximum residue limits. Another consideration foodservice should take note of are high-risk foods. These foods have been identified as the source of food illness outbreaks and therefore require strict handling. These foods include meat and poultry,

milk and eggs, seafood and shellfish and cooked grains, i.e., rice. Meat and poultry, for one, are considered high risk due to the bacteria's ability to live in the intestines of animals, which are carriers and, when alive, will show no symptoms (Lawley et al., 2012). High-risk foods and the handling of ingredients require access to information and knowledge of their quality as well as their origin, known as traceability.

All safety efforts from farm to fork are to monitor any possible hazards as they move from one supplier to the next to eliminate the hazard. In the eye of the consumer, Motarjemi et al. (2014) state that an enormous range of judgements is often made when purchasing products. They also state that the evaluation of products, being hugely subjective, comprises intrinsic and extrinsic factors. Ophuis and Van Trijp (1995) state that the use of some quality cues are concrete product characteristics that the consumer can observe before actual consumption or usage. The authors provide examples of quality cues and quality attributes specifically related to the quality judgement of food, as seen in Table 3.1. The comments align with the discussion of quality cues in contrast to quality attributes (Chapter 2). Consumers have a set of behaviour patterns carried out almost unconsciously (Motarjemi et al., 2014). Intrinsic properties in the evaluation of products refer to their appearance and how the customer remembers, for example, the product to have performed in terms of taste, flavour, texture, and stability. These factors are perceived so rapidly that the consumer may not necessarily be aware of doing it. After this process, the decision to purchase is based on whether the products' intrinsic and extrinsic properties performed to the consumers' expectations. The ingredients and final food products, often judged by the abovementioned quality cues, are significant determinants of whether consumers consider their food safe to eat.

TABLE 3.1: EXAMPLE OF QUALITY CUES AND QUALITY ATTRIBUTES FOR FOODS

Intrinsic quality cues	• Appearance • Colour • Shape • Size • Structure	**Extrinsic quality cues**	• Price • Brand name • Country of origin • Store • Nutritional information • Production information
Experience quality attributes	• Taste • Freshness • Convenience	**Credence quality attributes**	• Healthfulness • Naturalness • Animal friendliness • Environmental friendliness • Wholesomeness • Exclusiveness • Way of production

(Ophuis and Van Trijp, 1995)

The above discussion of the pillars for food safety provides the quality attributes and a foundation of what quality cues to expect in a foodservice environment that aims to assure the service of safe food.

3.2.2.5 Food safety and the study of quality perceptions

Ventura-Lucas (2004) states that the interpretation of "signs" (discussed as quality cues) and previous experiences associated with goods/services are decisive factors in giving meaning to food safety. Henson et al. (2006) describe the safety of food served in restaurants as an experience characteristic. Consumers will predominantly rely on visible "cues" in evaluating the quality of food safety and its performance in food establishments. It can then be said that consumers will depend on their own subjective assessments (Fatimah et al., 2011). Furthermore, consumers continue to make assessments of food safety and whether the attributes sought were satisfied post-consumption (Henson et al., 2006).

For the sake of this study, four main food safety attributes have been defined, and relevant "signals" of food safety refer to the cues used by consumers during the quality perception process. These cues were obtained through the review of earlier research similar to this study and in completing Phase 1 of the study, i.e., entails semi-structured interviews conducted in various QSRs. These endeavours assisted in constructing the measuring instrument, as discussed in Chapter 4. Table 3.2 illustrates some studies concerned with food safety perception, practices, or implementation and identified some cues related to evaluating food safety in various foodservice environments.

TABLE 3.2: SUMMARY OF PAST STUDIES AND IDENTIFIED FOOD SAFETY ATTRIBUTES

Authors	Research	Attributes highlighted
Worsfold (2007)	- Consumer perception of food safety and public knowledge of restaurant hygiene inspections is discussed. - The study also asked consumers about concerns they had regarding general food safety when eating out.	• Cleanliness of facilities (toilets) • Appearance of the food establishment • Undercooked food • Poorly presented food • Unhygienic appearance of staff • Dirty crockery/cutlery • Presence of foreign bodies
Knight, et al. (2007)	- Consumer perceptions of food safety at restaurants are discussed. - Study of the consumer perceptions in comparison to the perceptions of food safety of other food system actors (i.e., federal government agencies, food processors and manufacturers, farmers, grocery stores and supermarkets).	• Food safety protocols • Personal hygiene • Workplace sanitation • Food handling • Food preparation
Van Tonder, Lues & Theron (2007)	- The main focus is on personal and general hygiene practices of food handlers in the delicatessen sections of retail outlets in South Africa. - The authors also examine knowledge and practices regarding personal and general hygiene.	• Food handling • Attire (apron/glove replacement) • Surface cleaning practices • Handwashing • Reporting staff illnesses

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Authors	Research	Attributes highlighted
Dundes and Swann (2008)	- This is a study of fast-food employees' experience of food safety who worked at three different food establishments. - The results presented included areas where health violations were experienced.	• Inadequate training • Temperature of the food • Cross-contamination • Handwashing
Nowicki and Sikora (2011)	- This study investigates customer satisfaction with food quality and safety in Bistro Bars. - The study focuses more on demographic differences and the satisfaction levels.	• Respondents with higher levels of education are less satisfied/more demanding of food safety and quality • Female respondents are less satisfied/more demanding • Older respondents (65+) are more or less satisfied/more demanding
Lee, et al. (2012)	- Consumer perception of food safety in Asian and Mexican restaurants aimed to document consumer attitudes towards food safety in restaurants.	• Cleanliness of the kitchen and restrooms • Temperature of storage areas • Quality of the food (freshness) • Temperature of the food • Where the food originated • State approval and inspection
Djekic, Smigic, et al. (2014)	- This research deals with food hygiene practices in different food establishments to investigate food safety dimensions from three European cities.	• Restaurant cleanliness • Temperature control • Cross-contamination • Personal hygiene • Food preparations • Water control
Lui, et al. (2016)	- This research looked at food safety performance with a comparison between ethnic and non-ethnic and chain and independent restaurants, given that cleanliness and hygiene are factors that affect consumers' restaurant selection.	• Clean food equipment • Presence of certification/permits • Personnel (physical appearance and employee health) • Pest control
Liu, et al. (2018)	- The study focused on the perceptions of consumers, set in the restaurant environment - Aspects of food safety related to three cleanliness cues - Study employed the IPA tool for evaluation - Cleanliness was found to be a direct influence on the consumer's overall satisfaction	• Functional clues • Mechanic clues • Human clues • Clean fingernails • Clean uniforms/protective wear • Wearing gloves when handling food

The Table was consistent with the data collected in Phase 1, providing background from a literature standpoint. Yu-Gang and Wen-Hwa (2022) comment on their research that it was important to achieve similar food safety indicators/cues, which were consistent with previous literature studies in their findings.

3.2.3 Motivation and stakeholders behind food safety assurance

Globally, legislation and other quality and safety standards have been developed by various organisations, such as the Food and Agricultural Organisation, the World Health Organisation (WHO), the International Organisation of Standardisation and the British Retail Consortium, to name a few. In

2010, the WHO estimated 600 million foodborne illnesses and 420 000 deaths. According to the WHO, however, less than 10% of foodborne illness cases are reported, whereas less than 1% of cases are reported in developing nations (WHO | Listeriosis – South Africa, 2018). Statistics in Africa show that there are roughly 91 million cases of FBI, which further results in 137 000 fatalities (Mwambi, Bijman, Mshenga & Oosting, 2020).

According to Lee et al. (2012), the public's concerns about food safety have led to the development and tightening of food safety regulations across the world and the various food supply chains that exist. It is not merely about addressing contamination at the source but also maintaining a level of responsibility and accountability when interacting with food. The Food and Agricultural Organisation (FAO) has responded by aiming to improve food safety and quality management systems, contributing to food security, amongst other global objectives (FAO, 2017). The World Health Organisation (WHO) has dedicated its activities to the protection of humanity from disease and acts through prevention, detection and response to public health threats associated with unsafe food (WHO, 2018).

The South African government supports the efforts for food safety assurance by stating that people have the right to expect the foods they eat to be safe and suitable for consumption (Department of Agriculture, Forestry and Fisheries, 2017). According to Chanda, Fincham, and Control (2010), South Africa has the fundamentals of a food control system in which legislation and functions are not confined to a single government department. Responsibilities of the control system are a shared responsibility of three main national departments, as illustrated in Figure 3.1 (next page).

In South Africa, legislation and regulations have been passed to monitor and maintain food safety. Controls include those of imports and exports, safety and quality aspects of food, as well as the control of processed and unprocessed foods (Chanda, et al., 2010).

Specifically looking at the Foodstuffs, Disinfectants and Cosmetics Act 54 of 1972 in South Africa this was developed briefly to control the sale, manufacture and importation of foodstuffs, cosmetics and disinfectants. Within this Act are 50 sets of regulations, with the newly adapted Regulation 638 relating specifically to the "general hygiene requirements for food premises and the transport of food" (Department of Health, 2018).

This regulation explicitly elaborates on food handling and preparation for the prevention of foodborne illness, health approval and certification, and ensures responsibility through the requirements for all industries. It further relates to the handling of food and the need for a certificate of compliance before establishments are able to operate. The Act further specifically looks at the following issues (on the next page):

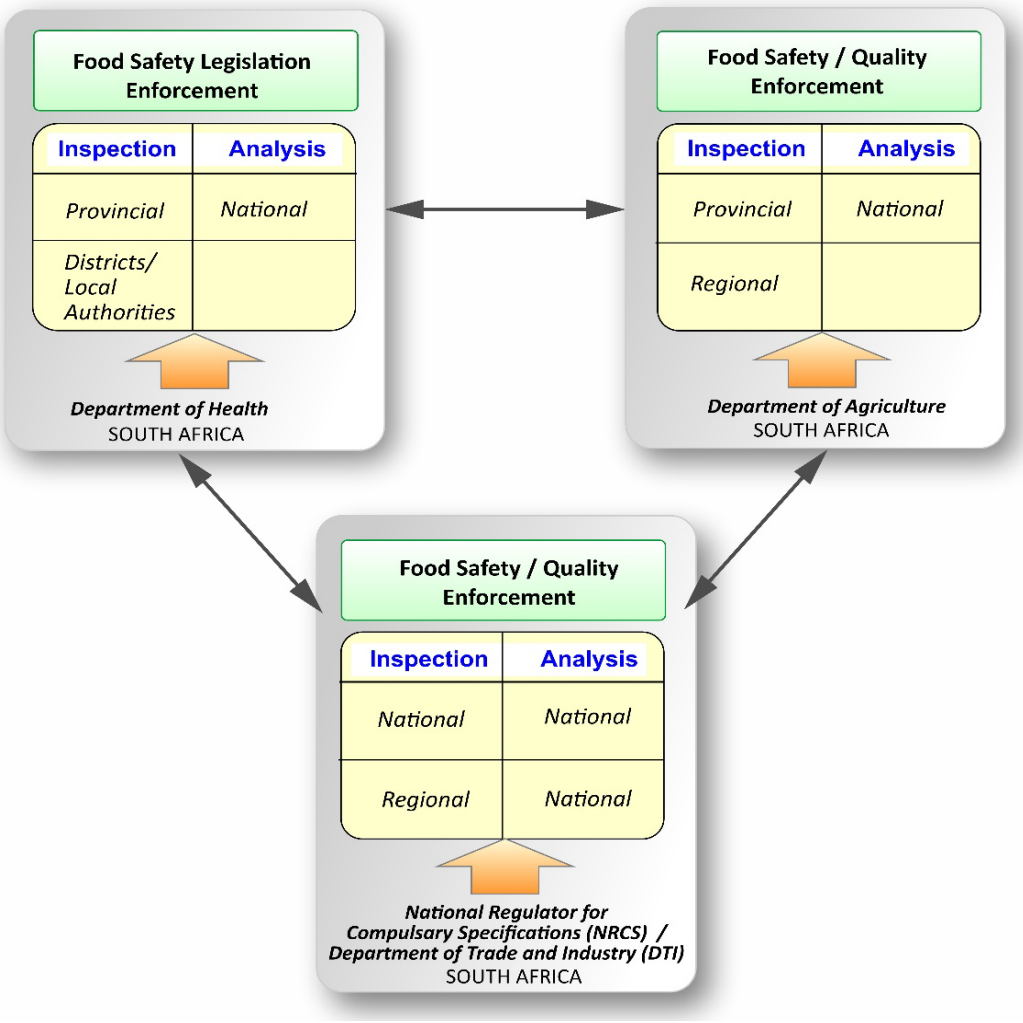

FIGURE 3.1: REPRESENTATION OF THE SOUTH AFRICAN FOOD CONTROL SYSTEM (Mashuba, 2016)

- Prohibition on the handling and transport of food
- Standards and requirements for food premises
- Standards and requirements for facilities on food premises
- Standards and requirements for food containers
- Standards and requirements for the display, storage and temperatures of food
- Standards and requirements for protective clothing
- Duties of a person in charge of a food premises
- Duties of a food handler
- Standards and requirements for the handling of meat
- Standards and requirements for the transport of food
- Provisions concerning unprocessed products (Department of Health, 2018).

The Act further discusses the responsibilities and specifies the functions of the stakeholders; this information is openly available to foodservice operators to ensure that prior to operating, they are aware of how to maintain food safety control.

3.2.4 Food safety in the foodservice industry

Food safety assurance is considered fundamental in foodservice because of the high volume of meals served (Rebouças, Santiago, Martins, Menezes, Araujo & Almeida, 2017). Private and public efforts concerned with food safety implementation have faced many barriers globally and locally. Motarjemi et al. (2014:822) further emphasise that aid in food safety assurance, more flexible approaches to implementing food safety controls become necessary. Additionally, the approach to food safety management should be in line with local culture, economics, and available infrastructure.

The failure to perceive the risk associated with poor food safety practices may impede the successful implementation of food safety control measures (Kunadu, Ofosu, Aboagye & Tano-Debrah, 2016). According to Sibanyoni et al. (2017), the assurance in foodservice establishments will depend heavily on the availability of infrastructure, appropriate management support and commitment. Additionally, knowledgeable and skilled food handlers are needed. Studies concerned with food safety knowledge, training and the habits/practices of food handlers, however, have concluded that certain food safety practices have proven to be insufficient and hence inefficient in the assurance of food safety, i.e., handwashing, and temperature control. Outbreaks can become international emergencies due to the range and speed of product distribution (Fung, Wang & Menon, 2018). Knowles (2012:13) states that there has been an increase in the number of cases notified in developed countries due to the greater public awareness of food poisoning. Despite food poisoning being a notifiable disease, on the other hand, it has been found that instances are unlikely to be reported as people are less likely to pursue medical attention (Mashuba, 2016).

3.2.5 Recent food safety issues in South Africa

In 2017, South Africa found itself experiencing the globe's largest listeriosis outbreak ever detected (WHO | Listeriosis – South Africa, 2018). Spread across the country's three largest metropolitan cities, 20% of the 1060 laboratory-confirmed cases resulted in the loss of lives. The protein product responsible for the outbreak was cold meat called polony. This is a widely consumed ready-to-eat processed meat. Due to the menu evolution of the QSR industry in South Africa, this commodity itself has grown to be included in some franchise menu items. Furthermore, the concern was that South Africa exports this product to 15 other African regional countries (WHO | Listeriosis – South Africa, 2018). This outbreak caused a scare among South African citizens, which was further enhanced by the poor surveillance system, like other African countries. It called for the need for risk communication with consumers, particularly with vulnerable groups. Unsafe food poses global threats, to which the young, elderly and sick are particularly vulnerable (Fung, et al., 2018). This is alarming given that it is

only through food surveillance that investigations can be conducted, and the movement of potentially contaminated products be controlled (Fung, et al., 2018). Consumers generally rely on the government to ensure food products are not only safe but are also sold as what they claim to contain (Fung, et al., 2018).

Most foodborne illness outbreak reports have not been specifically related to the commercial foodservice industry in South Africa. Examples, however, include a university student in September 2019, attending an institution in the Pretoria region, Gauteng province. The student was reported dead after consuming food from the university cafeteria (Coetzer, 2019). Another alarming article reports the hospitalisation of 28 Pretoria high school students after consuming food purchased from a street vendor (Kubheka, 2019). One example affecting a larger number of victims includes the illness and hospitalisation of two hundred and fifty school pupils in East London in the Eastern Cape Province, reported in 2018. The article reports on symptoms experienced by the learners but fails to mention the source causing the illness (ENCA, 2018). Other outbreak reports include the deaths of three primary school learners (News24, 2019) and the deaths of teenagers after having consumed "vetkoeks" purchased from vendors (ENCA, 2017), to mention a few.

It is imperative to have this information, as it is stated by Bisholo, et al. (2018) that the media report foodborne outbreaks. Still, they are often not recorded in an epidemiological surveillance system in South Africa. They continue to state that many food safety challenges exist in South Africa as illness outbreaks are not reported (Bisholo et al., 2018). It further raises the concern that the South African surveillance system is currently unaware of how often the consumer is affected when referring to the commercial foodservice industry.

3.2.6 Barriers experienced with food safety implementation in foodservice.

Dundes and Swann (2008) emphasise that it is vital that the foodservice industry understand how deviation from the health codes can cause illness and that these rules are not simply for appearances. Having stated the above, it is concerning that foodservice establishments are playing an increasing role in the risk setting for foodborne illness (Henson et al., 2006; Knowles, 2012). This is backed by Motarjemi et al. (2014) and Kaskela, Sund and Lundén (2021) in that foodservices are frequently cited as the location for foodborne illness outbreaks. In 2007, for example, the USA confirmed that 40% of outbreaks were sited in restaurants. Kaskela, Sund and Lundén (2021) found that during the inspection of restaurants, only 34.1 % of the restaurants received an A (excellent). This alternatively meant that two-thirds of the other restaurants inspected showed non-compliance.

In the foodservice supply chain, foodservice establishments are the last point before serving to a consumer. Safe food handling at this point becomes critical in preventing foodborne illness, but also in maintaining the previous efforts and food safety measures undertaken by participants in the chain mentioned above (Motarjemi et al., 2014). Other than the operators who are liable in this phase, other contributory factors make food safety assurance face its difficulty. These factors include the use of multi-ingredients, or the natural component of the food handled, the volume of food due to the size of the operation, the range of worker education and high employment turnover (which affects the training frequency of staff).

Furthermore, prevalent hygiene practices associated with the occurrence of foodborne illness include unsafe sources/raw materials, inadequate cooking, improper holding temperatures, processing, contaminated equipment, poor personal hygiene and cross contamination (Medeiros, Hillers, Chen, Bergmann, Kendall & Schroeder, 2004; Knight et al., 2007; Fatimah, et al., 2011; Djekic et al., 2014; Mashuba, 2016; Bai et al., 2019). Literature mentions quality and freshness of ingredients, food storage, and hand washing as other attributes of food safety that have failed in their practice, thus causing foodborne illness outbreaks (Dundes and Swann, 2008; Lee et al., 2012). This is also supported by Motarjemi et al. (2014), stating that in an outbreak experienced in the UK, the leading causes were attributed to improper storage (14%), handling by an infected food handler (6%), cross-contamination (33%) and inadequate heat treatment of food (18%).

In South Africa, foodborne illness outbreaks are rarely reported, as noted above. This poses a problem, as it becomes difficult to trace establishments that may not adhere to food safety practices and regulations set by the government. In an effort to improve accountability, the Regulations Governing General Hygiene Requirements for Food Premises, Transport of Food and Related Matters (R638) were amended in 2018. Changes include that the person in charge/supervisor of food handling must be able to demonstrate that they are suitably qualified and trained in principles and practices of food safety and hygiene. The regulation also requires record keeping of all training programmes for at least six months (Department of Health, 2018).

In a study conducted by Badrie et al. (2006), the findings ultimately revealed that the respondents were undetermined in their trust of food safety authorities for ensuring safe food, as there is a lack of implementation and monitoring of the food safety systems. Verdú, Millan, Saavedra, Iruzubieta and Sunjuan (2021) have more recently stated that certain elements that tend to ensure the food safety of products being sold, are lacking. Food safety, quality, and thorough comprehension at food establishments are essential, and operators within the industry have a emphasised responsibility to understand and enforce standards to protect and cater to the customer.

3.2.7 Food safety in foodservice and the consumer

In a study conducted by Mhlanga, Moolman and Hattingh (2013), the commentary is that understanding consumers is crucial as how they perceive a restaurant will affect their future purchase decisions. Oyewole (1999) found that food hygiene, as a concept related to food safety, was rated the highest out of 10 other service quality concepts in restaurants. Lee et al. (2012) state that although certain food safety protocols may be voluntary, it is through these programmes that foodservice will gain market share as customers will link the products to a high quality, leading to competition and reputational advantage. Knight et al. (2007) comment that consumers must place their trust in chefs and foodservice workers to ensure that the foods they eat are handled and prepared properly when eating at restaurants. Despite the need for consumers' trust, however, a heightened awareness of food-related safety matters exists among food consumers in this day and age. Therefore, there is a driving demand for more information (Du Plessis and Du Rand, 2012). This is supported by Omari, Arthur and Frempong (2018) when affirming that worry and concern over food safety matters are important determinants of people's attitudes to health and food safety as well as how they respond to information. Additionally, the extent of the worry and concern has been found to differ according to gender, age, and social class of the consumer (Omari, et al., 2018).

Concerns regarding hygiene, cooking, selling, and servicing environments were found to be on the increase. This was due to the notion that few outlets may be perceived as hygienic from visual inspections. The concept of food safety practices and their implementation is often not entirely visible to consumers other than through specific observable cues. Corresponding with Henson et al. (2006), the increasing importance of food consumption outside the home has highlighted the need to understand how consumers make their judgments about food safety. On the other hand, Lawley et al. (2012) state that observable cues are often about defects in food commodities; the defects are cues that have more to do with visual food aesthetics than food safety.

Holistically, consumers expect food to meet their nutritional needs and for the food to be wholesome and taste good. They also expect to be informed precisely and accurately that the food offered to them is safe (Knowles, 2012:20). Fung et al. (2018) comment that food safety is a basic human right and that safe food essentially enhances individual and population health. Motarjemi et al. (2014) state that it is often only when a high number of consumers are exposed at a common time or place that there is a greater chance of the outbreak being recognised. According to Ergönül (2013), this is the problem: consumers do express their concerns about food safety, but only a few appear to change their purchase and consumption behaviours in view of their concerns. Badrie et al. (2006) remark that consumers may still not attribute certain illnesses to being foodborne despite their awareness of food

safety practices. Mashuba (2016), and Motarjemi et al. (2014) state moreover that surveillance is not universally available, which is something more developed countries can employ.

Compromising food safety assurance is not a way for any company to reduce costs, as even a slight dip in consumer confidence can have significant effects (Knowles, 2012:18). It is through the mechanisms of ensuring the provision of safe food that consumer confidence will be supported. According to Henson and Caswell (1999), the number of the costs and benefits of food safety regulations are intangible and difficult to convert into monetary amounts. The consequences of poor food safety noted by Knowles (2012) include the decline in product confidence, the cost of legal action, and the salary cost of staff replacement. The company may also experience the cost of promotion in an effort to improve the company image and maintain sales. At national and international levels, outbreaks of foodborne illness damage the trade and tourism of that region or country, especially where foodservice has a direct interface with travellers who are frequently compelled to eat their food while in transit (Motarjemi et al., 2014:824).

A study aimed at developing a catering quality scale aligned with a food safety perspective found authors commenting that food safety, food attractiveness, and food acceptability are key characteristics influencing food quality (Yu-Gang & Wen-Hwa, 2022). According to Behrens et al. (2015), customer involvement is therefore essential in the food safety chain to develop effective risk management and communication strategies.

The following section will discuss food safety and its interaction within the food industry.

3.3 FOOD INDUSTRY

Food safety, and discussion on the food safety pillars, interpreted as attributes and quality cues applied in this study, are found in the previous section. Food safety is ultimately targeted at protecting the consumer in the various environments in which they interact with food. This section now discusses the food industry, the foodservice industry and specifically quick service restaurants. The constructs and components are defined and discussed, the industry's growth over time and how it has affected consumers. The chapter concludes with how food safety assurance has been applied in the QSR environment in past research.

3.3.1 Components of the food industry

In its entirety, the food industry plays a vital role in every nation. This industry plays a crucial role in public health, food safety, food security, social development, and nutrition (Sadiku, Musa & Ashaolu, 2019). The food industry is a further collection of several other industries, all producing a diverse range

of food products. Sadiku et al. (2019), state that the food industry comprises the following components:

- *Agriculture*

  The production of food and feed; farming, livestock raising and fish farming
- *Food processing*

  The transformation of raw ingredients into marketable food products
- *Food distribution*

  The transporting, storing, and marketing of food products to consumers.
- *Food regulation*

  The regulations on food production and distribution ensure quality and safety. These are the rules that food businesses must comply with in order to operate.
- *Food marketing*

  The vehicle for promoting information about food.

In its analysis, Global Edge (2020) states that the food and beverage industry is divided into two major segments: production and the distribution of edible goods. The production segment includes processing meats, creating beverages, packaged foods and other modified foods. The distribution of food involves the transporting of the finished product to the hands of the consumers. Global Edge (2020) continues to include companies in the food industry that encompass food to retail outlets, restaurants, or directly to consumers.

Additionally, there is an increased demand for health foods and informative labelling. When looking at foodservice and the hospitality industries specifically, these are known to operate by providing and offering foodservices such as restaurants and bars and other services such as accommodation, gaming, entertainment, meetings, and events (Research and Markets, 2019). Major forces behind the growth of this industry incorporate people having extra time and more disposable income however, in the same breath, the assessment of industry trends noted that consumers are looking to save money and stretch their money further.

3.3.2 Foodservice industry and classification

According to Friddle, Mangaraj and Kinsey (2001), foodservice operators include those who own, franchise or manage a retail foodservice business. These operators may either manage one restaurant or a chain of eating establishments. The foodservice segment has also been referred to as "the food-away-from-home" segment (Friddle et al., 2001). The foodservice segment comprises an overabundance of commercial and non-commercial establishments. According to Spears and Gregoire (2013), the commercial segment, as seen in Figure 3.2, includes establishments that sell food for profit;

this is their primary activity and includes restaurants, off-site catering, hotels, and retail store operations. The non-commercial establishments provide foodservice as a secondary activity for the business in which the foodservice establishment is located. Examples of these establishments include hospitals, the military, correctional facilities and schools that offer catering services, i.e., onsite foodservice businesses (Spears & Gregoire, 2013).

This study focuses on the commercial segment, which contains a broad range of restaurants providing limited services to fine dining experiences.

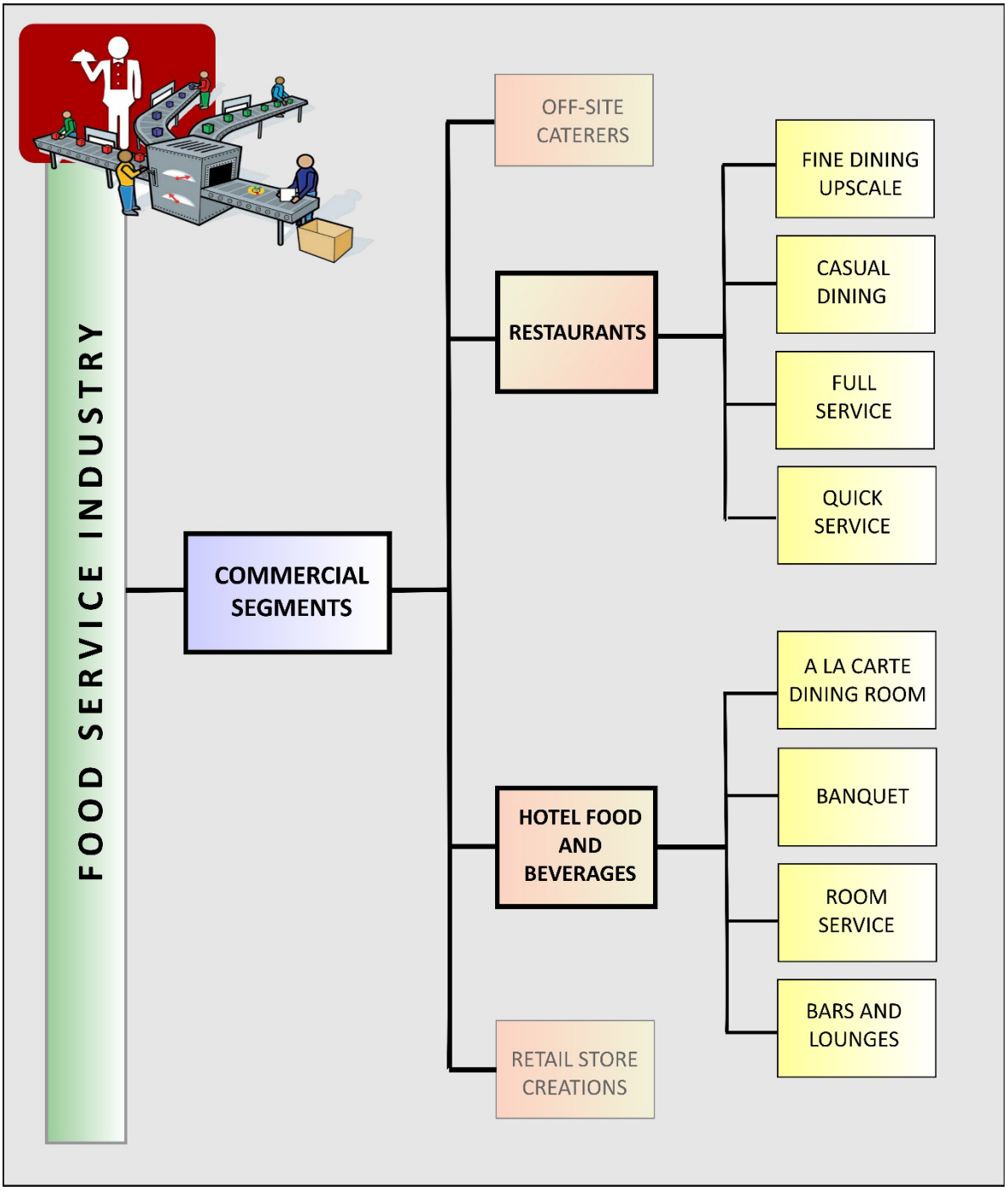

FIGURE 3.2: COMMERCIAL FOODSERVICE SEGMENTS

Fine dining restaurants are characterised by a high level of attentive table service (Spears & Gregoire, 2007:13). The staff at these establishments are often highly trained and are responsible for creating a memorable, elegant dining experience. Casual and full-service restaurants are said to be designed to attract middle-income individuals who prefer a more relaxed and casual atmosphere (Spears & Gregoire, 2007). These establishments also have waited table service and broad full-line menu offerings (Friddle, et al., 2001: Cousins & Weekes, 2020). Lastly are limited service/limited menu restaurants, also known as quick service or fast-food restaurants. These establishments are designed to provide food in a relatively short period of time (Spears & Gregoire, 2013; Cousins & Weekes, 2020). Friddle et al. (2001) state that not only do they provide a convenient and fast service, but they are quick to adapt to the ever-changing tastes and preferences of their customers.

3.3.3 Growth of the foodservice industry

In looking at the growth of the industry globally, it is estimated that its worth was 3.4 trillion USD, in 2018. It is projected to further grow in market size to a value of 4.2 trillion USD by 2024 (Research and Markets, 2019). There are a few opinions as to why there has been an increase in consumption of food outside of the home. According to Motarjemi et al. (2014), food consumption in the foodservice industry, specifically in poorer communities, is due to those communities not having the facilities for the preparation of food at their dwelling place. On the other hand, the author motivates that with regard to developed communities, the experience of consumption in the foodservice industry is an increasing trend as it is associated with busy lifestyles, income growth, health and environmental consciousness (Motarjemi et al. 2014; Ntloedibe, 2016; Janssen, Davies & Richardson, 2018). The changes in consumption patterns are expanded on in an article by Sneed and Strohbehn, (2008) in the evaluation and evolution of the different generations and their consumption behaviours i.e., the "Baby Boomers" generation (born between 1946 to 1964) do not have the time to cook. "Generation X" (born after the boomers between 1965 to 1981), have little knowledge of how to cook, and lastly, "Generation Y" is not interested in cooking at all (born 1982-2000), (Jonck, Van der Walt & Sobayeni, 2017). This is otherwise discussed by Friddle et al. (2001) stating that generational attitudes towards cooking are different due to "Baby Boomers" experiencing a lack of time to cook, they do so as a hobby. "Generation X" have too much going on in their lives to be bothered; lastly, “Generation Y” does not know how to cook. Despite this however, the consumer today is noted to be very knowledgeable about what is available in the market and what constitutes high quality (Friddle, et al., 2001; Jevšnik, Hlebec & Raspor, 2008). The industry has responded to demand by offering the consumer an ever-widening variety of products coupled with convenience and value for money (Andrews, Penman & Hart, 2001) Other key drivers in the increase of consumption of meals outside of the home over time have come to include an aging population, (i.e. not having the energy to prepare

meals at home), growing ethnic diversity, the increase in dual-income families (thus having more disposable income to purchase food away from home), single-person households, time constraints, and a difference in attitude correlated with different generations (Friddle et al., 2001; Kotni, 2016; Olise et al., 2015). The above sheds light as to why the patronage of restaurants and consumption of food away from home has become more of a staple, rather than a treat.

Economic development and rapid urbanisation in non-Western areas of the world have further led to change in consumption patterns, eating, and in cooking behaviours (Janssen, et al., 2018; Blick, Abidoye & Kirsten, 2018). In the South African context, the growth of restaurants, coffee shops and QSRs jointly made earnings of approximately R4.7 billion, contributing over 87% to South Africa's total food and beverage industry income in 2018 (South African Market Insights, 2019). The popularity and growth of the industry demonstrate that consumers have a need for the goods and services offered. Restaurants have grown to provide a variety of dining options, convenient and time-saving meals. Recent developments and subsequent effects of the COVID-19 pandemic have found an "explosive increase" in foodservice purchasing through non-contact methods. Orders have rather been made online or have boosted the use of drive-through or pick-up consumption of food products, as well as the use of delivery services to the home (Lee & Ham, 2021).

3.4 QUICK SERVICE RESTAURANTS (QSRs)

For the sake of this research, the quick service restaurant (QSR) segment is studied. This industry is one of the leading foodservice sectors (Friddle, et al., 2001). Whiteford, van Seventer and Patterson (2014) define these restaurants as those consisting of units mainly engaged in providing foodservices ready to be taken away for immediate consumption; customers order and pay for items prior to consumption (Zagorsky & Smith, 2017; Cousins & Weekes, 2020). QSRs are designed around the concept of providing a fast, easy, and convenient dining experience at a low cost (Tabassum & Rahman, 2012; Mason, Jones & Benefield, 2013) According to Mhlanga (2018), these establishments are characterised as serving fast food experience and offering minimal table service. Furthermore, they have a limited menu of food items prepared with minimal time delay and are finished and packaged to order (Mhlanga, 2018). The quick service industry was the first to adopt the franchising business model. The commentary is that this industry contributed 13.3% to the country's GDP in 2018 in South Africa (BizCommunity, 2018).

Studies found that the consumption of fast-food meals is motivated and differs according to gender, age, education, employment status and household size. Namin (2017) found that the target market for QSRs is often consumers with midrange income levels. When looking at the fast-food consumer, Sharebox (2019) found that 22% of purchasers were between 30-39 years of age and 10% were

between 16-19 years old. Other characteristics of the fast-food consumer found that they are generally young, are employed, and live in larger households (Rydell et al., 2008). Drivers for consumption of fast food included the convenience, taste of the food and the pricing of meal items (Rydell et al., 2008).

3.4.1 QSR patronage in South Africa

Like the rest of the world, food intake choices in South Africa have been influenced by geography, season, education, disposable income, and other support services such as globalisation, marketing culture and social networks (Ronquest-Ross, Vink & Sigge, 2015). The industry has adapted over time to enhance the overall meal experience, also due to the South African aspirations to Western trends. According to Oni (2014) South Africa has one of the fastest growing fast-food industries in the world. This was further seen in 2020 despite tough economic situations in South Africa; the convenience and easy to use services saw the QSR industry evolving with demand (Agrela, 2020). This has been attributed to the most international fast-food markets viewing South Africa as their gateway to the rest of the African continent (WhichFranchise, 2014; Sharebox, 2019).

A comment made by Niselow (2018) was that a family's trip to a quick-service restaurant after payday has now become a habit for most households. A study regarding the fast-food intake of young adults in South Africa found that as much as 60% of the sample recorded that they consume takeaways between 1- 4 times a week (Van Zyl, et al., 2010; FASA, 2012). FASA (2012) conducted a survey and concluded that South Africans have become fast food junkies and have embraced the affordable, large portioned and immediate consumption of food. FASA additionally showed that food franchises contributed up to 13.3% of South Africa's Gross Domestic Product, employing over 320 000 people in 2016 (WhichFranchise, 2014; Niselow, 2018). South Africa has been noted as having the largest foodservice market in sub-Saharan Africa (Maumbe, 2012; Ntloedibe, 2016).

The foodservice industry has shown favourable growth in South Africa, with franchising documenting an income of over R 580 billion in 2017 (BizCommunity, 2018). According to an article titled "SA's ferocious fast-food appetite", the growth of this industry is a result of the broadening black middle class, whose numbers have doubled in the past decade (Holmes, 2016). Within the South African context, it can be noted that many may not afford to eat out often, but still do. The highest levels of consumption have been experienced in the Johannesburg, Cape Town, Tshwane, Ekurhuleni and eThekwini metro households (BizCommunity, 2018). The growth is further attributed to the change in the South African dining out culture as well as the expansion of quick service restaurants into townships and rural areas. Industry players have gone beyond serving quick food-like snacks to venturing into African delicacies (Olise, et al., 2015).

3.4.2 Participants in South Africa's QSR industry

The industry notes several established participants such as Kentucky Fried Chicken (KFC), which is regarded as the biggest player, boasting over 771 restaurants across the country. Other big names which predominantly make up the South African food franchise sector include the Spur Corporation, Famous Brands and Taste holdings (WhichFranchise, 2014). International brands have joined the South African market such as Burger King, Domino's Pizza and Pizza Hut. In 2014, it was reported that in totality, quick service restaurants operated in South Africa (Mhlanga, 2018). The growth of the QSRs in South Africa is further enhanced by the huge presence of delivery companies and the growth of online applications such as Mr. Delivery foods and UberEats (Mhlanga, 2018). Mhlanga et al. (2013) state that despite the increasing popularity of eating out, other sectors such as the full-service sector have displayed negative growth rates as customers have opted to dine in quick service restaurants.

In the South African customer satisfaction index (SAcsi) conducted in 2013, fast food industries ranked second in the world; SA consumers had rated outlets a satisfaction score of 79 out of 100 (Bizcommunity, 2013). Over time, this has been maintained in the fast-food industry contributing the most in turnover i.e. 29% contribution (BizCommunity, 2018b). This evaluation of the quick-service restaurant industry is impressive as SAcsi holds a license with the American Customer Satisfaction index and this allows South Africa to make comparisons with the global community (Bizcommunity, 2013).

The quick-service industry is becoming multifaceted with competition on the rise (Mhlanga, 2018). The existence of an intense industry rivalry has impacted the performance expectations for QSR in South Africa (Mhlanga, 2018). In a study conducted in Nigeria by Nwokah and Kenneth-Adiele, (2018) research stated that quick service restaurants must be perceived as being able to offer sufficient value for their customers. Food quality is one of the most important determinants of customer satisfaction and Nwokah and Kenneth-Adiele (2018) elaborate by saying quality food is described as food that is well presented, fresh and tasty. In a different segment, a study conducted in Port Elizabeth, South Africa, regarding expectations and experience of customers in formal full-service restaurants, Mhlanga et al., (2013) comment that restaurant customers progressively demand higher food quality and service.

In contrast to the formal commercial industry, street food vending is also widely popular in South Africa. These street-vended foods are defined as foods and beverages, prepared, or sold by vendors in streets and other public areas, for immediate consumption (Holy & Makhoane, 2006; Verdú et al., 2021). Several concerns with regard to safety and quality surround this industry and it is noted to be the single largest employer in the informal sector.

With this being said, food handlers move in and out between the informal and the commercialised kitchens. It was noted that they often face improper hygiene conditions and a lack of sanitary facilities, despite the requirements of operating under a certificate of acceptability (Holy & Makhoane, 2006). This causes concern, as in the South African context there is a reported lack of coordination among many government departments, which are responsible for the regulation and enforcement of food safety (Bisholo, Ghuman & Haffejee, 2018).

3.4.3 Quick service restaurant and quality food safety assurance

Quick service restaurants have an enormous consumer reach, having the ability to affect consumers and be affected by consumers. Studies have indicated that in the evaluation and choice of quick service restaurants, cleanliness and the provision of safe food products are some of the most important markers (Mason, Jones & Benefield, 2013). These are observed when evaluating trends in the foodservice industry, noting that one is the impact of food safety consciousness on foodservice. A study conducted on the QSR industry about food safety in urban Ghana found the authors acknowledged that food safety is an essential part of sustainable development and that it contributes to public health (Omari & Frempong, 2016). Friddle et al. (2001), state that restaurants are expected to prepare their food better, faster and safer than their competitors to succeed.

According to Andrews et al. (2001), the consumer has come to expect and demand quality and value to improve, although at the same time, it is increasingly intolerable of failures in either safety or quality. In the US, Liu and Lee (2017) comment that diners are willing to pay more for safer dining environments. Improving the food safety attributes in restaurants could be a revenue-generating strategy (Liu & Lee, 2017). Mason et al., (2013) uncovered in a study that price, speed of service, location, quality of food and cleanliness were five of the most prominent criteria in restaurant selection. With the QSR in South Africa having approximately over 5000 stores, QSR will only benefit by listening to their consumers and being receptive to trends which further include healthy eating, environmental consciousness and local sourcing (Courtney, 2016). As stated above, foodservice establishments have the responsibility to cater to their consumers, all the while ensuring the consumption of safe food (Fuller, 2007).

3.5 OBJECTIVES OF THE STUDY

In the review of the literature, this chapter discussed food safety and the foodservice industry. The discussion of food safety allowed for the expounding of the food safety quality attributes and cues, as uncovered in the literature and applied in this study. The food and QSR industry were studied, detailing the growth and applicability for study in the South African context. This has not yet been done in relation to food safety. The concepts were adopted into the conceptual framework, which is presented

in Chapter 4. The adoption of the concepts allowed expansion of the conceptual framework and in conjunction with the IPA framework. The objectives of this study stand as follows:

3.5.1 Objective 1: Identify cues indicating the quality of food safety at QSRs

The first objective was to **identify cues that indicate the quality of food safety at QSRs**. These quality cues refer to observable indicators that relate to quality attributes of food safety, as perceivable by the consumer. This objective was achieved with the use of literature and past research reviews. Phase 1 of the study further accomplished the objective through the application of qualitative techniques through the use of semi-structured interviews and observations at QSR across the Gauteng province.

3.5.2 Objective 2: Investigate Gauteng's consumers' perception of the quality of food safety in QSRs

The second objective of the research was to **investigate Gauteng's consumers' perception of the quality of food safety in QSRs**.

This objective is split into two sub-objectives through 2.1, the investigation and description of the **consumers' perceived importance of the quality of food safety quality cues at QSR.** 2.2 The investigation and description of the **consumers' perceived performance of the quality of food safety (in terms of experience) of quality cues at QSR.**

3.5.3 Objective 3: Evaluating consumers' perception of the quality of food safety at QSRs

The third objective was to **evaluate the consumers' perception of the quality of food safety at QSRs**. The objective was split into two sub-objectives.

Sub-objective 3.1 was formulated to further **evaluate the consumers' perceptions through findings of the IPA matrix**, in order to identify areas of concern.

Sub-objective 3.2 aimed to **evaluate the consumers' perceptions through their demographic categories** in order to identify areas of concern.

3.6 SUMMARY

This chapter provided an overview of the existing literature and what different research reported regarding food safety, the foodservice and the quick service restaurant industry. The final section of the chapter presented the objectives of the study. The objectives are explained by means of the conceptual framework, operationalisation of the study and the IPA framework, presented in the next chapter. Additionally, the research design and methodology are addressed.

Chapter 4

RESEARCH DESIGN AND METHODOLOGY

This chapter addresses the research design and methodology undertaken in this study. The chapter further explains the operationalisation, conceptual framework of the study and discusses the quality of the data.

4.1 INTRODUCTION

The previous chapter provided an extensive overview of the literature and relevant constructs utilised in the study. This has elaborated on the concepts and constructs and subsequently aided in the conceptualisation and operationalisation presented in this chapter. This chapter further covers the research design and methodologies used in the study. The steps taken contributed to authenticating the study's validity, reliability, and ethics.

4.2 THE RESEARCH DESIGN

A study's research design is defined as the framework of methods executed by the researcher, aiming to provide a logical flow toward responding to and handling a research problem (Sileyew, 2019). The design offers a guide on how to conduct research, highlighting the type of data that needs to be collected, the sampling plan, and the method of collecting data. It further details how the data will be analysed (Wiid & Diggines, 2012).

The objectives of the study usually determine which research design is best suited for each study (Kumar, 2011). Given the objectives set for the study, an explorative-descriptive approach to the research was the most suitable design for this study. Using both exploratory and descriptive research designs are inevitable when little information is available on a specific phenomenon, as was the case in this study.

The mixed-method research approach was chosen, consisting of qualitative and quantitative components, executed in two phases. It is stated that mixed-method research is an investigative approach that combines qualitative and quantitative techniques (Creswell, 2018). This approach was considered as it aims to best address the research problem. The approach allowed for more than the collection and analysis of data but also enhanced the study's overall strength. The mixed-method research approach employed a multimethod matrix and examined multiple approaches for the collection of the data. This is seen in Phase 1 (qualitative techniques used) and Phase 2 (quantitative techniques used) of the study.

According to Creswell (2018), traditional methods often employ observations and interviews to collect qualitative data combined with traditional surveys. As noted below, the results from the one method allowed the questions to ask in the succeeding method.

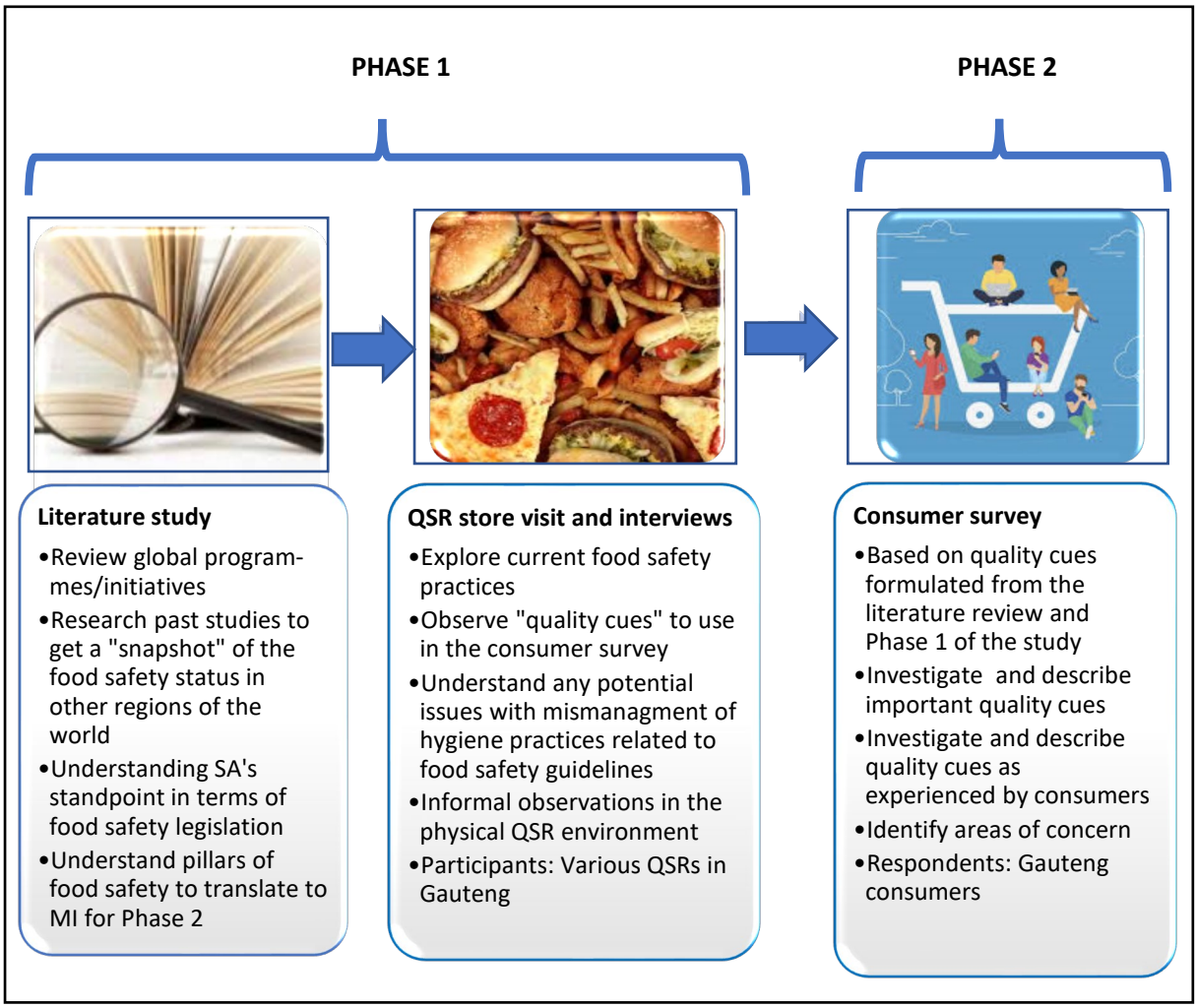

FIGURE 4.1: PHASES OF THE RESEARCH PROCESS

4.2.1 Phases of the study

Following the mixed-method research approach, two types of techniques are available to researchers wishing to pursue exploratory-descriptive designs, including the embedded and the emergent techniques (Berman, 2017). The embedded technique was chosen because it facilitates answering different questions that require various forms of data. In this study, measuring the consumers' perceptions of food safety quality cues could only be accomplished by using quantitative data, which is more suited to answering the “what” questions. On the other hand, determining the QSR managers' contextual experiences in dealing with the issue of food safety protocol and implementation to ensure food safety quality could not be explained numerically. As a consequence, it became necessary to

incorporate qualitative data to help answer both “what” and “how” questions in the study (Creswell, 2018). Accordingly, the embedded design allowed the strengthening and integration of the results and conclusions of the study (Berman, 2017).

The phases established in the study were further the result of the literature review and conceptual model. In this research, there was a strong need to understand the concepts and constructs of food safety, particularly within the QSR industry. For the enrichment of the theory, Phase 1 investigated food safety protocols and procedures as employed within the QSR context in Gauteng. This procedure aimed to give way to determine the food safety quality attributes and consequent food safety quality cues.

PHASE 1

The first phase, the qualitative component, consisted of individual face-to-face interviews with managers and site observations at the various QSRs. The manager interviews sought to discover and comprehend sense from their viewpoints and the experiences of affected individuals or groups, by considering the contextual factors shaping their experiences (Creswell, 2014). The use of literature alone would have been insufficient to understand the current practices in QSRs. Thus, the qualitative technique undertaken with management interviews at QSRs provided insight into what management should be aware of.

The managers at the QSR stores agreed to openly report their day-to-day experiences regarding food safety and their efforts to implement protocols. The use of observations permitted the qualitative data to have a sense of completeness and contributed to the triangulation of the qualitative data collected. Interview responses were supported by observations of the practices to ensure food safety. The use of qualitative data through the participant interview responses aimed to build a foundation of what consumers may conceivably perceive. This was quantified in Phase 2 of the study with responses from the consumer survey.

PHASE 2

The second phase, the quantitative component, comprised a consumer survey at the various QSRs. The survey sought to investigate and comprehend consumer perceptions of food safety by evaluating its quality cues. As stated, the mixed-method approach began with a qualitative interview and observations for exploratory purposes, followed by this phase, the quantitative survey method with respondents from a large sample so that the researcher could generalise the results of the population (Creswell, 2018).

From understanding the qualitative foundation, that provided what consumers could possibly perceive, Phase 2 quantified the responses from the consumer survey.

4.3 RESEARCH AIMS AND OBJECTIVES

Consumers need a reliable food safety system. Thus, the investigation of the quality of food safety and consumer perceptions aimed to shed light on how these perceptions and experiences of the quality of food safety performance are presented to Gauteng's QSR consumer population. The investigation of consumers' perceptions of food safety quality was aimed at understanding any existing shortfalls in industry and restaurant practices. The investigation moreover aimed to shed light on the awareness of foodborne illness incidences and aid in understanding how consumers perceive the food safety quality cues in order to potentially improve communication and education between stakeholders. This may assist in the overall optimisation of the business's operations itself. Additionally, the investigation aimed to understand the consumer better and consequently provide for the consumer in that they can better grasp the concepts and potentially evaluate unsafe food environments.

Objective 1:

To identify cues that indicate the quality of food safety at QSRs.

This objective was accomplished in Phase 1 of the study by means of qualitative techniques. A literature study on food safety theory, legislation, food safety programmes, and guidelines as they exist in South Africa and globally was accomplished. The study reviewed past research on food safety, its practices, and the identification of problems in other parts of the world across all stakeholders (big business, food handlers, and consumers' perceptions).

In fulfilment of the objective, Phase 1 further entailed store visits conducted to gain insight from those involved in the frontline of food safety implementation within QSRs. This task was performed using semi-structured individual face-to-face interviews with the managers and onsite observations conducted at QSR establishments.

The data collected here, and thus the fulfilment of Objective 1, allowed the research to continue with the design of the measuring instrument, the consumer survey, which was used to address subsequent Objectives 2 and 3.

Objective 2:

To investigate the consumers' perception of the quality of food safety at QSRs.

- **Sub-objective 2.1**: To investigate and describe consumers' perceived importance of food safety quality cues at quick service restaurants.

- **Sub-objective 2.2**: To investigate and describe consumers' perceived performance of food safety quality cues at quick service restaurants.

Objective 2 was achieved in Phase 2 by employing quantitative research techniques. These objectives were formulated for the exploration and description of consumers' perceptions of the quality of food safety. An overview of what consumers perceived as important food safety quality cues and what they experienced in terms of the performance of the food safety quality cues were the sub-objectives in Phase 2.

Objective 3:

To critically evaluate the consumers' perceptions of the quality of food safety in QSRs.

- **Sub-objective 3.1**: To evaluate the consumers' perceptions of the quality of food safety in QSRs through IPA matrix interpretations in order to identify areas of concern.
- **Sub-objective 3.2**: To evaluate the consumers' perceptions of the quality of food safety in QSRs according to demographic categories to identify areas of concern.

Objective 3 focused on evaluating the consumer responses with the intention to reveal the areas of concern within the consumers' perceptions of the quality of food safety. The evaluation, therefore, would allow the researcher to further discuss any unique findings. This assessment utilised the IPA matrix interpretations as well as the ANOVA and t-test to determine any significance between demographic groups and any statistical significance between the means of the quality cues from the demographic categories.

The pursuit of Sub-objective 3.2 was supported by a study highlighting that the current food environment is complex, with economic and sociocultural factors influencing food consumption (Janssen et al., 2018).

4.4 CONCEPTUAL FRAMEWORK

The conceptual framework for the study was adapted from the quality perception process model developed by Steenkamp (1990). The model presents quality attributes related to the food safety assurance sought by consumers when dining at or purchasing from QSRs. The food safety quality attributes are based on the pillars of food safety, i.e., the main themes of food safety that contribute to the provision of safe food (Chapter 3). Within the quality perception process model, food safety attributes are based on experience or credence attributes that have been constructed due to descriptive, informational, or inferential belief formation.

The attributes sought by the consumer as well as the intrinsic and extrinsic cues that become important to the consumer are influenced by prior experiences, the level of an individual's education, the usage goals of the product/service, and situational factors.

Thus, Objective 1 was achieved by identifying and understanding the quality cues as they exist in the QSR environment. Objective 2 aimed to engage with consumers who were asked to evaluate the importance of food safety quality cues and the performance of the quality cues from their experiences to determine their perception of food safety quality in QSRs. Results of the importance and the performance of food safety quality cues were then translated to the importance-performance matrix.

Achieving Objective 3, the data from descriptive statistics (mean ratings) of the food safety quality cues, led to plotting the cues in the IPA matrix. The interpretation of the quality cues in the quadrants allowed the researcher to evaluate areas of concern of how the consumer perceives specific quality cues in QSR. Additionally, the demographics, as well as quality cues, were analysed to further elaborate on the areas of concern. The last objective was motivated in light of past studies and findings that sociodemographic differences, in fact, exist. Through their analysis, more specific approaches to food safety communication for each population sector were facilitated (Verdú et al., 2021).

Figure 4.2 presents the conceptual framework.

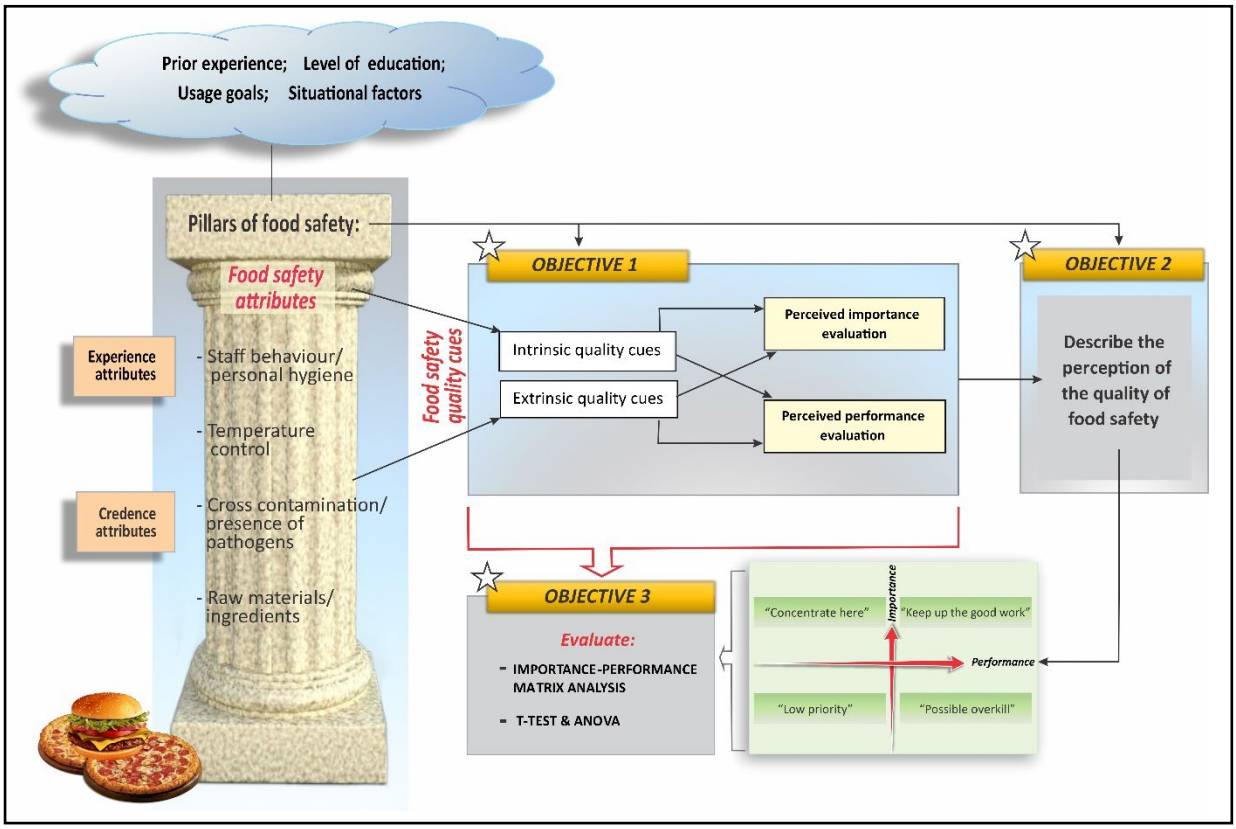

FIGURE 4.2: CONCEPTUAL FRAMEWORK

4.5 OPERATIONALISATION

Operationalisation indicates how the concepts in the conceptual framework are measured. Table 4.1 is the map of the study and lays out the objectives, what was measured, how the concepts were measured, and the data analysis techniques that assisted in the interpretation of the data.

Table 4.1: Operationalisation Table

OBJECTIVES	MAIN CONCEPTS	DIMENSIONS	INDICATORS	MEASURING	DATA ANALYSIS
Objective 1: To identify cues that indicate the quality of food safety at QSRs					
Objective 1	Food safety quality cues present in the QSR environment	• **Food safety quality attributes related to:** • Temperature control • Staff behaviour/hygiene • Cross contamination/ • pathogen presence • Raw materials/ ingredients	• **Temperature control** - Describe your storage/inventory policy for all ingredients (dry goods/frozen goods and refrigerated goods) • **Staff behaviour/hygiene** - Describe the cleaning and hygiene practices at your establishment - How is the staff trained in terms of learning how to prepare menu items - Describe the food safety training you have received • **Cross contamination/pathogen presence** - Provide examples of any time you have received a food illness complaint and how you handled the situation - What protocols does the establishment follow to prevent the contamination of food? • **Raw materials/ ingredients** - What is your ordering process for ingredients - In the event of receiving ingredients that are damaged/spoilt, what do you do - How do you evaluate the safety of your bread/sauces/meat products?	• **A semi-structured interview** - Managers reporting instore food safety practices • **In-store observations** - Observable practices related to quality attributes/dimensions (Questions 7 – 17)	Thematic analysis

OBJECTIVES	MAIN CONCEPTS	DIMENSIONS	INDICATORS	MEASURING	DATA ANALYSIS
Objective 2: Investigate and describe consumers' perception of the quality of food safety at QSRs					
Sub-objective 2.1: To investigate and describe consumers' perceived importance of food safety quality cues at quick service restaurants	Perceived importance	• Temperature control • Staff behaviour/hygiene • Cross contamination/ pathogen presence • Raw materials/ ingredients	Evaluation of intrinsic and extrinsic food safety quality cues: • **Temperature control** - Holding food during service at the correct temperatures - Food that is cooked well done - Refrigerating foods at the correct temperatures - Cooking food to the correct internal temperature • **Staff behaviour/hygiene** - Proper hygiene practices - Regular handwashing - Staffs use of hairnets/hats - Trained and knowledgeable staff - Implementation of food safety protocols at QSR • **Cross contamination/pathogen presence** - Clean establishment free from pests/rodents - Clean preparation facilities - Use of clean serving ware for your foods (plates and cutlery) • **Raw materials/ ingredients** - Taste of the food - Fresh ingredients - Expiry/sell-by dates displayed on the relevant food items - Smell/scent of the food - Appearance of the food - Information about the quality of the ingredients	• Consumer survey • Section 2 • 5-point Likert-type scale (Question 10)	Descriptive statistics: - Mean ratings - Standard deviations - Importance-performance analysis

OBJECTIVES	MAIN CONCEPTS	DIMENSIONS	INDICATORS	MEASURING	DATA ANALYSIS
Sub-objective 2.2: To investigate and describe consumers' perceived performance of food safety quality cues at quick service restaurants	Perceived performance as experienced by consumers	• Temperature control • Staff behaviour/hygiene • Cross contamination/ pathogen presence • Raw materials/ ingredients	Evaluation of intrinsic and extrinsic food safety quality cues: • **Temperature control** - Holding food during service at the correct temperatures - Food that is cooked well done - Refrigerating foods at the correct temperatures - Cooking food to the correct internal temperature • **Staff behaviour/hygiene** - Proper hygiene practices - Regular handwashing - Staffs use of hairnets/hats - Trained and knowledgeable staff - Implementation of food safety protocols at QSR • **Cross contamination/pathogen presence** - Clean establishment free from pests/rodents - Clean preparation facilities - Use of clean serving ware for your foods (plates and cutlery) • **Raw materials/ ingredients** - Taste of the food - Fresh ingredients - Expiry/sell-by dates displayed on the relevant food items - Smell/scent of the food - Appearance of the food Information about the quality of the ingredients	• Consumer survey • Section 3 • 5-point Likert-type scale (Question 11)	Descriptive statistics: - Mean ratings - Standard deviations - Importance-performance analysis

OBJECTIVES	MAIN CONCEPTS	DIMENSIONS	INDICATORS	MEASURING	DATA ANALYSIS
Objective 3: To critically evaluate the consumers' perceptions of the quality of food safety in QSRs					
Sub-objective 3.1: To evaluate the consumers' perceptions of the quality of food safety in QSRs through IPA matrix interpretations in order to identify areas of concern	Consumers' perceptions based on findings from the Importance-performance analysis	• **Quadrant interpretations:** - Keep up the good work - Low Priority - Low importance - Concentrate here	**20 Food safety quality cues:** • **Temperature control** - Holding food during service at the correct temperatures - Food that is cooked well done - Refrigerating foods at the correct temperatures - Cooking food to the correct internal temperature • **Staff behaviour/hygiene** - Proper hygiene practices - Regular handwashing - Staffs use of hairnets/hats - Trained and knowledgeable staff - Implementation of food safety protocols at QSR • **Cross contamination/pathogen presence** - Clean establishment free from pests/rodents - Clean preparation facilities - Use of clean serving ware for your food (plates and cutlery) • **Raw materials/ ingredients** - The taste of food - Fresh ingredients - Expiry/sell-by dates displayed on the relevant food items - The smell/scent of food - The appearance of food - Information about the quality of the ingredients	Importance-performance matrix	- Plotting of mean ratings - Graphical presentation of the IPA matrix

OBJECTIVES	MAIN CONCEPTS	DIMENSIONS	INDICATORS	MEASURING	DATA ANALYSIS
Sub-objective 3.2: Objective 3.2: To explore the consumers' perceptions of the food safety quality cues in QSRs in terms of possible differences across demographic categories with the aim to identify areas of concern.	Significance found in the sample's demographic characteristics	DEMOGRAPHIC CATEGORIES • Gender • Age • Population group • Level of education • Employment status • Income level	- Male - Female - 18-66+ years - African - White - Indian - Coloured - Matric - Diploma - Degree - Postgraduate - Other - Student - Full time - Part-time - Self-employed	• Consumer survey • Section 1 (Questions 2- 7)	t-test Analysis of Variance (ANOVA)

4.6 METHODOLOGY

The methodology considered the set of procedures followed to achieve the goals of the study. This included the selection of the study area and participants, as well as the sampling technique and the specific steps that were taken to implement the two phases of the study.

4.6.1 Study area and unit of analysis

The specific areas of the study are all located in the Gauteng province.

Gauteng is a diverse province boasting more than 16 million people (Statistics South Africa, 2017) characterised by a large urban population living in an estimated 5,4 million households. Gauteng is also the most densely populated of all 9 provinces in South Africa (Statistics South Africa, 2022). The areas covered in the study included QSRs in the three metropolitan municipalities in Gauteng, namely The City of Johannesburg, The City of Ekurhuleni, and The City of Tshwane (Figure 4.3 – next page.). The City of Johannesburg has a population of over 6 million people, followed by The Ekurhuleni Municipality, with over 4 million people, and the City of Tshwane, bordering closely to a population of 3.2 million people. The lowest populated is that of Sedibeng District Council in Southern Gauteng with just over 1 million people residing in that region.

The selection of Gauteng as the study area was based on five general criteria, namely:

1) accessibility,
2) convenience,
3) affordability,
4) diversity of QSRs, and
5) availability of t respondents.

Accessibility was facilitated by the branded foodservice franchisor (Famous Brands) as well as the QSR store owners, who gave the researcher access to particular stores. Convenience was experienced in that store locations were representative of various demographics across the Gauteng region. Some stores were grouped in locations that were easier to access and available at any time of the day (for example, QSRs in shopping centres, the University of Pretoria campus store, and petrol stations). Lastly, affordability was addressed as transport was provided to the fieldworkers by the University of Pretoria to alleviate any transportation cost issues.

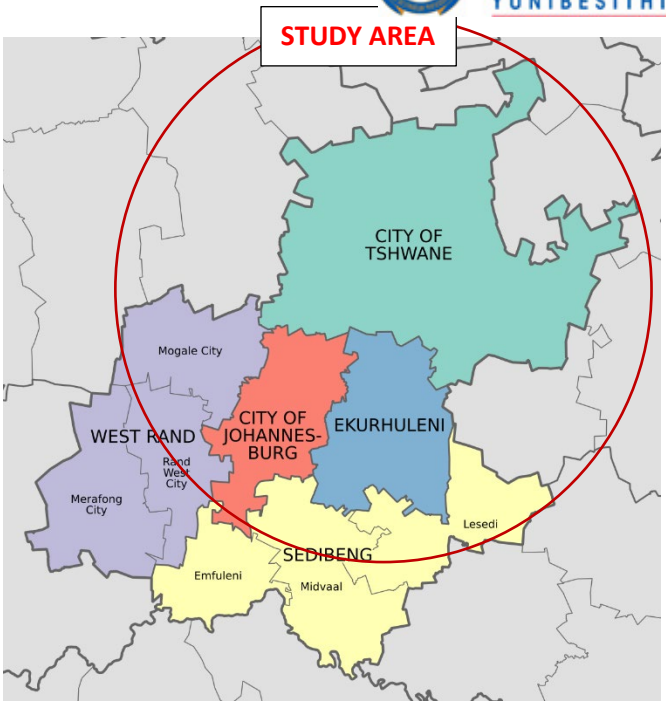

FIGURE 4.3: MAP DEPICTING MUNICIPALITIES IN THE PROVINCE OF GAUTENG. THE STUDY AREA COMPRISED NAMELY THE THREE METROPOLITAN MUNICIPALITIES, i.e., TSHWANE, JOHANNESBURG AND EKURHULENI. (Adapted from Nhamo et al., 2021)

4.6.1.1 Unit of analysis, Phase 1

The unit of analysis is defined by de Vos, Strydom, Fouche, and Delport (2005) as the "what" of the study. This refers to what object, phenomenon, entity, process, or event forms part of the study. Furthermore, according to de Vos, et al. (2005:104), the selection of a unit of analysis commences almost automatically at the problem identification stage.

The unit of analysis in Phase 1 entailed responses of the QSR managers and evaluating how their responses related to food safety practices/procedures applied in the restaurants. This was translated to intrinsic and extrinsic food safety quality cues.

Management responses as well as the informal observation notes obtained during discussions with management at the various stores, all came together to provide a 'picture' of the QSR environment, food safety practices therein, and the relevant food safety quality cues.

4.6.1.2 Unit of analysis, Phase 2

For Phase 2, the parameters to identify respondent participation included their age and familiarity with the QSR environment (their recent patronage at a QSR).

The unit of analysis was the consumer's responses to the questions relating to the importance of food safety quality cues and the performance of food safety quality cues. This information was necessary to draw on the Gauteng consumers' subjective perceptions of food safety quality, specifically in the QSR environment.

The chosen QSRs for Phase 2 spread across various locations in Gauteng's study area, representing South Africa's income groups and population. The advantage of visiting the specific QSRs for this study was that they were often situated in shopping centres/malls or petrol stations. It allowed for easy

access to various age groups, genders, population groups, and other relevant demographic categories to be considered in the analysis.

The sampling strategy for both study phases is discussed in the following sections.

4.6.2 Sampling strategy

Sampling is the selection of cases one wishes to examine in detail to learn about the entire population (Neuman, 2012; Vehovar, Toepoel, & Steinmetz, 2016:327). Non-probability sampling was used as the sampling technique for this study and further focused on the convenience sampling techniques for both phases of the study.

4.6.2.1 Non-probability sampling, Phase 1

The sample for the qualitative component of the study (Phase 1) made use of the non-probability technique called convenience sampling. Lai and Hitchcock (2015) state that this method is often applied as it is easier to manage and is acceptable where samples can represent the whole population. Face-to-face interviews at store visits were scheduled with managers within the Gauteng region. This was done after the allocation of 40 QSR stores from Famous Brands, and the approval from the store owners. Locations that were visited are presented in Figure 4.4.

4.6.2.2 Non-probability sampling, Phase 2

Convenience sampling was employed for Phase 2 of this study. The most typical recruitment is at events or other locations where customers are within the vicinity (Vehovar, et al., 2016:328). Respondents in the sample were male and female consumers in the Gauteng province. These consumers were either personally approached at a QSR or through the use of social platforms. For online questionnaires, respondents were encouraged to only participate if they had consumed food at a QSR within the last three months. Additionally, respondents were asked where and at which specific QSR they had recently purchased to ensure the use of data only from Gauteng. The names and locations of the QSR were also requested in the paper-based questionnaire.

Alongside the quality perception model, the consumer may judge quality during and after post consumption of products or services. Therefore, the consumer needed to have had an experience to make a judgment on the perceived importance and performance of food safety quality cues in order to participate in this study.

Additionally, respondents needed to be older than 18 years to participate in the study. No other limitations or requisites were set regarding demographics; therefore, all willing respondents were encouraged and welcomed to participate in the study.

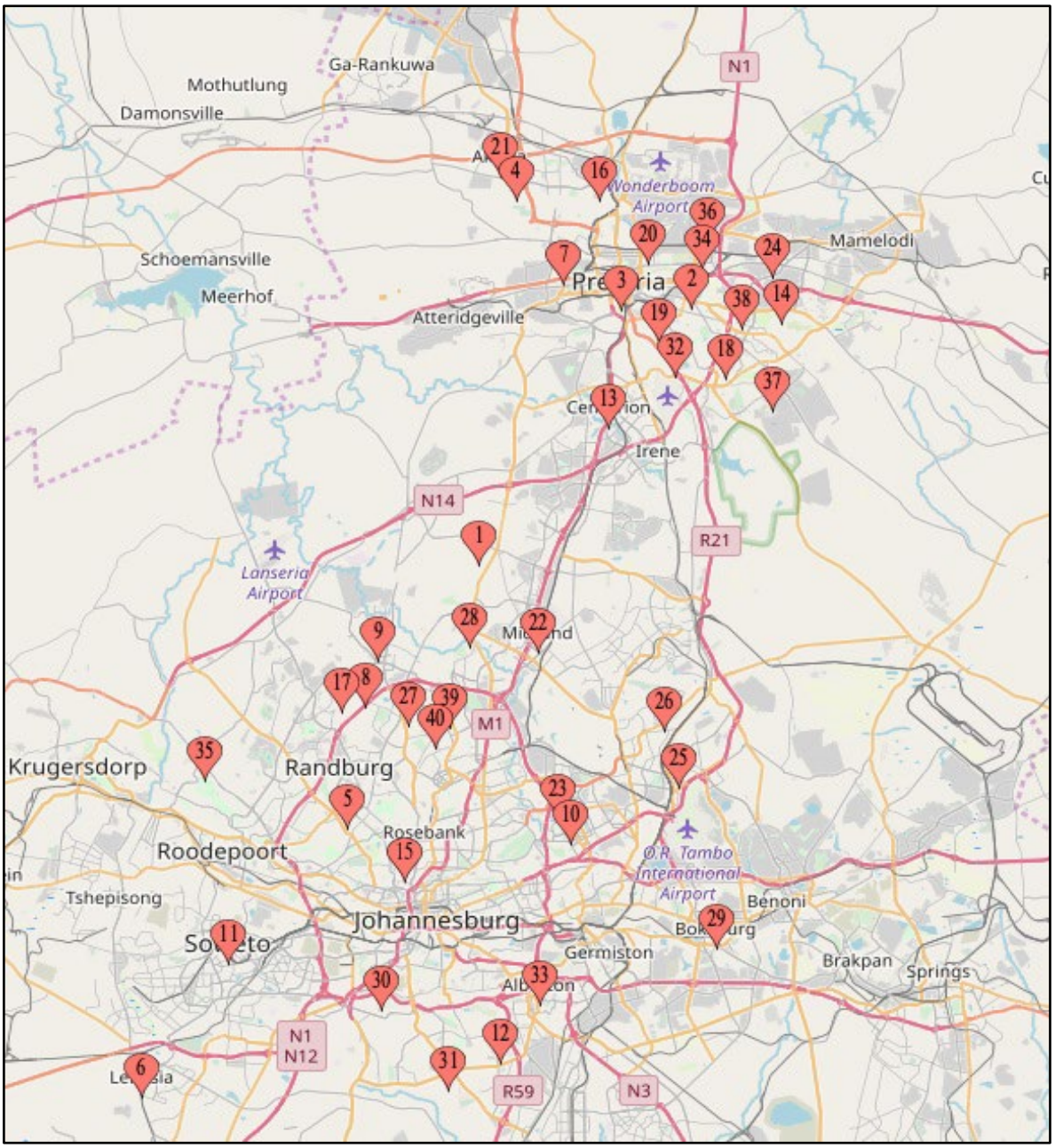

FIGURE 4.4: GEOGRAPHICAL LOCATION OF QSRS VISITED FOR DATA COLLECTION, GAUTENG, SOUTH AFRICA

Keeping this in mind, the evaluations of perceived importance and performance were noted to be influenced by the demographic backgrounds and experiences of the demographic groups. Analysis of the groups was performed, as Sub-objective 3.2, which demonstrated statistical significance in the results between the means of the quality cues from the different groups. This further allowed for the provision of more meaningful results (Lai and Hitchcock, 2015).

Details of the two phases of the study and how they were implemented to collect qualitative and quantitative data will now be discussed, followed by the analysis of the data.

4.7 DATA COLLECTION

As illustrated in Figure 4.5, the study followed a mixed-method approach executed in the two phases.

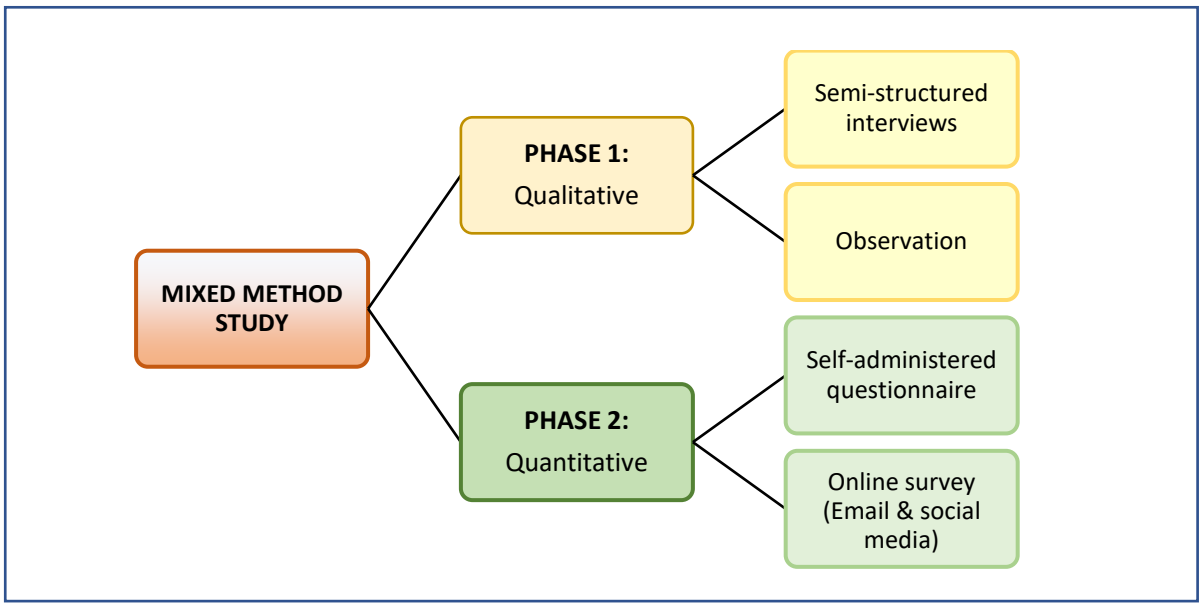

FIGURE 4.5: THE TWO PHASES OF THE DATA COLLECTION

4.7.1 Phase 1: Assessment of the QSR industry using qualitative techniques

In collecting the data, interview questions and observations were based on the research objectives and concepts underpinning the study.

4.7.1.2 Designing the measuring instrument

In the interview schedule design (see Addendum C for Phase 1), questions were structured to gauge information from QSR managers in a conversational manner. This was to understand daily tasks and efforts employed and aimed at food safety assurance. The set of questions chosen was based on the pillars of food safety and how the managers understood those pillars. Managers also needed to be able to comment on how they undertook any problems or experiences with staff's implementation of food safety practices.

The semi-structured interview schedule was compiled (see Addendum C) in line with the research objectives. The study's supervisor assisted with this, and it was further reviewed by a third party (the foodservice franchisor) and in line with the ethical guidelines (see Addendum A).

Field workers' Phase 1

The use of field workers assisted the researcher in approaching the forty allocated stores and conducting semi-structured interviews with the store managers. The use of field workers became necessary due to the various locations of all the QSR stores across the Gauteng province. The time

needed to interview the managers while still taking adequate transcriptions of the participants' responses also encouraged the use of field workers.

Twenty field workers were initially trained for data collection in July 2017. These were final year students from the University of Pretoria. The field workers were trained on how to approach the participants and make observations within their allocated QSRs. Field workers had to know how to answer any questions should there be confusion amongst the participants and be able to explain the purpose of the study. These field workers were trained in the presence of the supervisors of the research. The field workers were further organised in pairs for each QSR store they were to approach. They were instructed to collect the data on the interview schedule and take relevant notes on their observations' schedules. These observations were guided by the questions in the interview schedule (Addendum C), as the field workers were proficient in looking out for any cues supporting the managers' responses.

Semi-structured interviews

The field workers approached the managers of the QSRs. The interaction commenced with obtaining their consent for access to the stores and their participation in the semi-structured interview. This was essential due to busy shifts and daily tasks to be completed. The research objectives were explained to the managers before collecting any data. No other limitations or requisites were set out regarding demographics; therefore, all willing managers were encouraged and welcomed to participate in the study. Food safety protocols and efforts were evaluated from the participants' responses to obtain a general picture of the conditions within South African QSRs.

The manager/supervisor face-to-face interviews aimed to provide responses that would highlight preliminary data to generate content for the quantitative survey. This was sought because the managers are responsible for implementing and managing food safety policies and standard operating procedures in their respective quick service restaurants. Their insight was believed to aid in providing some food safety quality cues that would most likely be controlled in delivering safe food to consumers in the QSRs. A maximum of forty participants were intended for the semi-structured store manager interviews. This target originated from the forty stores the foodservices franchisor had allocated for the collection of data. Encapsulated in context, semi-structured interviews allowed the researcher to tap into interviewees' viewpoints and interpretations of reality.

Observation

The study's qualitative component further included observation as a method of data collection. Field workers made notes of food safety-related cues that they may have observed while visiting the QSRs. Smit and Onwuegbuzie (2018) explain that observation involves collecting data using one's senses,

especially looking and listening in a systematic and meaningful way. This study further meant carefully detecting possible consumer quality cues on food safety that the fieldworker may have perceived during their experience in the stores. Fieldworkers were briefed beforehand on what to look out for by the researcher. As a qualitative technique, observation in this study enabled an understanding of what people do and how they respond to challenges, specifically arising from the availability or lack of food safety protocols in the QRS observed during the study (Walshe, Ewing & Griffiths, 2012).

The observation was done alongside the semi-structured interview schedule and included items relating to food safety protocols and practices in QSRs. These included the following:

- Type of activity observed.
- Why the activity was done.
- How the activity was done.

Consistent with Fry, Curtis, Considinen and Shaban, (2017) views about the exploratory nature of observational data, this study used observation to answer questions about food safety practices in quick service restaurants and to anticipate how consumers may react to food safety cues in these environments. While waiting for the manager or after the management interviews, the field workers spent time at their various locations to take notes relating to food safety cues that may be perceivable by the consumer. This included any cleaning conducted, removal of dirt/clearing of dishes, looking into the kitchen, and noting any complaints during their time at the QSR, for example. Through observing food safety practices and activities, the study aimed to share new insights and multiple perspectives on the behavioural aspects of food safety as manifested in managers, and employees' conduct during interactions with customers. Observation data collection envisaged improving understanding of practice, processes, knowledge, beliefs, and attitudes embedded in clinical work and social interactions (Fry et al., 2017).

4.7.2 Phase 2: Consumer survey

The second phase of the study involved a consumer survey, collecting data from respondents who purchased from or dined at QSRs. The study's primary objective was to gauge consumers' perceptions of food safety quality cues and to evaluate differences according to the IPA matrix. The processes that were employed to conduct Phase 2 of this study were as follows:

4.7.2.1 Phase 2: Designing the measuring instrument

For the quantitative measuring instrument, the survey method was executed by using a questionnaire. One advantage of surveying is that the respondents have the ability to provide accurate, reliable, and valid data. It is the most widely used social science data-gathering technique (Neuman, 2013). In

completing Phase 2 of this study, the questionnaires were designed to be easily read and understood by the consumer. Past studies were reviewed based on similar objectives to measure perception (Liu and Lee, 2018). This was done to ensure the validity and reliability of the instrument used in this study. Despite the ease of use and advantages, however, the survey method may easily provide misleading results, and it is therefore imperative to apply this technique diligently (Neuman, 2013). The review of the instrument is discussed below, as well as the justification for using a large sample size in this phase. The steps taken to review past research and other measuring instruments were done to address any potential of misleading results, thus ensuring the accuracy of the information.

In the design of the questionnaire, information was needed to understand consumers' perceptions of the quality of food safety. The first set of information sought in the questionnaire related to how important the food safety cues are to the consumer (who makes a subjective evaluation) and, secondly, how well each of the particular food safety quality cues performed in terms of personal experience when dining at or purchasing from a QSR. The questionnaire design was based on the importance-performance framework allowing for both the collection and analysis of the data discussed below.

4.7.2.2 Importance-Performance Analysis (IPA) framework

The importance-performance analysis (IPA) framework alongside the quality perception framework, allowed for data collection in the research. The IPA has previously been applied within the hospitality industry in its vastness and the foodservice industry specifically.

Origins of the importance-performance analysis framework

The importance-performance analysis tool was introduced by Martilla and James (1977), with the initial ability to assess service quality and the ability to suggest management strategies (Sever, 2015). It is a multi-attribute technique that allows for evaluation, and its application has been extended to various fields, including foodservice and tourism (Janes & Wisnom, 2003; Aigbedo & Parameswaran, 2004; Arbore & Busacca, 2011; Tzeng & Chang, 2011; Obonyo, Ayieko & Kambona, 2012; Su, 2013; Blešić et al., 2014; Lai & Hitchcock, 2015). It was initially developed for the analysis of consumer satisfaction to meet consumer needs. According to Sever (2015), one key objective of the tool is its ability to diagnose the performance of product or service attributes while facilitating data interpretation for implementing practical strategies or suggestions. It is further based on the premise that areas that require attention may be identified by assessing customers' perceptions of the importance and performance of aspects of a product or service (Ma, Qu & Njite, 2011).

According to Arbore and Busacca (2011), the tool further allows an organisation to set priorities to enhance customer satisfaction. Janes and Wisnom (2003) commented that this tool employs a technique of measuring the importance and performance of specific cues related to the area of study,

in line with consumers' perceptions according to expectations and the consumers' experience. Addressing perceptions according to expectations is essential in business, as resources are often limited. Still, the environment remains competitive; therefore, quality improvement must be prioritised for customer satisfaction and business survival (Lai & Hitchcock, 2015).

By assigning descriptive cues, the tool allows for precise consumer evaluation at an individual level. IPA was applied in the service environment. A motivation provided by Ennew, Reed and Binks (1993) states that service is judged by the outcome, such as technical quality, as well as the process by which the service is delivered. The qualitative nature of providing service allows for measurement in relation to relative/user-defined standards. It, therefore, allows the focus to be on the relationship between what the consumer expects from the particular product or service (perceived importance) and what they actually get (perceived performance).

The use of the importance-performance analysis framework for the consumer

Ennew, Reed and Binks (1993) assert that expectations vary depending on the consumer. Therefore, an appropriate standard for measure is an experience-based norm that will reflect the performance. This statement is motivated by Oyewol (1999) in saying that different customers will judge the same service/product differently. Therefore, the tool allows for a thorough understanding of the consumer viewpoint (Janes & Wisnom, 2003). It is supported in the theory of the quality perception process. The quality of a product or service may be highly variable because of the difficulties in ensuring consistent behaviour across service personnel (Ennew, et al., 1993).

The IPA model is especially useful when managers need to have a general idea of consumers' perceptions versus the organisations' performance in an effort to identify areas of concern that require improvement (Ma, Qu & Njite, 2011). The cues may be derived in various ways, including the use of qualitative data obtained from focus groups, expert interviews as well as findings from relevant previous studies.

It is critical to determine which cues to apply in the analysis because customers may not pay attention to certain cues during their purchasing process (or interaction with the service provision). Arbore and Busacca (2011) continue to say this may be because the customer may take specific cues for granted, which may be misleading in the analysis. The importance of cue selection is supported by Sever (2015), stating that the appropriate selection of cues is critical for deriving the best management decisions, as these decisions will rely on the information revealed from the set of selected cues. The study's choice of quality cues to incorporate into the measuring instrument included the literature and the surrounding aspects of food safety protocols and practices. This assisted in deciding which cues to use. Furthermore, the management responses and observations made by the fieldworkers were

instrumental in providing quality cues. Cues that specifically coincided with the literature review and key practices at the QSRs provided the "importance" and "performance" quality cues.

Importance-performance analysis matrix

Ennew, Reed and Binks (1993) state that the tool should aim to retain a high degree of simplicity in calculation and interpretation so that it may be applied in practical situations. The IPA tool can be customised to the agency's particular needs as appropriate to issues/attributes that need to be evaluated. Consumers judge the quality of products or services based on a set of cues, which are relatively important in determining satisfaction (Arbore & Busacca, 2011).

The use of IPA was beneficial in the past due to the growth and competitiveness that exists across various industries, thus prompting professionals to look for ways to gain an advantage and attract and retain clients by aligning with what the consumers perceive (Janes & Wisnom, 2003). In context to this study, the growth and complexity in QSR operations, the evidence of existing cases of foodborne illness and past research implicating the commercial kitchen, the application of IPA, and quality perceptions of the consumer, aimed to shed light on where the industry should direct strategies.

In its application, a two-dimensional matrix is used. It contains four quadrants and includes an analysis matrix for plotting cues based on their relative importance and performance of the quality cues to the customer (Janes & Wisnom, 2003). The same set of cues for importance are evaluated for performance as they will be directly compared within the IPA matrix (Oh, 2001). This is endorsed by Sever (2015), stating that the same set of cues should be used for evaluation, with the recommendation that this should be done sequentially.

As seen in Figure 4.6 (next page), there is a vertical and horizontal axis; the vertical measures the perceived importance, and the horizontal the perceived performance of the spec Previous studies adapted the vertical axis was adapted to measure perception/expectation (Janes & Wisnom, 2003). These axes develop categories which assist in the areas of suggested management.

Quadrant one is a vital quadrant linked to cues that drive business activity. In this quadrant, labelled "Concentrate here" the cues are of high importance, but performance and, thus, the experience of the cues are low. Janes and Wisnom (2003) state that these cues require attention and that failure to do so reflects major weaknesses.

Quadrant two takes note of cues that are important to the consumer and have performed well as experienced by the consumer. The suggestion is, therefore, to maintain the good work as it indicates success (Azzopardi & Nash, 2013).

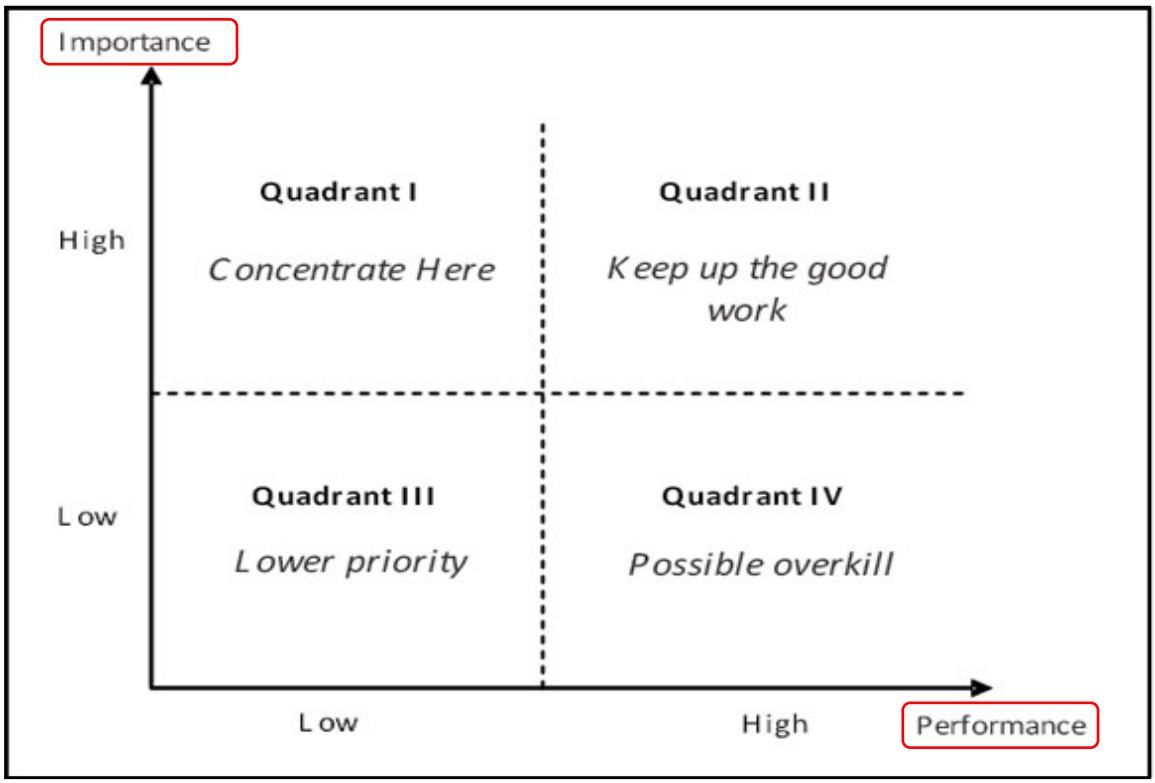

FIGURE 4.6: IMPORTANCE-PERFORMANCE ANALYSIS MATRIX (Martilla and James, 1977:78)

Quadrant three is labelled as "low priority" due to both the performance and importance of the cues being low. According to Azzopardi and Nash (2013), there is no immediate threat if no gains are achieved from improving the performance.

Quadrant four is labelled as "possible overkill" and it categorises cues as "low importance" but "high performance". In this event, the suggestion is to shift attention to allocate resources better. The importance of the cues is not highly rated by the consumer.

Placement of the gridlines

In constructing the IPA matrix, the most common direct measurement method is the "data-centred approach" (Lai & Hitchcock, 2015). This method uses the mean values of the importance and performance scores collected as the crossing points or "crosshairs". Other studies have used the "scale-centred" approach in which the crossing points are the centre of the established scales, i.e., 3 in a 5-point Likert-type scale. Martilla and James (1977) originally recommended using the median if there is an insufficient amount of variance; however, Sever (2015) mentions that the choice is pretty much a matter of judgement. The misplacing of the points could produce ambiguous and conflicting interpretations and, thus, recommendations. For the sake of this research, the data-centred approach was applied, as it was driven by the collected data and implies the respondents' characteristics and the samples' quality perceptions (Sever, 2015).

Concerns with the use of the IPA framework

Some concerns have been raised when using the IPA regarding the manner in which the researcher chooses appropriate cues for evaluation. The conceptualisation of the term "importance" and the use of an appropriate scale for IPA and the data collection and analysis are also some of the concerns across past studies that have used the importance-performance analysis framework.

In applying this framework, it is essential not to **exclude any cues** that may be important to the consumer. Should specific cues not be included, the importance-performance analysis will be limited (Martilla & James, 1977). The benefit of evaluating importance and performance, thereafter, allows for progression from general to more specific questions, as stated by Martilla and James (1977).

In the first step of its application, Lai and Hitchcock (2015) ask whether it is necessary to build a new set of cues or whether they may be borrowed or adapted from previous studies. Clear guidance is lacking for the selection of appropriate cues, and thus Sever (2015) states that the choice is site and case specific. Furthermore, it is supported that some research has successfully used previous IPA studies with well-developed cues. In contrast, Lai and Hitchcock (2015) mention that new research subjects have different conceptualisations, and therefore the recommendation is to develop a unique set of cues for new studies. This study aimed to investigate and describe the quality of food safety in QSRs, with the premise that food safety has existing protocols and practices. Therefore, it is the perceptual cues that have to be adopted and applied in this research, past studies, literature, the interview responses, and observations conducted in Phase 1, as well as information from panel experts. "The reuse or novel combination of existing cues is applicable" (Lai and Hitchcock, 2015).

Alongside this concern is **defining "importance**", as it has been used interchangeably with expectation. The definition of the word "important", according to Hornby (2010), means having a great effect, of great value or having significant influence or authority. Sever (2015) commented that importance had been defined as the desired outcome and expectation as a tolerated outcome.

The use of importance in relation to expectation is in agreement with the quality perception model in that it is in the importance of various quality cues and quality attributes that consumers form perceptions (Ophuis & Van Trijp, 1995). The customer will develop a set of expectations about the cues previously noted from information received directly or indirectly. The degree of conformance between the product's actual performance, reliability, and durability to these expectations is important to their perception of the quality of the product (Kenyon & Sen, 2011).

A further concern is extended in **determining which scale is best for IPA studies,** i.e., direct or indirect measurement scales. Direct methods of measurement include those in which the respondents are informed that they are being measured or have been made aware of it by the nature of the

measurement technique (Livneh & Antonak, 1995). Indirect scales are used to avert threats to the validity of the data. Indirect scales yield responses that are not taken literally but instead based on the respondent's performance on a seemingly straightforward task. It is thought to unconsciously reveal hidden psychological constructs interpreted as attitude (Livneh & Antonak, 1995).

A comment was made that the strength of using direct measurement is the simplicity and effectiveness offered (Lai & Hitchcock, 2015). A direct measurement scale would be a Likert-type scale, of which most researchers use a 5-point or 7-point Likert-type scale. According to Sever (2015), direct measures are advocated for rather than using statistically derived estimates. It is suggested that direct ratings are more stable and valid in IPA. Ho (2017) remarks in his article that it is difficult to meaningfully capture attitudes and perceptions due to relying on self-reporting on attributes that cannot be explicitly measured. Using quantitative surveys that employ Likert-type scales thus becomes a common strategy for estimating perceptual or attitudinal constructs.

Concerns relating to **data collection and analysis** are sample size and type of analysis. With regard to the sample, Lai and Hitchcock (2015) motivate that the appropriate size is important for IPA to allow enough variance in the responses. In line with the literature, an increase in sample size enhances the prospect of achieving statistical significance.

4.7.2.3 Final consumer survey for collection of data

The final questionnaire was developed, having initially evaluated measuring instruments used in previous studies (Deacon-Erasmus, 2015; Liu & Lee, 2018). The 5-point Likert-type scale was used as the measuring instrument. This scale was introduced by Likert (1903-1981) and is a popular type of scale as it is easier to compile than other attitude scales (Welman, Kruger & Mitchell, 2005). A summated attitude scale consists of several statements in which the subjects indicate the degree to which they agree or disagree with the content.

With all the above considered, the questionnaire format was clear, neat, and easy to follow.

The following information presents the sections in the questionnaire (see Addendum D).

A) Demographic information on the respondents

In this section, the respondents were asked to provide their demographic information: gender, age, level of educational qualification, race, employment status, and monthly income. The name of the QSR/place of purchase in Gauteng was also asked of respondents, and lastly, the frequency of QSR purchases per week.

B) Evaluating food safety quality cues based on the perceived importance

In this section, the respondents had to rate food safety quality cues with statements ("extremely important" to "not at all important") on a 5-point Likert-type scale on food safety cues they perceived to be important.

C) Evaluating food safety quality cues based on perceived performance

In this section, the respondents had to rate the same food safety quality cues with statements ("excellent" to "terrible") on a 5-point Likert-type scale on the food safety cues and their perceived performance based on experience.

D) Rating of factors considered when choosing to dine at or purchase from a QSR

In this section, respondents were asked to rate the most important factors when choosing to eat at a QSR on a five-point Likert-type scale "extremely important" to "not at all important."

Before collecting the data, the large quick-service restaurant management company (the foodservice franchisor) reviewed and accepted the questionnaire. The large, branded foodservice franchisor owns over 3 600 restaurants across South Africa, other regions in Africa, the United Kingdom, and the Middle East. The measuring instrument was shared to verify the questionnaire's validity and address any concerns the customers were to be asked. No concerns arose from the review process.

Field workers: Phase 2

The use of field workers became necessary to assist with the distribution of the survey to achieve a sample size of a minimum of 400 respondents. This sample number is adequate for IPA when looking at the response rate, according to Lai and Hitchcock (2015), in that a response rate of at least fifty per cent (50%) is adequate for analysis and reporting. In the review of the theory, a minimum of fifteen measurable items is recommended. This study made use of 20 measurable items and collected a total of 487 responses from valid questionnaires.

Twenty fieldworkers were initially trained on how to approach respondents. The introduction of the field workers to respondents upon approaching them included explaining from where they originated. The fieldworkers wore their chef attire with the University of Pretoria logo to aid as an instrument for identification. The other tasks involved in the training of the field workers included the following:

a) The field workers were trained to ideally approach respondents after they had placed their orders with their preferred QSRs. Field workers specifically targeted respondents who were sit-down consumers, and after the consumer completed their meal, the questionnaire was collected.

b) Field workers were proficient in answering questions should there have been confusion amongst the respondents in understanding the difference between the "importance of quality

cues" versus the "performance of quality cues" sections. These explanations were conveyed to the field workers when they were trained together with the supervisors of the research.

c) The field workers were further organised in groups of two for each QSR store they were to approach. They were instructed to collect the data on paper-based questionnaires, which resembled the electronic questionnaires, to ensure the consistency of responses. This specific phase of the study (the quantitative data collection phase) was executed between March 2018 to May 2018.

Administration of the questionnaire

The questionnaire was administered using direct and indirect distribution methods to increase the number of responses and the quality of the quantitative data sought by the study. The two methods included self-administered questionnaires in a face-to-face encounter with respondents and an online questionnaire, duplicating the paper-based questionnaire. The use of two distribution methods was warranted since heavy reliance on either the self-administered questionnaire or the online survey would render the responses and analysis biased. This triangulation of data collection strategies was necessary as most consumers in South Africa still do not have easy access to internet services. Only 54.7% of Gauteng's population has internet access (McLeod, 2017). Respondents could have been ill-equipped to complete the questionnaire due to the inability to navigate the internet.

Self-administered questionnaires

With consent from the store managers, consumers who visited the various participating QSRs were approached randomly, and the respondents' consent was also sought.

A major advantage of having used self-administered questionnaires in this research is that, firstly the respondents felt free to answer the questions independently without too much interference from the researcher, thus ensuring the impartiality and objectivity of the answers. Secondly, self-administered questionnaires are relatively straightforward, cost-effective, and cover a large area within a reasonable time frame. Neuman (2013) states that this approach is effective and may achieve acceptable response rates from a sample with a strong interest in the topic. Blair, et al. (2013) support that these surveys have successfully collected data about sensitive issues such as the perception of quality, which is a subjective topic.

Whether a questionnaire is distributed directly or indirectly, the researcher must introduce himself, explain the purpose and importance of the survey, provide assurance of confidentiality, and provide instructions on how to complete the questionnaire (Blair, et al., 2013). For the paper-based questionnaire, this was ensured through a cover letter that accompanied the questionnaire and with access to field workers in the event of any questions. Additionally, as part of the cover letter,

respondents were provided with the researcher's and main supervisor's contact details in case of further questions. This information is clarified in Addendum B.

Online survey

The second method used to administer the questionnaire involved an online survey. Practically, this involved providing an online platform for respondents to access the questionnaires and a link for the questionnaire was forwarded to the respondents through electronic mail or other media**.** Online platforms to distribute the survey link included Facebook and WhatsApp. The online survey tool Qualtrics was used to construct the questionnaire and collect and store data from both the paper-based and electronically distributed questionnaires. There are advantages and disadvantages associated with online questionnaires. Neuman (2013) confirms that the South African public did not have widespread access to the internet until the end of the 1990s, which is still evident in other developing countries today. This is referred to as sampling and unequal access to and use of the internet (Neuman, 2013). To address this challenge, this motivated the researcher's used dual data collection to ensure that no respondent was excluded from participation due to the lack of internet access. The advantages of using an online platform are that it is fast and inexpensive (Neuman, 2013). Additionally, since the study area focuses on the Gauteng region, online distribution through the online platforms allowed for a larger, more representative sample of the population to participate. This would otherwise not have been possible due to time constraints and the impracticality of the field workers to access the entire province of Gauteng.

The following section will detail how the data was analysed for Phases 1 and 2.

4.8 DATA ANALYSIS

By employing the mixed-methods approach in the study, the data analysis procedures were accordingly separated to demonstrate how qualitative and quantitative data sets were treated, analysed, and subsequently integrated with the literature.

4.8.1 Data analysis: Phase 1

Thematic analysis was used to analyse the qualitative data for Phase 1 of the study. Figure 4.6 (next page) illustrates how using the thematic analysis guidelines, as suggested by Braun and Clarke (2006:66-22), involves specific tasks.

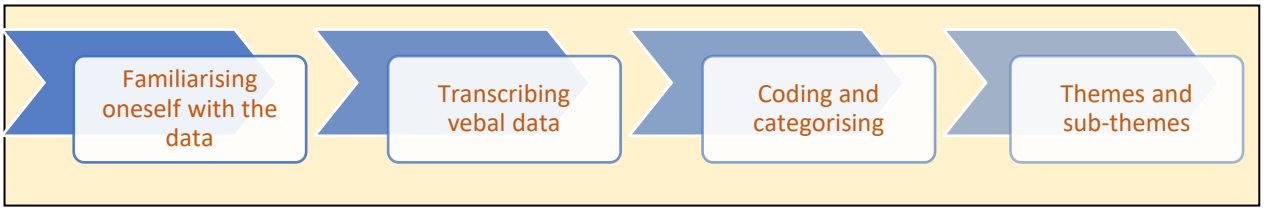

FIGURE 4.6: THEMATIC ANALYSIS

As indicated in the operationalisation table (Section 4.5; Table 4.1), the qualitative data from interviews were analysed using thematic analysis. The *initial step* entailed reading the transcripts to get an overall idea of what the participants reported during the interviews. In the *second* stage, the data was reduced to writing. The field workers conducted these two stages, and thereafter, the raw data was given to the principal researcher, who commenced with the subsequent stages of analysis. The *third* stage entailed the identification of initial codes and categories in accordance with the sequence of the research questions. In the fourth stage, the initial themes were identified, listed, and then reviewed to identify the main themes that captured the essence of the research problem. The responses of the managers/supervisors were read and thereafter allocated to the identified themes as reviewed in the literature (Chapter 3). An external party was consulted to check the interview and observation notes to verify the principal researcher's interpretations. The identification of themes in the research was based on the theoretical constructs that the research aimed to identify, investigate, and describe, i.e., food safety quality cues in QSRs. As stated before, food safety legislation and protocols exist and are expected to be enforced. Collaboration with literature and the results from the thematic analysis technique allowed identifying quality cues to be evaluated by the consumers.

4.8.2 Data analysis: Phase 2

Data collected from the consumer survey, designed using the Qualtrics platform, was captured electronically for the paper-based questionnaires by the primary researcher. This further allowed for merging the data from the online-based questionnaires with the paper-based questionnaires. Through the use of the Qualtrics platform, in addition, the researcher was able to track responses throughout the collection phase. This process ensured that the research pulled the targeted sample size and drew preliminary conclusions.

The data was thereafter exported to Microsoft Excel for sorting and data cleaning. Once done, the clean data was transferred to IMB SPSS 26 to analyse all the quantitative data.

The analysis yielded statistical information comprising means and standard deviation scores.

For Sections 2 and 3 of the questionnaire (consumer evaluations of importance and performance of the food safety quality cues), the scores were summarised based on the 5-point Likert scale. Importance statements for food safety quality cues ranged from 1 = Not important at all to 5 = Extremely important. Following that, the scores measuring the performance of the food safety quality cues were summarised with 1 = Terrible to 5 = Excellent.

By implementing descriptive statistics, summaries described consumers' perceptions of the importance and performance of food safety quality cues. This analysis was based on deductive reasoning, which enabled the generalisation of the results.

The IPA framework was used to conduct the analysis' next stage. This was done by generating and plotting the perceived importance and perceived performance means on the IPA matrix with the use of IBM SPSS 26. The 20 quality cues identified in Phase 1 were plotted into either of the four IPA quadrants ("keep up the good work", "possible overkill", "low priority", and "concentrate here").

The perceptions related to the possibility that a consumer who thinks a cue is important also perceives it to be poorly supplied. In contrast, another may think the same cue is unimportant and perceived it to be supplied very well (Ennew, et al., 1993).

To achieve Objective 3, a t-test and ANOVA (Analysis of Variance) and the relevant post-hoc tests were conducted to evaluate significant differences between the means of the importance and performance food safety quality cues from the sample groups. The use of the t-test and ANOVA involved statistical testing, in which the result was presented only when there were significant findings (Christmann, 2012:71). If a finding was statistically significant, it implied that the researcher was confident that the significant finding, most likely, did not occur by chance. The probability figure was compared to the alpha level the researcher selected with a value between 0.05 and 0.01. The p-value for both the t-test and ANOVA was set to $p<0.05$ in this study.

An independent samples t-test was also conducted. The t-test is used when comparing means between 2 groups. The above two tests (t-test and ANOVA) were created between male and female groups and between groups of the other demographic categories (level of education, employment status, income levels, population group).

4.9 QUALITY OF THE DATA

Data quality is addressed according to validity and reliability. Kumar (2011) describes establishing data quality as a concept of appropriateness and accuracy as applied to a research process. Neuman (2012) refers to these concepts as ideas that assist the research in determining the findings' truthfulness, credibility, or believability.

Validity is the degree to which the researcher has measured what they intended to measure. Kumar (2011:178), Neuman (2012); Leedy and Ormrod (2013:89) state that validity suggests "truthfulness" and describes it as "how well an idea fits with actual reality." He states that the concept of validity can be applied to the entire research process or any of the process's steps. Following a mixed-method approach, the next section will address the validity and reliability of Phases 1 and 2.

4.9.1 Validity and reliability

4.9.1.1 Phase 1: Credibility and integrity

Validity in qualitative research indicates consistency and trustworthiness. Enhancing validity in the qualitative phase of the study required that alternative terminology to illustrate how the credibility and integrity of the study were enhanced. This terminology includes expressions such as credibility and dependability (Ali, Azham & Yusof, 2011).

To ensure credibility, an equivalent to internal validity, strategies such as triangulation were employed. This involved using multiple or multiple approaches to analysing the data in an effort to enhance the credibility of the study (Hastings, 2010:2). Processes such as member checks and peer review fall under triangulation (Ali et al., 2011). The extensive review of the literature undertaken in the study and the conceptual framework design (see Section 4.4) supported the use of terms applied in the questions raised in the interview schedule. Constructs such as food safety, food safety quality attributes, quality attribute beliefs, intrinsic and extrinsic cues, and food safety pillars were conceptualised before compiling the interview schedule. In collecting the data, 20 field workers went to different QSR stores. Firstly, this provided a peer review platform during the data collection process, and secondly, the presence of a second person during the interviews removed interviewer bias. In the analysis of the data, responses collected at various locations were found to support one another in the constructs underlined in the literature.

Dependability, which relates more to reliability in qualitative research, may also be established through triangulation. The use of a mixed-method research approach employed triangulation.

Two types of triangulations are discussed for Phase 1:

- Data triangulation used multiple sources of data in the investigation through the manager interviews and the observations.
- Investigator triangulation was also conducted using multiple investigators in the manager interviews. This allowed for the auditing of data consistency.

Similarities and uniformity obtained from the responses given by the participants throughout the interviews enhanced the dependability of the research.

4.9.1.2 Phase 2: Validity

Addressing validity issues in the quantitative phase of the study also necessitated the use of appropriate terminology and measures that resonate with the principles of quantitative research. Patten and Newhart (2017) state that validity refers to the measuring instrument measuring what it is supposed to.

According to Kumar (2011), validity is easy to apply by ensuring that each question in the measuring instrument has a logical link with the relevant objectives (Kumar, 2011:179; Neuman, 2012). This specifically relates to ***content validity***. According to Kumar (2011:180), content validity refers to the assessment's adequate and balanced coverage of items in the instrument.

To ensure that content validity was addressed in the consumer survey, all main concepts and their dimensions, as well as indicators, were identified in the operationalisation of the study (see Section 4.4). This further guaranteed that the concepts would be represented in the questionnaire.

Leedy and Ormrod (2013:89) refer to ***face validity*** which was achieved through the evaluation of similar, relevant past studies before the development of the instrument used in this study to maintain the "appearance" of the collection tool. The foodservice franchisor also evaluated the questionnaire before collecting the data, in that the measuring instrument's purpose was to answer questions on the quality of food safety.

Lastly, ***construct validity*** relevant to this study is regarded as more sophisticated, as it is based upon statistical procedures (Kumar, 2011:180). Construct validity is determined by establishing the contribution of each construct to the total variance observed in a phenomenon. According to Leedy and Ormrod (2013:90), construct validity refers to the extent to which an instrument measures a characteristic that cannot be directly observed but is instead assumed to exist based on patterns in people's behaviours. Motivations as to how to improve validity include the clear conceptualisation of words. This was achieved in this study through the conceptualisation and operationalisation of the constructs in Chapter 3. Leedy and Ormrod (2013:215) state that one must develop unambiguous, clear theoretical definitions. In evaluating the language used in the consumer questionnaire, questions were reviewed, and in the event of misinterpretation, these questions were adjusted to layperson's terms. It also ensured that the general public would understand the questions.

4.9.1.3 Phase 2: Reliability

Salkind (2012:165) states that reliability occurs when a test measures the same thing more than once and results in the same outcome. In applying reliability, one may further refer to dependability or consistency (Kumar, 2011:181; Neuman, 2012). To evaluate reliability, the trained fieldworkers tested the measuring tool before data collection. The fieldworkers tested the tool to prepare for questions that may occur during store visits and interactions with respondents. Pre-testing of the research instrument was also done with supervisors and specialists; for example, Professor Korsten (the Co-Director of the Department of Science and Innovation, Centre of Excellence in Food Security) examined the research instruments and provided inputs for further improvement. In establishing consistency,

Kumar continues to say that this happens when items or questions measuring the same phenomenon produce similar results.

To determine the internal reliability of the scale, Cronbach's alphas were calculated for both perceived importance and perceived performance. Results are presented in Chapter 5.

4.10 ETHICAL CONSIDERATIONS

Ethical considerations in research narrate the scientist's obligations (Salkind, 2012). According to Walliman (2006) the value of research rests as much on its ethical integrity as it does on the uniqueness of its findings. Throughout this research, ethically completing the research for both Phases 1 and 2 was imperative. Salkind (2012) comments that nearly any decision can have ethical implications. Ethics are the rules of conduct in research (Walliman, 2006). Supported by Kumar (2011), the following points below include some of the ethical issues to be considered:

Collection of information

All research is required to obtain ethical clearance before collecting information. Furthermore, one must consider the relevance and usefulness of the research through a proposal process before conducting the research. Without justification of relevance and usefulness, it is regarded as a waste of the respondent's time and, therefore, unethical. At the commencement of this study, several earlier research studies were reviewed to identify the literature gap and formulate the research problem to justify the value of the research. A research proposal was submitted in 2017 to the Department of Consumer and Food Sciences that was approved in February 2018. Ethical clearance was obtained in March 2018 from the Faculty of Natural and Agricultural Sciences (Reference number EC17915-150) (Addendum A).

Seeking consent

Informed consent implies that respondents/participants were made aware of the information sought from them, the purpose of the research and their participation and how their participation will directly or indirectly affect them (Kumar, 2011). Neuman (2012) provokes that it is not enough only to obtain permission; respondents need to know in what they will participate. Along with providing respondents with this information, consent should be voluntary and without pressure. To fulfil this, permission was obtained from the store managers at various QSRs before conducting any interviews and observations. Some managers respectfully declined to sit for the interviews, especially when the store was understaffed at that particular time or too busy for them to participate.

During the data collection of Phase 2, managers were asked for access to their stores. After being given entry, consumers were also asked for their consent before participation. Walliman (2006) states that

questionnaires must have the necessary written information as an introduction. Additional information regarding the study was available on the questionnaire's cover page (Addendum B). Should any consumers have wished to withdraw from the study, no pressure was applied to their participation.

Maintaining confidentiality

It is unethical to share information obtained from a research study for other purposes (Kumar, 2011). It is also unethical to identify an individual respondent, and their information should be kept anonymous, i.e., identities are protected. Both participants in Phase 1 and respondents in Phase 2 were assured their information would remain confidential, and no request was made for the disclosure of names or any other information that would jeopardise the respondents' identity.

Plagiarism

In conducting the study, various literature sources were consulted, and care was taken to ensure plagiarism was avoided. A reference list was compiled, which indicates all the sources consulted and used in the write-up of the dissertation. The adopted Harvard referencing method was applied as per Consumer and Food Sciences departmental requirements. A signed Turnitin report as proof of authenticity is handed in separately.

4.11 CONCLUSION

The research design and methodology used in the study were decided upon after lengthy considerations. Hence, the appropriateness of the methods was ultimately confirmed. This study followed a mixed-method research approach, using qualitative and quantitative techniques. Additionally, the research was exploratory and descriptive.

The exploratory and descriptive nature was applicable in Phases 1 and 2 of the study, collecting data across the province of Gauteng from March 2017 to May 2018.

For the analysis of the data, Phase 1 employed thematic analysis of the interview responses and notes taken from the observations at the QSRs. For Phase 2, descriptive procedures, graphical interpretation, and inferential statistics (t-test and ANOVA), were applied. The results and discussion are accessible in Chapter 5.

While conducting this research, various measures were applied to ensure validity and reliability. Furthermore, ethical guidelines were implemented to ensure that the research was conducted within ethical boundaries and measured up to acceptable standards.

Chapter 5

RESULTS AND DISCUSSION

This chapter provides the results of the formulated objectives and sub-objectives. The data collected first relates to the qualitative phase of the study, embodying the interview answers from the QSR managers as well as the QSR observations. Secondly, the quantitative phase representing the consumers' responses obtained from the questionnaire is presented and discussed. The managers' responses and observations were analysed by thematic analysis. Descriptive statistics were employed using measures of central tendency (means) and percentages, as well as measures of variability (standard deviation) for phase two. The chapter proceeds to analyse the data through inferential statistics, using t-tests and variance analysis; this was done only where significant relationships were realised.

5.1 INTRODUCTION

The findings are discussed in relation to the objectives formulated for this research. The first phase (Phase 1) sought to identify food safety quality cues in the QSR context. The participants' demographic profiles, interview responses, and observations will be presented and discussed, aligned with the literature for support.

The consumer survey data details the demographic presentation of the respondents, and thereafter, the descriptive and inferential statistics are presented.

To enable a meaningful presentation and discussion of the results, this chapter has been divided into sections according to the two phases that the research followed.

For the purpose of the study, 35 (N=35) interview responses were collected during Phase 1. These responses were guided by a semi-structured interview schedule.

For Phase 2, 487 (N=487) responses were collected, which gauged consumer perceptions on the quality of food safety cues in QSR. The data was critically evaluated with the use of the IPA quadrants. The employment of inferential statistics (t-test and ANOVA) was done in order to fulfill Objective 3 of the study.

5.2 PHASE 1

The demographic characteristics of the qualitative sample for Phase 1 comprised 35 managers in the selected QSRs. The semi-structured interview schedule (Addendum C) sought to provide enlightenment on the food safety assurance protocols and practices in stores.

The analysis for the qualitative phase involved highlighting key themes that emerged from the interview sessions. The themes were discussed according to the four pillars of food safety (Chapter 2). Thematic analysis was used to categorise and reduce these themes into meaningful chunks of information. The presentation and discussion from the interviews were supported using verbatim quotations.

The first phase of the study aimed ***to identify food safety quality cues in QSRs.*** The description from the specific viewpoints of industry stakeholders responsible for the assurance of food safety within the specific QSR stores further contributed to the aim. Additionally, field workers conducted observations within the stores to identify cues that may indicate the quality of food safety. The tasks completed in this phase supported the mixed-method approach employed for the study.

5.2.1 Demographic characteristics of the QSR managers

In accordance with the objectives set for Phase 1, the semi-structured interviews were conducted at various locations across Gauteng to determine the food safety quality cues that may be perceivable to the consumer when dining or purchasing at a QSR. A total of 40 stores were approached, but only 35 managers were available for the interview and observations to be conducted.

The demographic profile of the managers covers minimal demographic information, namely only gender and age. Participants were also asked what position they were currently occupying and the duration of their employment at that particular QSR.

TABLE 5.1: GENDER DISTRIBUTION OF QSR MANAGERS

Gender	%	Count (N=35)
Male	60	21
Female	40	14
Total	**100 %**	**35**

As indicated in Table 5.1, more male managers participated in this phase.

Most participants (82,86%) were in the 25-34 years and 35-44 years age groups (Figure 5.1).

When questioned about their experience in the sector, 37% of the participants said they had managed quick service restaurants ranging from 0 to 18 months; 20% had experience ranging from 2 to 5 years; and 43% had six or more years of working experience.

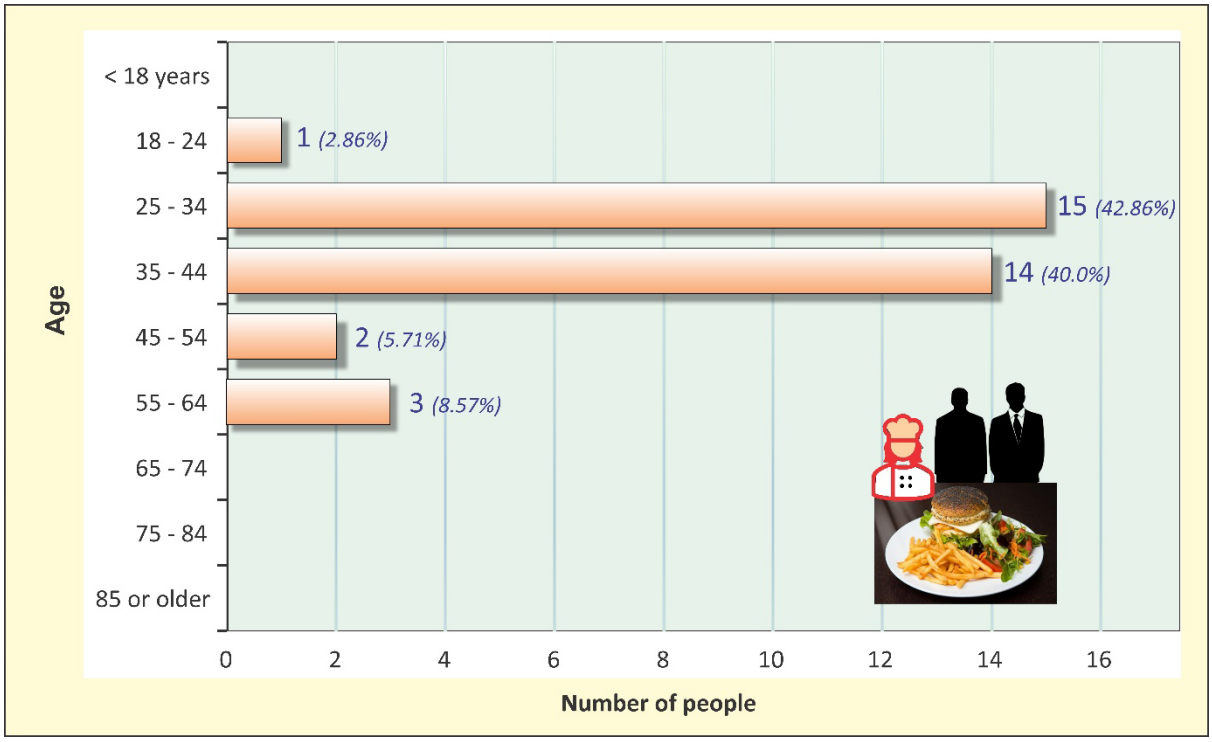

FIGURE 5.1: AGE DISTRIBUTION OF THE QRS MANAGER SAMPLE (PHASE 1)

5.2.2 Food safety quality cues according to managers of the quick service restaurants

This section presents the interview results from the QSR managers. The data collection was cognisant that management is mainly responsible for making decisions and enforcing legislation, safety strategies and company policies to ensure food safety.

Unsafe food handling practices, in particular, and the lack of application of basic food hygiene standards, such as cooking and storage temperatures of food, cross-contamination, and personal hygiene of food handlers, have a significant impact on food safety in any food outlet. Odonkor and Odonkor (2020) state that this is of concern because unsafe food affects reputation and patronisation in the hospitality industry, and it is detrimental to those who depend on the consumption of food outside of the home for nourishment.

The topics noted in the literature were used to create the interview schedule (Chapter 2). The US Food and Drug Administration (FDA) further supported topics from the literature.

The FDA stated that the top five factors that contribute to foodborne illnesses include:

i. Poor personal hygiene
ii. Food from unsafe sources
iii. Contaminated equipment
iv. Improper holding temperature
v. Inadequate cooking (Orange County California, 2020)

Conclusions from the interviews are herewith presented and discussed in line with Chapter 2's pillars of food safety namely staff **personal hygiene and behaviour**, **presence of pathogens/cross-contamination**, **temperature control of food** and **raw material**.

(i) Personal hygiene and staff behaviour

Food handlers are noted to represent the critical and final stage of food production before the customer consumes it. According to Soon (2019), this is the environment in which meals are prepared and delivered.

Given this statement, the questionnaire was completed to enquire whether QSR managers and their staff complied with professional hygiene standards and if managers monitored the behaviour of staff related to the relevant food safety regulations. Table 5.2 reveals the interviewees' responses regarding their experiences on this issue verbatim.

TABLE 5.2: PARTICIPANT RESPONSES REGARDING CLEANING AND HYGIENE PRACTICES OF QSRs

EXPECTATIONS OF STAFF MEMBERS DURING THE HANDLING OF FOOD

- *Each worker is responsible for cleaning and sanitising their own station throughout the day.*
- *There is a sanitiser station available, and different colour utensils.*
- *Wearing of gloves and hairnets. Regular cleaning.*
- *Cleaning takes place daily in the kitchen itself, but staff are also reminded to clean and be hygienic regularly.*
- *Staff must wash hands every 20 minutes. Clean regularly when there are no customers.*

STAFF BEHAVIOUR IN THE COMPLETION OF WORK TASKS:

- *Separate cleaning chemicals and detergents from food areas. Regular handwashing. Chemicals and cleaners are kept separate from food. The whole store (room) is cleaned before it opens and just before the late shift leaves.*
- *Cleaning practices are very strict, as there are cleaners on-site in the kitchen and dining area.*
- *The storage room will be cleaned weekly, and stock repacked on shelves. The QSR will also be cleaned during and after hours.*
- *All staff are responsible for keeping the store clean. We clean every hour or when we see something dirty and deep clean once a week. The establishment is washed daily and, deep cleaned weekly by all staff.*
- *The whole kitchen will be cleaned twice daily. Workers are encouraged to wash their hands regularly.*

The responses and the overlap demonstrated the importance of ensuring food safety protocols and practices are constantly maintained in the respective QSR establishments. More than 50% of the managers' responses to the above question concurred and highlighted QSRs' common staff hygiene and behavioural practices.

Table 5.2 suggests that QSR managers used diverse but complementary approaches to promoting and maintaining hygiene in their establishments, of which staff were responsible for execution.

In some QSRs, one day a week would be dedicated to deep cleaning the establishment, and the staff would clean as they work. Participants also noted a schedule to clean the kitchen and equipment. In

other establishments, it was reported that employees use Hazard Analysis and Critical Control Points (HACCP) procedures.

With regards to staff practices, there is a specific time in the store that signals the employees to wash their hands:

> *"in the kitchen, a buzzer will go off every 5 minutes to remind the staff to wash their hands".*

Personal hygiene and staff behaviour are essential to monitor because non-compliance with food safety assurance may be compromised. Issues such as infection where bare hands came in contact with food, failure to wash hands properly, the inadequate cleaning of processing or preparation equipment or utensils, and food worker's abuse of food temperature adherences may contribute to the failures in food safety assurance (Motarjemi & Lelieveld, 2014).

Managers also responded that employees make use of hair nets and gloves, and do not come to work if a person is ill. Soon (2019) states that food workers who do not follow safe and hygienic practices may potentially play a part in transmitting pathogens to food and food contact surfaces. Protective clothing such as gloves, hats/hair nets, and approved footwear are therefore worn to protect and prevent hazards from occurring.

Chapter 2 highlighted that food handlers or foodservice staff could expose food to hazards, and it is recommended that they be trained (Knowles, 2012:251). The findings above provide evidence and emphasises the importance of the staff's personal hygiene and related practices. The managers' responses have shown to align with the literature on how the staff impact the assurance of food safety, and thus any perceivable related cues that the consumer may experience cannot be ignored. The study revealed that common practices and behaviours are essential for the staff to execute and promote safe food production and service, as well as contribute to the quality of food safety.

The next question focused on employee training. It was determined that there was a need for staff to be adequately trained on how to safely prepare menu items, given the increased consumer awareness about food safety. From managers' responses, it was clear that QSRs used a combination of formal and informal training to empower their staff with knowledge and skills on their practices and their responsibility towards food safety preparation.

Table 5.3 (next page) provides some responses from the manager related to staff training in some of the participating QSRs.

TABLE 5.3: STAFF TRAINING ON FOOD MENU PREPARATION

OFF-SITE STAFF TRAINING

- *Before hiring staff, people go through the Steers training process at the Midrand Training Centre for a few weeks. They go for updates on training regularly.*
- *They attend a training camp at Head Office every month to learn to make introductory products.*
- *Famous Brands train the staff.*
- *All staff have the same knowledge.*
- *Head Office trains them.*

ON-SITE STAFF TRAINING

- *Staff train each other. There is no training procedure.*
- *They make use of in-house training for at least one month's training period.*

A COMBINATION OF ON AND OFF-SITE TRAINING

- *When staff go for training Famous Brands will train them, and afterwards, they will gain practical experience before being employed.*
- *Training programmes in-house and training at the Head Office are also compulsory.*
- *Before staff is hired, they go through a Steers training process at Midrand Training Centre for a few weeks. They go for updates on training regularly, and some staff have worked here longer than I have.*
- *Yes, three months of in-store training and then sent to Famous Brands HQ for more training.*
- *The staff first undergo a training period at Famous Brands and then further train in-store.*
- *Famous Brands train the staff to work a certain amount of time, after which they would have to train or gain experience for another amount of time before they get employed in the franchise.*

Table 5.3 reports that some QSRs relied on standardised training provided by their head office.

Centralisation and standardisation of training demonstrated the prevention of some of the QSRs from designing and implementing innovative and customised training solutions that specifically addressed their unique environments. Some of the managers interviewed admitted that head office-based training was not enough as it did not cover all essential aspects of food safety.

The study also revealed that most of the QSRs used a combination of in-house and head office training.

In line with the participants' responses, the literature highlighted the importance of training in-house and improving staff knowledge of food safety practices. Jeinie, Nor and Sharif (2015:122) noted that "without well-trained personnel which realises the importance of hygiene rules in the food processing chain, implementing functional food safety and maintaining a system is a goal very difficult to achieve." In a similar study, Mashuba (2016:5) noted that although most foodservice staff were knowledgeable about some of the aspects of food hygiene and food safety, significant gaps remain in food safety practices/ behaviour. This study concludes that it is vital for food handling staff to be provided with adequate training to improve food safety awareness and practice. The findings with regards to the food safety quality attribute support the importance of training overall, but also, importantly, the combination of training programmes that support one another.

Arendt, Paez and Strohbehn (2013) reported that restaurant outlet managers expressed a dire need for continuous training and re-training of foodservice staff; without regular training, managers would be unable to be effective in managing food safety in their establishments. Rowell, Binkley, Alvarado, Thompson and Burris (2013) note that even though some managers are able to provide regular training to their staff, what is missing is the successful transfer of the training to the food production environment. Managers need to ensure that after training, foodservice staff get enough time to test and practice their knowledge and skills in food safety situations. Soon (2019) supported this line of thinking in that, post-training, there is still a lack of translation of knowledge and attitudes into food safety practices.

Close supervision became necessary for situations where staff lacked appropriate training on safe food production procedures. This, however, may prove difficult during peak times when safe food handling practices are sometimes compromised due to the pressure that the food production team faces. Soon (2019) states that for QSRs to be effective in their product and service offering, they need to provide quality and meals that are served consistently and in a timely fashion. Due to the constant demand and time pressures in the kitchen, food handlers have less of an opportunity to carry out hygiene activities. Support and guidance provided by the managers in store, and the evidence from the managers' responses highlight the ability to create positive food safety cultures, and thus, consumers may perceive hygiene activities and the behaviour of staff and management support or participation as a cue to quality food safety assurance at a QSR.

In conclusion of the food safety quality attribute of staff behaviour and practices, all of the interviewees confirmed that the general rule in food production was to keep areas neat and tidy through regular cleaning and sanitisation of surfaces and by ensuring that different utensils and cutlery are used for different menu items. Staff personal hygiene and behaviours are distinguished, and the related activities carried out by the staff will contribute to the food environment performing within safer parameters.

The overall findings provide evidence that there are food safety quality cues related to staff hygiene and behaviours within the QSR environment that the consumers may perceive.

(ii) Temperature control of food

Central to safe food storage is keeping the food fresh by setting and maintaining the refrigeration temperature at the right level. The temperature danger zone refers to temperatures between 6 degrees to 63 degrees Celsius, ideal for growth as even a small number of bacteria will grow between these temperatures.

The QSR managers were then asked to describe their storage/inventory policy for all ingredients to gauge how the temperature was monitored in the storage areas. Managers were queried to elaborate on all ingredients and supplies (i.e., dry, frozen, and refrigerated goods) in the interview. This provided insight into the need to store some items in cold storage and other items separately. Responses are tabulated below in Table 5.4.

TABLE 5.4: TEMPERATURE CONTROL IN QSRs

TEMPERATURE CONTROL OF FOOD IN RECEIVING

- *We make use of FIFO and take the received goods to storage immediately.*
- *All are kept separated; a receiving date is contentiously monitored.*

TEMPERATURE CONTROL OF INGREDIENTS IN STORE

- *We have the FIFO system and defrost cycles.*
- *Patties are defrosted in containers in the fridge.*
- *A walk-in fridge is used to refrigerate goods.*
- *Refrigerated goods keep for 5 days, and frozen goods for 3 months.*
- *Check the refrigerator temperature every day.*
- *Make use of temperature control sheets.*
- *The storeroom has to be recorded on the record sheet.*
- *We keep dry ingredients separate from cold ingredients.*
- *We have only one storeroom, and we have to store both stores' stock in the storeroom. However, I try to keep it separate from each other, and the stock is marked accordingly. We use the FIFO method to ensure that stock does not exceed its shelf life. An air conditioner has been installed to regulate the temperature in the storeroom to prevent spoilage of any sauces or bread rolls. The walk-in fridge is marked, and the shelves are specifically for specific items. Patties are defrosted in containers in the fridge, employees are regulated, and stock taken from the storeroom has to be recorded on the record sheet.*

The role of temperature control of food is essential as it can prevent or destroy the presence of pathogens in food. If temperatures are uncontrolled, it has an adverse effect, allowing food items to be a breeding ground for pathogens. The majority of management responses in this study indicated that they were aware of the importance of monitoring and maintaining temperature while the ingredients were in their storage facilities. However, an observation was made on the incorrect thawing of burger patties at one of the QSR stores, which is discussed below.

Past research has explored temperature use or abuse as a study conducted by Elobeid, Savvaidis and Ganji (2019) concluded that 71% of food handlers had no knowledge of the danger zones, and 69.7% were unaware of the correct thawing process for frozen food. The lack of awareness of the proper handling of food temperatures and the temperature danger zone poses potential risks and may cause infections in consumers (Elobeid, et al., 2019).

In an empirical study relating to temperature control, (Schaffner, Brown, Ripley, Reiman, Koktavy, Blade & Nicholas, 2015:1) it was revealed that most restaurant kitchen managers reportedly had formal cooling processes in place and provided training to food workers on proper cooling. The findings

from this study's responses align with past studies in that management demonstrated a level of consciousness and sensitivity to temperature control.

In the same study by Schaffner et al. (2015:1), however, some managers admitted that they had not tested and verified cooling processes in their outlets and that they did not monitor time or temperature during cooling processes.

This study's findings show that steps are being taken to ensure appropriate food storage throughout delivery and storage. (i.e., chilled, frozen and dry storage). However, some of the responses lack the support that this process is regularly controlled on-site through monitoring or controlling actual temperatures. It is confirmed that only two of the managers reported keeping temperature records. i.e., checking temperatures on a daily basis. Less than 40% of the responses were related to controlling the temperatures but instead focused on where the relevant ingredients were stored. The consumers' ability to perceive any acts concerned with temperature control would enable accountability on the QSRs' part. This may be achieved through the consumers' evaluation of adequate efforts related to preventing or eliminating the growth of bacteria through temperature control in the provision of safe food.

Thus, the findings provided evidence that although most managers were aware of the need to follow temperature guidelines, they did not demonstrate enough evidence of how they regulate or monitor their operations in this regard.

(iii) Cross-contamination/pathogen presence

QSR managers were probed as to what specific measures and protocols they used to prevent contamination of food in their establishments. This was asked as contamination contributes to an essential pillar of food safety as it involves any process by which contaminants, allergens, or bacteria are unintentionally transferred from food, substances, objects, or facilities to other food, substances, objects or facility with a potentially harmful effect (Department of Health, 2018). The field workers queried awareness of cross-contamination and its impact. Nearly all the participants confirmed utilising specific measures to prevent cross-contamination, as summarised in Table 5.5 (next page).

In addition to these measures, other QSR managers, despite lacking proper HACCP guideline knowledge, followed regular cleaning schedules and used separate chopping boards and knives. There was one incident, nevertheless, during interviews where the store manager did not understand what the term cross-contamination of food meant for their quick service restaurant, suggesting a gap, and misunderstanding of the terminology or gap in the orientation and training of managers in some food establishments. A response given by another manager indicated that they were aware that the

different foods (dry ingredients and those needing refrigeration) needed to be separated to control contamination.

TABLE 5.5: MEASURES TO PREVENT FOOD CONTAMINATION

PREVENTION FROM CONTAMINATED SURFACES

- *Cross-contamination colour-coded units. Franchise HACCP procedures are employed.*
- *Different preparation areas are used for the different produce. Different utensils are used for the various produce, and equipment is regularly cleaned.*
- *Strict storage rules for temperature and separate storage.*
- *Separate storage, separate areas for ingredient preparation, and sterilise work surfaces and equipment before and after production. Different coloured cutting boards are used for various produce and products, and meat products are prepared separately from fresh produce and sauces.*
- *They make use of different stations for each activity they have to do. They clean the surfaces regularly.*
- *Keep stuff separated and keep them at the correct temperatures.*
- *They make use of different colour cutting boards to prevent food cross-contamination. They also make use of colour coding for the preparation areas.*
- *Preventative measures taken to eliminate cross-contamination, e.g., different prep areas.*

PREVENTION FROM CONTAMINATED EQUIPMENT

- *Equipment is cleaned regularly. All perishables are stored in the cold room, and meat is kept separately.*
- *HACCP, and it is very important to use different utensils for different products.*
- *The use of separate cutting boards and separate food containers are crucial.*
- *They check the products. They also check the equipment to see that it is in a suitable condition and that they are cleaned properly.*

PREVENTION FROM STAFF AND POOR HANDLING PRACTICES

- *Also very importantly is to clean as they go.*
- *Hygiene practices are administered, like regular washing of hands.*
- *HACCP, regular cleaning, wearing of gloves and hairnets.*

COMBINED EFFORTS

- *Use colour-coded cutting boards, wash hands, wear hairnets and store food at the correct temperatures.*
- *Use different cutting boards, wash hands regularly and keep food at a safe temperature. Hygiene practices implemented like regular washing of hands.*
- *Use gloves. Adhere to kitchen safety rules. Correct storage temperatures (keep food out of "danger zones" at all times).*

Evidence was provided that some of the interviewees had specific policies that regulated staff conduct in relation to food contamination issues. These rules ensured that people did what was right.

One of the QSR managers was very specific on how company policy was used to prevent contamination of food: *"This Steers shares a back kitchen with Fish-Aways. To prevent contamination between the two when the fish is prepped at the back, Steers will only make use of the kitchen in front. They do not*

use the same knives, oil, staff (members) or preparation stations. If Steers needs the prep area in the back, it will be cleaned and sanitised properly. They also use the back at different times."

Another manager reportedly stated, "*Staff has a rule not to bring food from outside, and if they do, it is stored separately from the product preparation area and storage area. The staff can also not warm up customers' food."*

Literature supports the containment of contamination as Motarjemi et al. (2014) state that in order to prevent or restrict cross-contamination, restrooms and disposal systems must not be directly connected to production areas. As part of the establishment, there must be a means for cleaning and disinfecting the premises, equipment and contact surfaces, and employee hands (Knowles: 2012:235). The management responses in this study agreed with this statement, as a few managers reportedly used a combination of efforts to address cross-contamination. Keeping the premises clean is vital as there is contact with food.

In a study by Green and Selman (2005:1), they found that there are challenges to preventing food contamination. Several factors constrained the staff's ability to practice food safety in their food establishments, including "time pressures, structural environments, equipment, and resources." The managers in this study did not demonstrate experiences of any of these constraints from their responses. Instead, the managers were able to comment on cross-contamination and its control on a day-to-day basis.

Managers provided evidence that it is through the regular cleaning of equipment, the cleaning of the dining area, cleaning of contact surfaces and equipment, as well as different storage areas for specific ingredients as some of the ways they aimed to control cross-contamination of food within the QSR environments.

(iv) Raw materials/ingredients

This attribute of food safety was aimed at identifying the possible challenges in food sourcing and production that could render food unsafe and how these mistakes were corrected, if at all. This attribute further emphasised the importance of the traceability of ingredients and how one mistake in the food supply chain could impact all other stakeholders following in the chain. Human errors account for most of the food safety challenges and risks experienced by customers in quick service restaurants (Kaskela, et al., 2021). Given this reality, respondents were then asked about procuring their raw materials (ingredients) and how any irregularities were resolved as part of their food safety management systems. It is known that the evaluation of products often involves the appearance and how the product performs in terms of taste, flavour, texture, preparation and stability.

As elaborated in Chapter 3, the quality perception model is built on the fact that customers will judge products or services based on various cues that they associate with the food safety concept (Schiffman & Kanuk 2010:180).

To gain further insight into the safety of the raw materials, managers were also probed on how they evaluate the safety of their ingredients.

Table 5.6 mentions the responses regarding raw materials and ingredients.

TABLE 5.6: RAW MATERIALS AND INGREDIENT PROBLEMS

INGREDIENTS LACK OF CONFORMITY DUE TO SENSES

- *Head office will be notified, and with the next delivery, the damaged stock will be recorded, and we will receive a credit note. Damaged stock will be taken back.*
- *It does occur, but not that often that damaged goods are returned.*
- *Bread is checked to see if it looks fresh and the sell by dates are confirmed. The use-by-dates of sauces, and if they are properly sealed, and the temperature is checked too. The meat products' temperatures are taken.*
- *We test the temperature and also look at the physical appearance of the products.*
- *For bread and fresh products, we visually inspect them, and for most of the other products, like sauces and meat products, we rely on the sell-by date.*
- *If it is crumbly, squashed or mouldy, it is expired.*
- *Bread: Feel if it is soft and look at the date. Sauce: Expiry date and presence of any bubbles.*
- *Swollen bottles are considered unsafe, and bottles whose seals are broken.*
- *Check the physical appearance and the current quality.*
- *Firstly, ensure all boxes are sealed or unbroken. Then, a visual inspection of bread-store products at correct temperatures.*
- *Driver brings in 1 packed item to be accessed on smell and best-before-date (freshness).*

OTHER INDICATORS THAT PROVIDED REASON FOR THE LACK OF CONFORMITY

- *I check the products when they deliver and return them immediately if necessary.*
- *Return if products are damaged.*
- *Firstly, check the expiry date. They will proceed to count how much stock they have. If they have enough, it will be sent back, if not, they will keep it.*
- *I have to check all the expiry dates and take temperatures of meat and sauces when they are delivered.*
- *It rarely happens because we have clear date and labelled packaging. Temperature control is done daily. If goods are delivered spoilt or damaged, it is sent back.*
- *Check shelf life manufacturing dates and use-by-dates. Use a FIFO system.*
- *Dates/best-before-dates and times are all on the inventory.*
- *Date control and taking of temperature are checked daily.*
- *With bread products we go by expiry date and the shelf life chart provided by Steers. Those products that will expire over the weekend are given to staff before the weekend. With sauces we also go by expiry date and the shelf-life chart provided by Steers.*

As noted above, as part of food storage procedures and maintaining the quality of their ingredients, most of the managers used the separation principle and expiry date information. Once foods had been separated, it was labelled accordingly to enable easy access, and the ingredients were used before the expiration dates. In some cases, food temperatures were taken, which further involved close monitoring of items to ensure that food was kept in a good and safe condition. This practice is consistent with evidence from the literature, which reveals that food separation and labelling is one of the key requirements under the HACCP principles (Codex Alimentarius Commission, 2011).

A unique finding, as results certify, was that visual cues are indeed an easy go-to in evaluating the use of some ingredients. Although less than half the managers reported using any visual cues, there was a manager who did seem to be confident to employ visual cues as a means to evaluate the safety of the ingredients/their conformity for safe consumption. Another unique finding was the consistent use of the expiry/sell-by dates, as reportedly used by almost 60% of the managers.

The use of such information was verified in this study and supported by literature in that access to ingredient information is beneficial as it has been noted that judging the quality and safety of food by appearance alone has become increasingly difficult (Van Rijswijk & Frewer, 2012). Individuals, therefore, rely on the information provided to them by producers, industry and institutions that are responsible for consumer protection. This information leads to the knowledge of traceability and how the industry can be held accountable for non-conforming and unsafe food. The respondents provided evidence that managers, in the event of receiving poor quality, defects in packaging or expired ingredients, they would send the items back to the supplier.

According to a study by Golan, Krisshof, Kuchler, Calvin, Nelson and Price (2004), traceability systems help companies to isolate the source and extent of safety or any quality control problems. The use of traceability systems further aids in reducing the production and distribution of unsafe or poor-quality products. This knowledge, such as the expiry dates for the use of the foodservice employees, was beneficial to businesses in that it reduces the potential for bad publicity, liability and product recalls.

In order to further comprehend what the managers or staff would do when encountering food ingredients of inferior quality, the managers were queried about the throwing away of food. The QSR managers felt this should be done in specific circumstances as part of their food safety precautions. Table 5.7 provides the reasons for discarding food items.

Food was to be discarded, as stated in Table 5.7. Food that was thrown-away further included broken packaging during delivery and dented buns and patties. Burger buns with mould would be discarded as well as any damaged or swollen bottles as a result of equipment failure or expiry dates. The visual cues that management used included the physical characteristics of the food and its packaging.

TABLE 5.7: INCIDENTS OF THROWING AWAY FOODS

REASONS RELATING TO THE CONFORMITY OF INGREDIENTS AND FOOD SAFETY
• *Burnt food and food that fell on the floor.* • *When rolls have expired, food is left over from customers, and potatoes are rotten.* • *When the kitchen staff didn't handle the food properly, such as using the wrong sauce for the wrong meal and when a cold chain broke, in that case, we needed to discard some of the ingredients.* • *When food is past its sell-by date.* • *Buns get stuck in the machines - discarded, moulded and damaged, and swollen bottles get discarded.* • *Past usable date of sauces.* • *At the end of a month, when products have reached their sell-by dates.*

- *Products reaching their expiry dates.*
- *The food items have exceeded their dates - prep date or expiry date.*
- *In case of food contamination, they throw the food out to waste, and the shop must pay for it. However, they do not prepare meals after 20h00 in advance and therefore do not waste that much.*

REASONS RELATED TO FOOD HANDLING OF THE STAFF AND FOOD SAFETY

- *When staff did not handle food properly or when a cold chain broke.*

Therefore, the study provides evidence that when related to raw materials or ingredients, one can expect that if something does not look, smell, or appear right, it will be perceived as such by the consumer too.

5.2.2.1 Summary

Management responses from the interviews and the review of the literature (food safety legislation and food safety practices and guidelines) contributed to the conception of the quantitative consumer survey.

QSRs and management involvement in food safety have been identified as important considerations in the promotion of food safety in restaurants. Arendt, Paez, and Strohbehn (2013:16) pointed out that management supervision is vital in ensuring that foodservice staff adhere to safe food handling behaviours such as hand washing, cleaning, sanitising, and taking food temperatures. Managers must set the tone for safe food handling and ensure that this is consistently maintained at all levels of the food production system.

Some of the managers interviewed reported that sometimes food safety was compromised by the negative attitudes of staff who wanted to do things their way despite having been inducted on how to handle food in the production area. Mjoka and Selepe (2018:1) found that the attitude of food handlers is crucial in ensuring food hygiene, and the improper handling of food evidently causes most foodborne illnesses. The findings above provided evidence that management was onboard to practices related to food safety assurance. This was particularly distinct concerning the management of cross-contamination and the close monitoring of raw materials and ingredients.

Having presented the results from the semi-structured interviews, the following section covers findings from observations carried out in some of the participating QSRs. These observations were done concurrently with the interviews.

5.2.3 Observations aimed to identify safety quality cues in QSRs

The observations conducted were meant to clarify both the context and the physical setting of the food environment and how these potentially shaped food safety management practices employed in QSRs. The observations were noted alongside the interview schedule, as the field workers were trained

to observe the facilities and, especially, be more attentive to where there may be food safety practice-related indicators. Through observation, it was possible to study and examine more closely, the attitudes and behaviours of managers and their employees towards food safety in food storage and food production activities.

The aim was to further determine whether QSR managers and their staff promoted and complied with food safety protocols in their establishments. Through the observation of activities, additional food safety quality cues were identified, reinforcing the management responses from the interviews. The specific activities observed and noted on the interview schedule included food storage and protection of the food from contamination; food separation; hygiene standards, and interactions between employees and customers before, during and after the sale of food. These observations are discussed in line with the food safety quality attributes and any noticeable cues.

(i) Staff behaviour/hygiene standards

In considering the staff's knowledge or exposure to food safety protocols and guidelines, the field workers observed the presence of posters on the wall indicating the HACCP procedures.

Related to the hygiene practices of the staff, and the enforcement of the necessary practices, it was noted that there was a timer with an alarm to alert the employees to wash their hands. The employees reportedly all wore hair nets across the locations visited in the study, which highlights the awareness of potential foreign object contamination and prevention.

As noted in Section 5.2.2, this study provided evidence that both training and supervision from management are essential in enforcing a level of good practice. The field workers observed routine monitoring and supervision activities from assistant managers in the production area. This assisted the production teams to focus and do things professionally to keep the area safe, secure and good-looking in their protective attire.

Related to staff training and reference to one particular store, the field workers observed staff, especially temporary staff, relying on their peers to learn about food handling. Derived from the majority of the observations and relating to staff behaviour, the employees used operating procedures to adhere to food safety practices. This included wiping and disinfecting recently used tables before allowing new customers to use those tables. Waiters only came back occasionally to check on their customers or to clear the table. This behaviour can be expected from a QSR establishment, as their model is based on limited service (Cousins & Weekes, 2020).

While peer learning plays an important role in facilitating the transfer of vital knowledge and skills of food safety to new employees, heavy reliance deprives new employees of the opportunity to receive

proper coaching and mentoring on food safety and good hygiene behaviours from their direct supervisors or line managers.

The primary focus was to determine whether staff applied general customer service and good hygiene principles to promote and uphold high food safety hygiene practices when serving customers.

Interactions between employees and food safety practices that consumers witness may potentially improve consumer confidence in staff behaviours and protocols employed by the QSRs to assure the quality of food safety.

Findings of the observations relating to the staff behaviour/hygiene concluded that managers were aware of the critical role of the staff and that training, enforcement and supervision of the staff behaviour were important in ensuring the quality of food safety.

(ii) Temperature control

From the observations of how temperature is monitored and controlled, a QSR was found that made use of a storeroom, cold room, and deep freezer. Similar products were packed on the same shelf with the implementation of the FIFO practice. The majority of the managers reportedly made use of the 'FIFO' principle. Furthermore, in determining whether ingredients were safe for use and consumption, a few managers were noted using thermometers to evaluate the safety of the ingredients. The findings of the observations, therefore, highlight awareness of temperature and its relation to food safety assurance.

In another observed QSR, a food storage facility was located outside the restaurant "*about 20m from the door in an alley; it was small*". Dry goods were stored in the storeroom, and frozen foods were observed standing outside (on the floor) near the field worker.

Keeping food outside the storeroom for extended periods risks exposure to contamination due to microbial growth and loose airborne germs and food bacteria. Given the management's claimed expertise regarding the need for temperature control, the observation was concerning as a food safety mechanism. This observation exposed that the actual practice of monitoring and controlling temperature for the safety of food was often lacking.

The above observation is supported in the literature by Elobeid, et al. (2019) stating that 32.1% of their sample did not know the correct procedure for thawing foods. This situation can potentially increase the number of bacterial pathogens, and subsequently, increase the incidence of foodborne illnesses.

As a consequence of the observations and answers of the managers, it is apparent that consistent temperature control measures may be inadequately executed in the QSRs. Less than 40% of the QSRs could provide insight into how they comply with any temperature control procedures.

(iii) Cross-contamination/pathogen presence

The observations with respect to cross-contamination concluded that ingredients were allocated to different storage areas for different requirements. This was validated throughout the QSR locations that were visited. Additionally, food preparation areas were separated for different food, and food items had various coloured chopping boards in the majority of the kitchens that the fieldworkers had been given access to.

(iv) Raw materials/ingredients

Observations with regard to raw materials found that all stock was labelled with the manufacturing and best-before dates. This was noted throughout the QSR stores visited. The use of labelling in the stores showing expiry dates was commendable, as was the practice of using cold rooms and deep freezers to ensure that foods are properly separated. This practice highlights the attempt to maintain the cold chain. The staff also did check their inventory daily and counted it. In the event that ingredients received were passed their expiry dates, the managers were able to contact their head office to alert them. Ingredients were kept separate for uplifting.

5.2.3.1 Summary

Phase 1 of the study sought to identify the food safety quality cues that could be employed in the quantitative consumer survey for Phase 2 of the study. The analysis of the data followed qualitative techniques (Section 4.8.1) to extract food safety quality cues from the semi-structured interviews and observations conducted by 20 fieldworkers.

5.2.4 Food safety quality cues (Objective 1)

The following section presents the food safety quality cues in fulfilment of Objective 1, derived from the management interviews and QSR store observations. The cues are listed in Table 5.8 (next page).

The final selection of the quality cues was supported by the literature review. This provided an instrumental way of verifying what the consumer may perceive in the Quick Service Restaurant environments. The various forms and sources of information assisted in selecting the importance and performance of food safety quality cues to be used in the consumer survey.

The following section made use of the above quality cues and was evaluated by the consumers who dined or made purchases from QSRs as the study's second phase. The cues were rated for their perceived importance and perceived performance.

The results are first presented using descriptive statistics (central tendency and standard deviation) with the aim of plotting the importance and performance means into the IPA matrix and within the relevant quadrants.

TABLE 5.8: FINAL FOOD SAFETY QUALITY CUES

CUE NUMBER WITHIN THE CONSUMER SURVEY	FOOD SAFETY QUALITY ATTRIBUTE	FOOD SAFETY QUALITY CUE
Q6	**Staff behaviour and hygiene**	Information on food safety protocols at QSRs
Q7		Trained and knowledgeable staff
Q8		Proper hygiene practices
Q16		Regular handwashing
Q17		Staffs use of hairnets/hats
Q11	**Temperature control of food**	Food that is cooked well done
Q12		Holding food during service at the proper temperatures
Q13		Refrigerating foods at the correct temperatures
Q14		Cooking food to the correct internal temperature
Q9	**Cross-contamination/ pathogen presence**	Clean preparation facilities
Q10		Clean preparation equipment
Q18		Regular cleaning of customer seating/dining areas
Q19		Clean establishment, free from pests/rodents
Q20		Using clean serving ware for your food (plates/cutlery)
Q1	**Raw materials/ingredients**	Fresh ingredients
Q2		Smell/scent of the food
Q3		Taste of the food
Q4		The appearance of the food
Q5		Information on the quality of ingredients
Q15		Expiry/sell-by dates displayed on the relevant food items

The further analysis employs inferential statistical analysis (t-test and ANOVA) to evaluate and discuss the results per the demographic categories. This allowed a more comprehensive presentation of Gauteng's consumers' perceptions of the quality of food safety.

5.3 PHASE 2

The following section presents the quantitative phase of the study. The sample's demographic characteristics comprised 487 respondents from the QSRs who dined at or recently purchased from a QSR. The questionnaire used for the study (Addendum D) queried consumers on their perceptions of the quality of food safety related to the identified cues (Table 5.9).

The analysis for the quantitative phase involved descriptive as well as inferential statistics. The findings are discussed as per the four pillars of food safety (Chapter 2). The second phase of the study had **two objectives**:

- ***To identify and describe consumers' perceptions of the quality of food safety at QSRs; and***
- ***To critically evaluate the consumers' perceptions of the quality of food safety at QSRs.***

5.3.1 Study area: Location of restaurants in its geographic area

The geographic area of the study comprised the province of Gauteng, South Africa, and was discussed in Chapter 4 (Section 4.6.1). The respondents for Phase 2 of the study were asked to indicate which QSR they had dined at/frequented when completing the questionnaire. Online questionnaires asked

respondents for the name of the QSR and where the restaurant was located within Gauteng. This was done to confirm that respondents indeed reside in Gauteng and make purchases from or dined at a restaurant classified as a QSR. Figure 5.2 illustrates the various locations of the respondents in Gauteng (Phase 2 of the study).

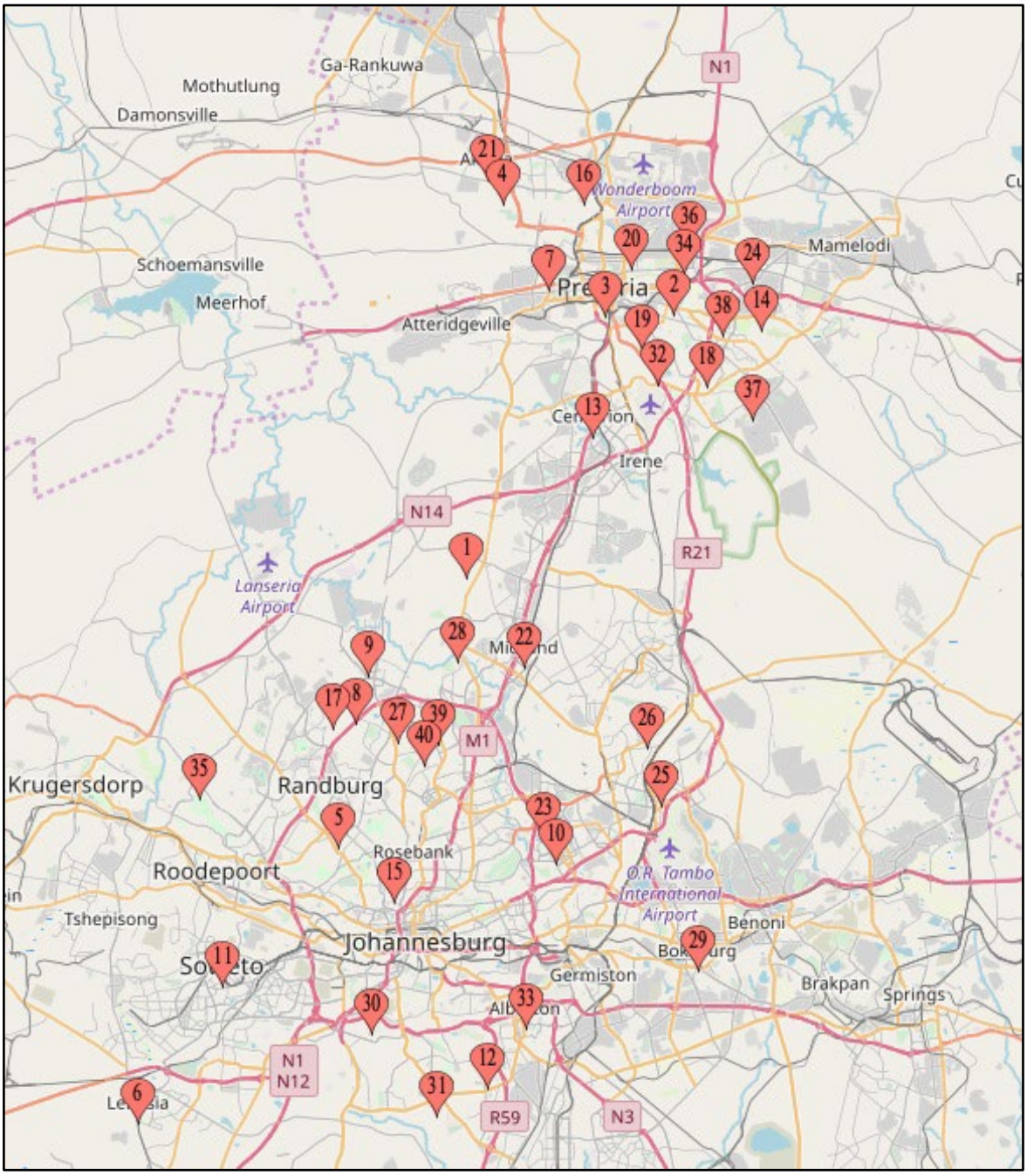

FIGURE 5.2: QSR LOCATIONS OF RESPONDENTS IN GAUTENG, PHASE 2 OF THE STUDY

5.3.2 Demographic characteristics of quantitative sample

Respondents' age, gender, household income, employment status, education level and population group formed the demographic information of the quantitative phase of this study. The quantitative data were analysed utilising SPSS 26 Software, producing descriptive statistics and inferential statistics.

Table 5.9 summarises the profile of the sample.

Table 5.9: DEMOGRAPHIC CHARACTERISTIC OF THE SAMPLE (N=487)

Categories in questionnaire		
DIMENSION	**FREQUENCY**	**PERCENTAGE %**
Gender		
Male	165	33.9
Female	301	61.8
Missing	*21*	*4.3*
Total	**466**	**95.7%**
Age (years)		
<= 25	235	48.9
26 - 35	132	27.1
36 - 45	54	11.1
46 - 55	43	8.8
56 - 65	17	3.5
66+	4	0.8
Missing	*2*	*0.4*
Total	**485**	**99.6%**
Level of Education		
Matric	191	39.2
Diploma	83	17.0
Degree	146	30.0
Postgraduate	48	9.9
Other	18	3.7
Missing	*1*	*0.2*
Total	**486**	**99.8%**
Employment Status		
Full time	131	26.9
Part time	14	2.9
Student	123	25.3
Unemployed	7	1.4
Self employed	26	5.3
Missing	*186*	*38.2*
Total	**301**	**61.8%**

5.3.2.1 Gender

Table 5.9 indicates the gender distribution of the questionnaire respondents. The data shows more female respondents than male respondents participated in the study. Traditional modes of survey administration reveal that women are renowned to be more willing to participate than men (Smith, 2008).

Looking at the general occurrence of eating out, the study found that this was higher among females than males (Hu, Wu, Zhang, Zhang, Lu, Zen, Shi, Sharma, Xun- & Zhao 2017). The consumption of food from QSRs is noted in an article by Fryar, Hughes and Ahluwalia, (2013) stating that women reported having higher consumption of fast food as a snack (25.7%), as compared to men (19.5%).

5.3.2.2 Age

Consumers above the age of 18 were invited to participate in the study. Differences across various age groups can be expected to influence their perceptions of food safety quality cues at QSRs. In a study

conducted by Bai et al. (2019), the influence of age on food safety views was observed in younger respondents (ages 19-39), who displayed the behaviour of paying attention to sensory perceptions of food. The study further indicated that the younger customers were generally more concerned with the food itself as well as the restaurant's image in their perspectives about food safety. It may also be noted that the consumption of fast-food items decreases with age (Fryar et al., 2013). In this survey, 48.9% of respondents were over the age of 18 but under the age of 25.

5.3.2.3 Education level

Respondents were asked to indicate their highest level of education. Five categories were presented as options in the questionnaire. Table 5.9 (previous page) shows the education levels of the sample.

Bai et al. (2019) revealed that a relationship exists between the level of education and the perspectives on food safety. Respondents who had a high school level education did not report paying attention to the sensory perception of food. Bai et al. (2019) clarify that this may have been due to their lack of trust in the inspection certificates or due to their lower food safety awareness of food safety signals. On the other hand, respondents who scored the lowest in the perception of food safety signals and inspection certificates represented those with post-graduate qualifications.

5.3.2.4 Employment status

Respondents were required to indicate their employment status. The data collected and the split is not representative of the South African population, as some of the QSR establishments that were allocated to the researcher for the collection were situated in student-dense areas. This information however does allow for distinguishing between respondents who are actually unemployed and those who are students.

Of the 487 respondents (n = 86), 38.2% did not supply their employment status. The employment status and, subsequently, the monthly household is sensitive information but still may impact the frequency of consumption due to the availability of more disposable income (Janssen et al., 2018).

Research found that the consumption of QSR products was significantly higher in areas where the income groups were lower. The disadvantaged groups consume less healthy takeaway food than those who are more advantaged (Janssen et al., 2018). An association between employment status and income levels was made by Bai et al. (2019) and is discussed below.

5.3.2.5 Monthly household income

The income level categories were presented in the questionnaire and thereafter regrouped to match and statistically compare data of different income groups (Table 5.10 – next page). According to Standard Bank (2016), 62.3 % of South Africa's population falls in the low to middle household income

group. Only 1.2% of the households in the country are considered to be in the upper-income/affluent category. 41.5% (n =202) of the respondents in this study did not indicate their household income.

When looking at the consumption of food from QSRs, Block, Scribner and Desalvo, (2004), found that those who lived in lower-income neighbourhoods had 2.5 times more exposure to QSRs than those who lived in more affluent neighbourhoods. This is too supported in a more recent study where Janssen et al. (2018), report that the poorest areas had a higher exposure to fast food outlets as compared to individuals living in areas that are less deprived.

TABLE 5.10: INCOME GROUPS OF RESPONDENTS

Categories in questionnaire				
Household income per month	n	**%**	**Categories for investigation**	**Standard Bank (2016) income brackets (per month)**
<R 6000	59	12.1	29.8% Low-middle income group	R 0 -R 1 708.33
Between R 6000 - R24 999	82	16.8		R 1 708.42 - R 7 416.67
Between R 25000 - R39 999	54	11.1	23.6% Upper-middle income group	R 7 416.75 - R 58 916.66
Between R40 000 - R99 999	61	12.5		
More than 100 000	29	6.0	6% Upper-income group	R 126 000+
Missing	*202*	*41.5*		
Total	**285**	**58.5%**		

According to Bai et al. (2019), the relationship and the perspectives on food safety show that income level makes a difference. The increase in income levels produced scores of the perception of food safety signals that were significantly low, i.e., the higher the income, the lower the perception of food safety risk was.

5.3.2.6 Population group

Respondents in this section indicated which population group they belonged to according to the South African Employment Equity Act No.55 of 1998. This information allowed the researcher to describe the composition of the population groups in the sample. The study did not intend to distinguish between the perceptions of population groups. However, this information later allowed for the description and profile of the consumers and their characteristics. The total population of Gauteng province is estimated to stand at over 15,5 million citizens (Statistics South Africa, 2021).

Figure 5.3 (next page) illustrates the demography of the consumers in the sample.

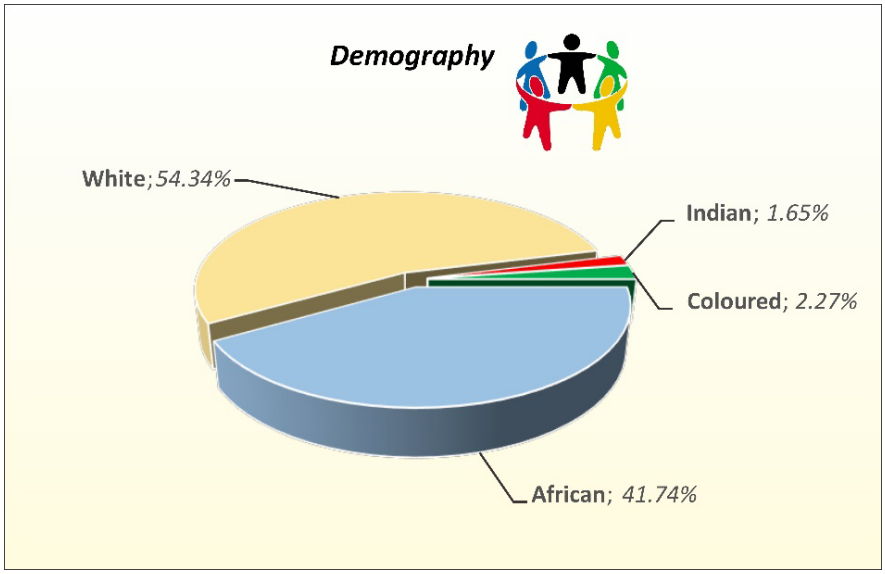

FIGURE 5.3: POPULATION GROUPS OF RESPONDENTS (PHASE 2)

5.3.3 Frequency of dining out/purchase from QSR

The respondents' dining out/purchase frequency at a QSR was asked as an indication of how often the decision to eat at or purchase from a QSR was made. This was investigated to present the status of QSR consumption in the Gauteng region. Consumers were questioned to indicate how often they buy food from a QSR in terms of days per week. Of the 53.2% that provided this information, 31.2% stated that they ate away from home at least once a week. Feedback from the respondents found that 46.8% (n = 228) of the respondents did not indicate their dining out/purchase frequency.

This increase in food consumption away from home is noted by De Andrade, Rodrigues, Antogiovannie and Da Cunha (2019) in stating that this is a characteristic of the current standard of living. With the consumption of food from QSRs and as noted above, Hidaka, Hester, Bridges, Daley and Griener (2018) also stated that living near QSR outlets is associated with greater consumption. This author attributes it, in a slightly different light; to higher household incomes as well as racial-ethnic identity and age.

TABLE 5.11: EATING OUT FREQUENCY PER WEEK AS REPORTED BY RESPONDENTS

Eating out frequency	n	%
Once (1x) a week	152	31.2
Twice (2x) a week	60	12.3
Three (3x) times a week	36	7.4
Four (4x) times a week	7	1.4
Five (5x) times a week	2	0.4
Daily	2	0.4
Subtotal	259	53.2%
Missing	*228*	*46.8*
Total	**487**	**100%**

5.3.4 Summary: Demographics

Given the above presentation of the demographics of the samples, it is noted that certain characteristics are critical factors that drive the consumers' choices. This may include the quality of the food, food safety, food hygiene, cleanliness of the restaurant, staff behaviour, and price (Bai et al., 2019; Harrington, Ottenbacher & Way, 2013). In this and other past studies, there is the suggestion that demographics indeed lead to consumers having different perceptions of food safety and more so, consumers exhibited diverse decisions for consuming from/at QSR and other foodservice establishments (Fryar et al., 2013; Omari, Arthur & Frempong, 2018; Safdar & Usman, 2018; Bai et al., 2019).

Sub-objective 3.2 discusses the above later in the chapter, which closely analyses the demographics of the respondents in this study to draw unique and significant findings.

The following section presents the quantitative analysis of the consumer questionnaire. The data is presented by means of descriptive statistics and the importance-performance matrix.

5.3.5 Consumers' perception of the quality of food safety at QSRs (Objective 2)

In 2018, it was said that the size of the takeaway and fast food (QSR) market in South Africa was between R22.4 bn and 26.4 bn. (Schwabe, 2021). The industry saw as many as 42 million consumer interactions within the market and thus was described as "piping hot" (Schwabe, 2021). Given the magnitude of this industry, the interface with the consumer can be expected to be as complex in the provision of a quality food safety system.

To determine how consumers perceive the quality of food safety at QSRs, the consumer survey proceeded to ask consumers to provide their perceived importance and the performance of food safety quality cues when purchasing or dining at a QSR in the Gauteng region. The following section commences with discussing the importance of the food safety quality cues results.

5.3.5.1 Importance of the quality of food safety cues

Consumers rated the importance of the food safety quality cues, resulting in a mean of M=4.52 and a standard deviation of 0.26.

The data of the importance ratings are revealed in Table 5.12. The first column represents the quality cue description used in the questionnaire. The second column shows the importance mean rating for each quality cue. The cues were assessed according to the 5-point Likert type scale, with a rating of 1 indicating 'Not important' and a 5-rating indicating 'Extremely important'.

TABLE 5.12: IMPORTANCE MEAN RATINGS OF FOOD SAFETY QUALITY CUES

Food safety quality cues	Importance mean rating
Clean establishment free from pests/rodents	4.83
Clean preparation facilities	4.83
Use of clean serving wear for your food (plates/cutlery)	4.81
Proper hygiene practices	481
Clean preparation equipment	4.79
Regular hand washing	4.74
Taste of the food	4.73
Fresh Ingredients	4.69
Staffs use of hairnets/hats	4.60
Regular cleaning of customer seating/dining areas	4.56
Expiry/ sell-by dates displayed on relevant food items	4.55
Smell/scent of the food	4.49
Holding food during service at the right temperatures	4.40
Food that is cooked well done	4.40
Refrigerating food at the correct temperatures	4.36
Cooking food to the correct internal temperature	4.33
Appearance of the food	4.32
Trained and knowledgeable staff	4.28
Implementation of food safety protocols at QSR	4.25
Information on the quality of ingredients	3.81
Overall mean	***4.52***
Std. deviation	***0.26***
Cronbach's alpha	***0.873***

Above the importance mean

Below the importance mean

LEGEND FOR COLOURS:
- Staff hygiene/behaviour,
- Cross-contamination/pathogen presence,
- Ingredients/raw materials,
- Temperature control of food

Table 5.12 presents a descriptive analysis of the importance mean ratings, as assessed by consumers and are arranged in descending order in the table to emphasise which food safety quality cues were rated more highly, in contrast to those rated on the lower end of the scale. The Cronbach's alpha for perceived importance is 0.873, which indicates internal consistency within the scale.

The quality cues that have been rated the highest and are also above the importance mean (M=4.52) refer to the food safety attribute "cross-contamination/pathogens presence" (all five are related to the same food safety attribute).

The evidence presented in Table 5.12 confirms that consumers have reported that cross-contamination measures/precautions for food safety assurance as being of importance to them.

In a study conducted by Patil, Crates and Morales (2005) consumers exhibited more knowledge of good hygiene practices, practices in order to prevent cross-contamination, and safe food practices. The

consumers' data demonstrate a high awareness of the importance of the related practices from the consumer survey. This may imply that they have a certain level of understanding of the role of preventing cross-contamination in food safety assurance.

Following the "cross-contamination/pathogen presence", the quality attribute sought by consumers related to the "staff hygiene and behaviour attribute"; thus, quality cues are rated preferably/ on the higher end of the Likert scale.

The data demonstrates the consumers' ability to interpret these food safety quality cues in the QSR environment. Food safety quality cues such as "proper hygiene practices (M=4.81), regular handwashing (M=4.74) and the use of hairnets or hats (M=4.6)" are regarded as of high importance to consumers. These findings relate to the consumers' knowledge of the importance of good hygiene practices (Patil, et al., 2005). The mean ratings of these quality cues indicate that consumers believe these quality cues play a role in food safety assurance.

All four of the food safety quality cues relating to the "temperature control" quality attribute were grouped sequentially in terms of importance mean ratings in the table above and were rated between (M=4.4) to (M=4.33). These findings in the study provide evidence of an overall "lower" quality perception regarding the temperature control of food and its role in the assurance of food safety in contrast to the other quality cues. Consumers may not regard these quality cues highly or be unaware of how these quality cues relate to and affect food safety assurance. On the other hand, consumers may be knowledgeable about the role of temperature in food and may still consciously or unconsciously choose not to follow or emphasise these practices (Patil, et al., 2005). The evidence of how these specific food safety quality cues are grouped below the mean creates a gap for inquiry.

The food safety cues relating to the "ingredients/raw material" quality attribute are distributed throughout the table with different mean ratings. Of the highest rate are the cues "taste of the food" (M=4.73) and the "appearance of the food" (M=4.67).

The lowest quality cue at the bottom of the table relates to "information on the quality of ingredients" (M=3.81). The "information regarding the quality of ingredients" in the study presents evidence that there is ambiguity in understanding this specific cue and how it may relate to food safety assurance.

This may infer the ability of consumers to interpret the different quality cues, within their intrinsic and extrinsic characterisations as well as the cues relation to food safety assurance within the QSR environment.

Acknowledging the quality cues which are rated relatively high in Table 5.12 highlights the intrinsic characteristics of food in that they are more easily perceived and evaluated. Gkana and Nychas (2018) found that consumers agreed that they use food's appearance and smell to tell whether it is safe.

5.3.5.1.1 Summary

Van Rijswijk and Frewer (2012) comment that consumers' perception of food and the food ingredients may impact confidence in food safety and quality. When evaluating food safety, the manner in which the food chains may operate may not be transparent to those consumers who do not have access to specialist information. Product information, such as traceability information, is believed to contribute to increasing consumer confidence in safe food provision. It is stated that consumers, therefore, rely on the information that is provided by producers, industry, and institutions, who are the agents responsible for consumer protection (Van Rijswijk & Frewer, 2012).

The arrangement for the food safety quality cues around the mean (M=4.52) as presented in Table 5.12 described consumers' overall importance perceptions of food safety quality cues in QSRs for this study.

Consumers are said to arrange cues/stimuli when they enter an environment and follow the process of integrating those stimuli alongside a memory, prior experiences, knowledge, and consciousness. The following section will further analyse performance means and present the mean ratings of the food safety quality cues.

5.3.5.2 Performance of the quality of food safety cues

This section required the consumer to rate their perceived performance bearing in mind and recent experiences regarding food safety. These experiences related to how they perceived the performance of the same food safety quality cues that were used for the importance evaluations. The 20 food safety quality cues were rated on a five-point Likert-type scale with a rating of 1 indicating "Poor" and a rating of 5 indicating "Excellent". The overall mean rating for the perceived performance resulted in a mean of (M =3.9) and a standard deviation of 2.1. The Cronbach's alpha for perceived performance is 0.951 and this indicates internal consistency within the scale.

Table 5.13 presents the food safety quality cues as rated by consumers with respect to their perceived performance and specifically, the consumers' experience of the quality of food safety in QSR. The quality cues in this table are fairly scattered in their relation to the food safety quality attributes, i.e., there is no identifiable pattern. This pattern differs from the previous table (Table 5.12), which presented the importance means, as the food safety quality cues in comparison, were found to be similarly/closely grouped.

The mean ratings of the quality cues related to the "ingredients/raw materials" attribute are scattered throughout Table 5.13 (next page). However, two of the quality cues, "taste of the food (M=4.25) and smell/scent of the food (M=4.22)", had the highest performance mean rating. Two cues relating to "Information about the quality of ingredients" find themselves at the bottom of the table (lower end

of the Likert-type scale), illustrating the low perceived performance as rated by consumers. Van Rijswijk and Frewer, (2012) have motivated that knowledge about consumer perceptions and the traceability system needs to be developed to know how the information may be effectively communicated to the consumer. The findings above verify a loss in comprehension between the importance and the performance of the quality cues.

The quality cues relating to the "Ingredients/raw materials" attribute seemed to be solely understood in relation to the intrinsic characteristic of food. Thus, they may be more easily perceived, and consumers rated their experience highly/ above the perceived performance mean.

The "cross-contamination" attribute found the related quality cues rated highly in their perceived performance and the cues collected above or closer to the performance mean.

All the quality cues for the "temperature control" related attribute (which were previously rated below the importance mean) performed above the performance mean (M=3.9). This attribute and relevant cues owe themselves to the concurrent and post-consumption construct of the quality perception model. It may be attributed to consumers recalling recent memories (in-store consumption or within the last purchase) and consumers were then able to rate this quality cue based on their recent experience/while completing this questionnaire.

The food safety quality cues "food that is cooked well done (M=4.13)" and "food cooked to the correct internal temperature (M=4.03)" were rated higher than the other temperature-related food safety quality cues. This implies that other cues may have posed difficulty in their evaluation of the QSR environment (Gkana & Nychas, 2018). The findings further hint that this may be especially true if those quality cues are not associated with food safety assurance according to the consumer (hence low importance means but higher performance means).

We see the food safety quality cues that relate to the "staff hygiene/behaviour" attribute fall towards the bottom of Table 5.13 (lower end of the Likert-type scale), generally presenting a negative performance, with the cue mean ratings dropping below the overall performance mean (M=3.9).

TABLE 5.13: PERFORMANCE MEAN RATINGS OF FOOD SAFETY QUALITY CUES

Food safety quality cue	Performance mean rating
Taste of the food	4.25
Smell/scent of the food	4.22
Use of clean serving wear for your food (plates/cutlery)	4.20
Clean establishment free from pests/rodents	4.17
Food that is cooked well done	4.13
Fresh Ingredients	4.08
Cooking food to the correct internal temperature	4.03
Staffs use of hairnets/hats	4.00
Appearance of the Food	3.98
Clean preparation equipment	3.95
Clean preparation facilities	3.94
Holding food during service at the right temperatures	3.94
Refrigerating food at the correct temperatures	3.93
Proper hygiene practices	3.92
Expiry/sell-by dates displayed on relevant food items	3.81
Trained and knowledgeable staff	3.75
Regular hand washing	3.75
Regular cleaning of customer seating/dining areas	3.72
Implementation of food safety protocols at QSR	3.71
Information on the quality of ingredients	3.35
Overall mean	***3.9***
Std. deviation	***2.1***
Cronbach's alpha	***0.951***

Above the performance mean

Below the performance mean

LEGEND FOR COLOURS:
- Staff hygiene/behaviour,
- Cross-contamination/pathogen presence,
- Ingredients/raw materials,
- Temperature control of food

5.3.5.2.1 Summary

The tables (Tables 5.12 and 5.13) above illustrate the descriptive statistics and the difference between the importance and performance ratings of the food safety quality cues perceived by consumers.

All performance means are shown to compare negatively (negative correlation) to the importance means. This is shown in Table 5.14 (next page), with the food safety quality cues arranged in descending order. It demonstrates a gap in what the consumers considered important when dining at or purchasing from a QSR compared to what they experienced.

TABLE 5.14: FOOD SAFETY QUALITY CUES' NEGATIVE RELATIONSHIP BETWEEN IMPORTANCE AND PERFORMANCE

Food safety quality cues	Importance means rating	Performance means ratings	P-I
Regular hand washing	4.74	3.75	-0.99
Clean preparation facilities	4.83	3.94	-0.89
Proper hygiene practices	4.81	3.92	-0.89
Clean preparation equipment	4.79	3.95	-0.84
Regular cleaning of customer seating/dining areas	4.56	3.72	-0.84
Expiry/sell-by dates displayed on relevant food items	4.55	3.81	-0.74
Clean establishment free from pests/rodents	4.83	4.17	-0.66
Fresh Ingredients	4.69	4.08	-0.61
Use of clean serving wear for your food (plates/cutlery)	4.81	4.2	-0.61
Staffs use of hairnets/hats	4.6	4.0	-0.6
Implementation of food safety protocols at QSR	4.25	3.71	-0.54
Trained and knowledgeable staff	4.28	3.75	-0.53
Taste of the food	4.73	4.25	-0.48
Holding food during service at the right temperatures	4.4	3.94	-0.46
Information on the quality of ingredients	3.81	3.35	-0.46
Refrigerating food at the correct temperatures	4.36	3.93	-0.43
Appearance of the food	4.32	3.98	-0.34
Cooking food to the correct internal temperature	4.33	4.03	-0.3
Smell/scent of the food	4.49	4.22	-0.27
Food that is cooked well done	4.4	4.13	-0.27
Mean differences	**4.52**	**3.94**	**-0.58**

LEGEND FOR COLOURS:
- Staff hygiene/behaviour,
- Cross-contamination/pathogen presence,
- Ingredients/raw materials,
- Temperature control of food

The following section will further discuss the findings for the sake of Objective 2, which along with the above section (Section 5.5), aimed to investigate and describe the perceptions of the quality of food safety in QSRs.

5.3.5.3 Comparison of importance vs performance findings

Phase 2 of the study sought to engage with consumers in order to describe their perceptions of the quality of food safety in QSRs. This was based on the use of a quantitative consumer survey. The survey prompted the respondents to rate food safety quality cues on their perceived importance when dining at a QSR and rate the same food safety quality cues on their perceived performance (from what had been experienced) when dining at a QSR.

The results found that the food safety quality cues related to the temperature control cues have implications on understanding how temperature control relates to food safety assurance. This was demonstrated in the importance means table, which showed that all temperature control related quality cues rated below the importance mean (M=4.5). The performance means however

demonstrated that some of the quality cues related to temperature control were experienced to perform well, subsequently receiving higher ratings in contrast to other food safety quality cues.

The food safety quality attribute relating to ingredients/raw materials, and relevant cues, experienced lower mean ratings, as seen in either of the tables. Only one quality cue "expiry date/sell-by date information", saw significant differences between its importance and performance ratings. This may also imply an implication in understanding how this quality cue relates to the assurance of food safety.

Lastly, the "cross-contamination" related quality cues highlighted consumers' awareness of their relationship to the quality attribute sought and the attributes' overall role in the assurance of food safety. These cues were mostly rated highly in both importance and performance tables.

Having investigated both the importance of food safety quality cues and the performance in terms of the experience of the same food safety quality cues, it was realised that the consumers' quality perceptions and what they regard as important to the assurance of food safety were not aligned to their experiences within the QSR environment. The data presented a low perception of the food safety quality cues as the overall importance mean was high. In contrast, the overall performance mean was unmatched (and lower) than the importance means in the study's findings.

The following section will analyse the perceptions of the quality of food safety through the application of the Importance-performance framework as the primary focus of this study and deduce the interpretations as per IPA quadrants.

5.3.6 Importance-performance matrix analysis

The previous section provided descriptive statistics on the quality of food safety. The data was derived post-evaluation of the importance of the chosen food safety quality cues and evaluation of the performance of the same food safety quality cues.

As the IPA framework follows, the importance and performance of each food safety quality cue were determined using mean ratings from the consumers who purchased from or dined at a QSR. These ratings indicated the items on the scale ranging from "extremely important" to "not important" for the importance measures and from "excellent" to "poor" for the performance measures.

The average importance and performance mean scores for the 20 identified quality cues were calculated and placed alongside one another to develop the scatter plot graph. The importance values fell on the vertical axis, and the performance values fell on the horizontal axis. The average mean scores of the cues are incorporated into the matrix (Figure 5.4 – next page) and were used to divide the graph into the four IPA quadrants. Each plot on the IPA matrix represents the values for importance-performance concerning the quality cue.

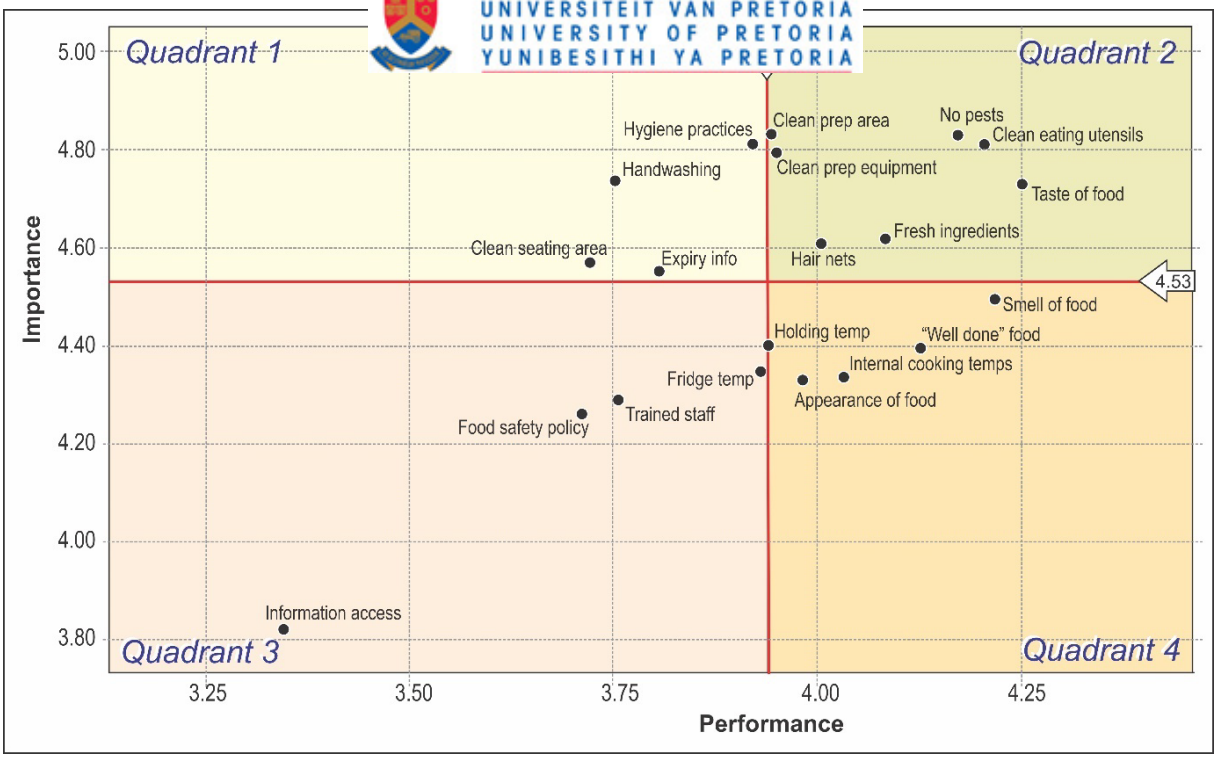

FIGURE 5.4: IMPORTANCE-PERFORMANCE ANALYSIS MATRIX: DESCRIPTIVE STATISTICS

The means of the importance and performance quality cues, as can be seen in Table 5.15 (next page), are placed into the four interpretable quadrants.

- "Concentrate here" = (Quadrant 1),
- "Keep up the good work" = (Quadrant 2),
- "Low priority" = (Quadrant 3),

and

- "Possible overkill" = (Quadrant 4).

This allowed for advanced analysis of the food safety quality cues in terms of how they relate to one another in their importance and performance perceptions.

The IPA application shows that most food safety quality cues fall within one of the four quadrants.

TABLE 5.15: SUMMARY OF IMPORTANCE-PERFORMANCE MATRIX

IMPORTANCE-PERFORMANCE ANALYSIS MATRIX INTERPRETATIONS	
CONCENTRATE HERE	**KEEP UP THE GOOD WORK**
Proper hygiene practices Regular handwashing Regular cleaning of customer seating/dining areas Expiry/sell-by dates displayed on relevant food items HIGH IMPORTANCE LOW PERFORMANCE ***(Quadrant 1)***	Clean preparation equipment Clean preparation facilities Clean establishment free from pests/rodents Use clean serving ware for your food (plates and cutlery) Taste of the food Fresh ingredients Staff's use of hairnets/hats HIGH IMPORTANCE AND PERFORMANCE ***(Quadrant 2)***
LOW PRIORITY	**POSSIBLE OVERKILL**
Information about the quality of the ingredients Implementation of food safety protocols at QSR Trained and knowledgeable staff Refrigerating food at the correct temperatures LOW IMPORTANCE LOW PERFORMANCE ***(Quadrant 3)***	Smell of the food Food cooked until well done Cooking food to the correct internal temperature The appearance of the food Holding the food during service at the right temperature LOW IMPORTANCE HIGH PERFORMANCE ***(Quadrant 4)***

Found in the "**Keep up the good work**" quadrant were the cues "clean preparation equipment, clean preparation facilities, clean establishment free from pests/rodents, use of clean serving ware for your food, the taste of the food, use of fresh ingredients and the staff's use of hairnets/hats". These food safety quality cues are perceived to be of **high quality** to the consumer in their perception of food safety at QSR.

The majority of the quality cues plotted in this quadrant relate to the food safety quality attribute, cross-contamination/presence of pathogens, as illustrated in Figure 5.5. These cues were rated above the importance mean (M=4.5), and the performance mean (M=3.9).

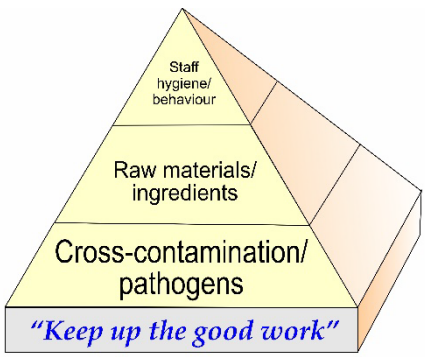

FIGURE 5.5: VISUAL REPRESENTATION OF "KEEP UP THE GOOD WORK" QUADRANT AND PROPORTIONALLY ARRANGED FOOD SAFETY QUALITY ATTRIBUTES

Other quality cues relate to the raw materials/ingredients and were also rated above both the importance and performance means.

The above describes the consumers' perceptions of quality cues relating to cross contamination/presence of pathogens at the QSRs and they are of the "highest quality". In reference to the quality perception model, it may imply higher subject involvement in that the respondents were able to engage and elaborate more with the concerned food safety quality cues. This may be due to prior knowledge, consciousness of the cues, or education relating to cross-contamination.

In a study concerning consumers' food safety practices and knowledge, Murray, Glass-Kaastra, Gardhouse, Marshall, Ciampa, Franklin, Hurst, Thomas and Nesbitt (2017) commented on consumers' awareness of cross-contamination. It was reported that approximately 90% of the respondents took precautions to avoid cross-contamination. This was done by using separate cutting boards for raw meat and other foods. Additionally, 93% of the respondents reportedly cleaned preparation surfaces and washed their hands before working with food, aiming to control cross-contamination (Murray et al., 2017). This finding demonstrates that consumers are conscious of the cross-contamination dimension of food safety quality and cues that point to preventing cross-contamination; consumers have a 'high perception' of the cues' contribution to quality food safety.

As found in Section 5.3.5, cross-contamination-related quality cues were also considered highly in terms of perceived importance and perceived performance.

The quadrant labelled "**Possible overkill**" relates to cues considered of low importance to the respondents but performed above the mean.

Quality cues in this quadrant include "the smell of the food, the appearance of the food, food cooked until it is well done, cooking food to the correct internal temperature and holding the food during service at the right temperature".

As seen in Figure 5.6 below more quality cues related to the temperature control of foods were plotted in the quadrant. The quality cues are seen to be rated above the performance mean (M=3.9) but rated below the importance mean (M=4.5). The above indicates that the consumers' perception of quality cues regarding the temperature control of foods at the QSRs, is perceived to be of quality in terms of performance but are not regarded as important, having plotted below the mean and into this specific interpretation quadrant.

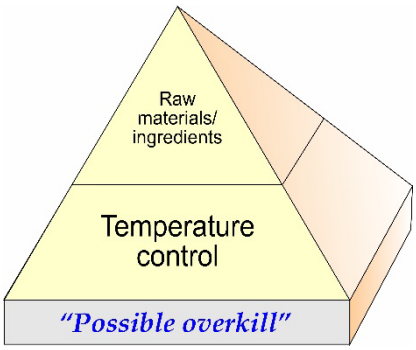

FIGURE 5.6: VISUAL REPRESENTATION OF "POSSIBLE OVERKILL" QUADRANT AND PROPORTIONALLY ARRANGED FOOD SAFETY QUALITY ATTRIBUTES

Concerning the quality perception model, this may indicate low subject involvement regarding the quality cues related to the temperature control attribute. This outcome may be due to the respondent's inability to engage or elaborate on the quality cues and further indicates what they may believe regarding this food safety attribute.

Consumers may not have the education, knowledge, or experience of temperature control and its relation to food safety assurance. Temperature control is highlighted as ensuring that the cooking of food is done at the correct temperatures. Temperature control is additionally critical due to the presence of harmful germs in food; adequate cooking is therefore done to slow down reproduction or kill the bacteria. Additionally, the purpose of holding potentially hazardous foods at the correct temperatures is to minimise pathogenic bacteria's growth (Orange County California, 2020). In their study, Murray et al. (2017) comment that in the cooking practices of consumers, the use of thermometers, for example, needs improvement. Consumers reported making use of visual inspections to determine when meat is done. The authors further stated that this was not a reliable method of knowing if the food had indeed reached safe internal cooking temperatures.

Temperature control of food may be a challenging food safety quality cue to translate/perceive in a QSR environment. Although the respondents reported a performance above the mean, the concern arises at the importance rating of this quality cue and its plotting below the importance mean. This concern is supported by Gkana and Nychas (2018), who discuss certain temperature control practices are considered as being inconvenient for consumers. Their conclusions included that the consumers were unfamiliar with maintaining safe temperatures of food in their own households. Thus, it may be assumed that this will not be perceived as important, and this may moreover translate to environments outside the consumers' control.

Two of the five quality cues relating to the raw materials/ingredients were still rated above the performance means but the specific quality cues were rated below the importance mean in the QSRs.

In both the "Keep up the good work' and "Possible overkill" quadrants, raw materials/ingredients quality cues were rated above the performance mean.

As stated, food is often evaluated in terms of taste, flavour, and texture. These factors are perceived so rapidly that the consumer may not necessarily be aware of doing it. The quality cues are more intrinsic and are thus major determinants of whether the consumer considers their food to be safe to eat or not.

The following quadrant relates to the food safety quality cues with mean ratings both below the importance and performance means and thus labelled "**Low priority**". In typical IPA interpretation, this would relate to cues that the consumer does not find important and does not perceive as of 'high'

performance. The company would then be recommended to cut or reduce investment and allocation of resources to departments/activities in the organisation related to any efforts in employing the said cues.

In this quadrant, we see "Implementation of food safety protocols at QSRs" and "trained and knowledgeable staff" having been plotted in this quadrant.

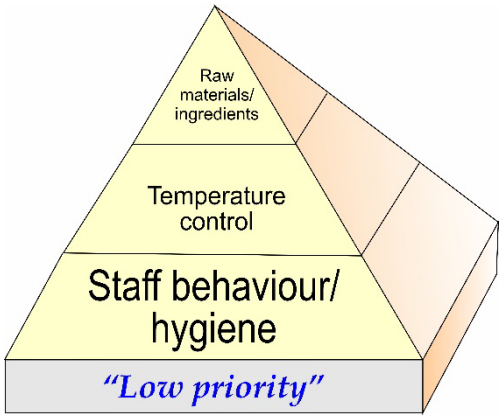

FIGURE 5.7: VISUAL REPRESENTATION OF THE "LOW PRIORITY" QUADRANT AND PROPORTIONALLY ARRANGED FOOD SAFETY QUALITY ATTRIBUTES

As noted in Figure 5.7, staff behaviour and hygiene the related food safety quality cues dominated in the quadrant. The food safety quality cues were rated below both the importance mean (M=4.5) and performance mean (M=3.9). This trend is further demonstrated in the "concentrate here" quadrant (discussion to follow), as findings indicated that other cues relating to staff hygiene/behaviour were rated below the performance means.

Concerning the quality perception model and consideration of this specific quadrant, the subject involvement indicates that consumers had low involvement in their ability to engage and elaborate on the quality cues.

The specific quality cues mainly relate to the extrinsic nature of the quality cues and most likely refer to the credence characteristic of the food safety quality attribute; past experience, education, or prior knowledge will affect how consumers identify these cues in relation to the attributes they seek in food safety assurance, i.e., staff hygiene and behaviour.

This is evident when analysing other cues related to staff hygiene and behaviour, which have been considered important; these quality cues in contrast were extrinsic to the quality cues but related to the experience characteristic of the food safety quality attribute, i.e., "wearing of hairnets/hats", "proper hygiene practices", and "regular washing of hands". All these quality cues are rated above the importance mean. It indicates that consumers were better equipped to interpret these quality cues and engage and elaborate on the cues in contrast to the other quality cues discussed above.

Staff hygiene and behaviour as well as the practice of good hygiene, are important for food safety assurance in foodservice as consumers rely on the food safety quality attribute (Bai et al., 2019). Many people manipulate large-scale cooking in the hospitality industry, increasing the plausibility of food contamination (Odonkor & Odonkor, 2020). Respondents in this study have reported that staff hygiene and behaviour are not performing at a satisfactory level overall.

The final quadrant relates to food safety cues that are rated of importance to the respondents but have performed below the mean. The quadrant labelled "**concentrate here**" aims to motivate company efforts and the allocation of resources to gain a competitive advantage in the market. The consumer would like to see these cues improve (Janes & Wisnom, 2003). "Proper hygiene practices, regular handwashing, the regular cleaning of customer seating/dining area and expiry date/sell-by date information on relevant food items" plotted into this quadrant.

The quality cues relating to staff behaviour and hygiene were rated above the importance mean (M=4.5) but below the performance mean (M=3.9).

Figure 5.8 illustrates the focus of this food safety quality attribute within this quadrant. As stated in the previous paragraph, the plotting of Staff hygiene and behaviour indicates that the consumers' consumer considers the quality cues important but indicated a "poor" performance in their quality.

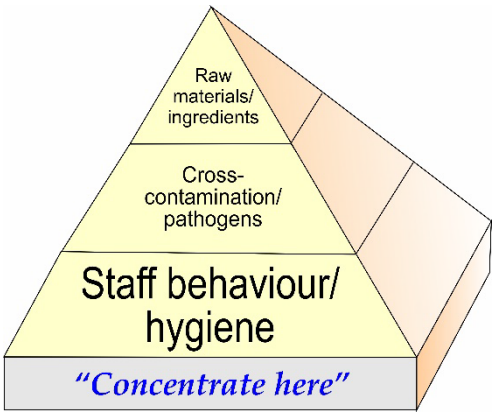

FIGURE 5.8: VISUAL REPRESENTATION OF "CONCENTRATE HERE" QUADRANT AND PROPORTIONALLY ARRANGED FOOD SAFETY QUALITY ATTRIBUTES

Also essential to mention is the quality cue "Regular cleaning of customer seating/dining areas". It is a quality cue regarded as an important practice in the quality of food safety, and the consumer did not see these cues performing at a "high quality".

For the fulfilment of Objective 2, it was seen that the different quality cues rely on both intrinsic and extrinsic identifications of food safety and in seeking the quality attributes during the quality perception process and consumers' evaluations. The ability to evaluate cues has demonstrated subject involvement, and the consumer's higher engagement and elaboration of the quality cues. Consumers

may have prior experiences, knowledge, education, or beliefs about these cues and therefore are able to provide a level of subjective evaluation when the cues are encountered.

Quality cues that are more extrinsic and credence to the quality attributes may demonstrate the lower subject involvement in that consumers were not able to fully engage or elaborate in encountering these quality cues. This, too, is influenced by prior knowledge, experiences, education and belief about how the quality cues relate to sought attributes in the assurance of food safety.

The findings from the importance-performance analysis framework are discussed further with reference to the quality attributes/food safety pillars and aim to identify areas of concern as for Objective 3 of the study.

5.3.7 Evaluation of the consumers' perceptions to uncover unique differences

The preceding sections' conclusions indicated certain quality cues pertaining to quality attributes that were critical to food safety assurance and quality. How the quality cues were rated does not invalidate the importance of the quality cues or the attributes but instead emphasizes the need to understand why they may have fallen in the concerned quadrants. This was evaluated in an effort to improve communication with consumers and clarify how the various quality cues, as they exist in the environments we are in, relate to the food safety quality attributes we seek.

The IPA matrix (Section 5.3.6) provided a humble interpretation of the perceived importance and performance means within the respective quadrants. The importance-performance matrix allowed the researcher to identify areas of concern. This was additionally prioritised to ascertain why specific cues may be/may not be interpreted as they should.

5.3.7.1 Evaluation of the consumers' perceptions to uncover unique differences: IPA matrix and food safety quality attributes

(i) Staff behaviour/hygiene

The evidence from IPA plotting and interpretation indicates that the consumers' perception of quality cues relating to staff behaviour and hygiene at the QSRs is perceived to be of an overall "**Low priority**" with low ratings of the quality cues in terms of performance. These quality cues, however, have demonstrated to be important to the consumer in their evaluation of food safety quality.

As more people consume food outside of the home, eating establishments are becoming a major source of foodborne outbreaks (Panchal, Carli & Dworkin, 2014). There are a number of studies that implicate food handlers and their contribution to foodborne illness. Rebouças et al. (2017) comment in their study that if there have been pathogenic microorganisms on food handlers' hands, for example, this has made food handlers important vehicles for foodborne diseases (Rebouças et al., 2017). In this

study, the findings presented that handwashing fell into the "Concentrate here" quadrant, thus elaborating on the importance of this quality cue from the consumers' perception.

The authors above further state that the attitudes of food handlers play a crucial part and will influence food safety behaviours and practices. In investigating staff behaviours and hygiene practices, it should be acknowledged that staff face certain barriers in ensuring food safety. One study indicated that most of the staff attributed the lack of training, the lack of law enforcement, the lack of time in the kitchen environment, and even laziness as barriers to assuring food safety (Odonkor & Odonkor, 2020). It is the responsibility of management and food safety legislation to protect the consumer and ensure their safety (De Andrade et al., 2019). This was established and endorsed in the management interviews that helped shape the consumer survey. When dining outside of the home, the consumers' perceptions may be shaped due to the feeling of familiarity, affection, and social identity with the foodservice establishment. The promotion of high quality of staff behaviours/hygiene will therefore lead to a level of confidence in the foodservices offered. Staff behaviour/hygiene practices are essential for the perceptions of the quality of food safety in QSR. Having stated that staff behaviour/hygiene are important attributes of the quality of food safety, other studies reveal that food workers lack expertise in cross-contamination and hygiene. (Panchal, Carli & Dworkin, 2011).

This study and the evidence provided present an area of concern, in that the consumer considers staff and their hygiene behaviours as a crucial part of food safety assurance, and yet, as seen in the study's results, the consumers had the perceived experience of inadequate measures taken by the QSR.

(ii) Cross-contamination/presence of pathogens

The cues relating to cross-contamination, or the presence of pathogens were rated as performing above the mean and were observed to be an important quality cue to the consumer. The related food safety quality cues in the IPA matrix are plotted in the "keep up the good work" quadrant. Ruby, Ungku, Abidin, Lihan, Jambari and Radu (2018) state that food is essential for survival, and in the event of improper handling of food, this becomes the cause of disease transmission. Foods that have been found with pathogens have often been credited to cross-contamination. Findings in this study reveal that consumers are aware that a clean environment is important to ensure food safety. Møretrø, Martens, Teixeira, Ferreira, Maia, Maugesten and Langsrud (2020) discuss cleaning by stating that it is a method for the dispersal of microorganisms in the process of managing and preparing food. Consumers have been noted to clean within their homes specifically for aesthetic considerations to achieve a desired state of visual appearance. Comments continue that the removal of dirty materials is guided by experiences of disgust (Møretrø et al., 2020). These experiences are associated with the general understanding that dirty materials must not be incorporated into the human body (Møretrø

et al., 2020:110–111). The findings in this study and the importance of these cues to consumers may therefore be understood in terms of what consumers may specifically practice within their homes.

Therefore, findings do not consider that the food safety quality cues related to cross-contamination and its perceived importance and perceived performance are areas of concern.

(iii) Raw materials/ingredients

The ratings of cues linked to raw material/ingredient information are scattered across all four quadrants. Overall, the performance means of the cues were rated as "high quality".

Findings are justified due to the visual appearance and sensory characteristics of foods that allow consumers to make evaluations. This was evident in this study when the related quality cues (both importance and performance) were rated above the respective means. Bai et al. (2019) support this by stating that Korean consumers considered the freshness of the food and its taste when choosing a restaurant. In evaluating safety, consumers may not always have information about the handling processes, and thus intrinsic cues may come into play. According to Bai et al. (2019), these cues include the appearance, texture, and taste of products. The aforementioned was shown in Phase 1 of this study as visual evaluations were a means of food safety evaluation reported in the management interview responses. Different levels of perception were additionally picked-up in the importance and performance mean ratings in the descriptive analysis of the survey results.

When referring to the ingredients and raw materials, the objective should be focused on preventing the consumption of foods from unsafe sources. Medeiros et al. (2001) comment that this may occur when consuming ready-to-eat foods that are produced in a manner that does not kill pathogens. One specific cue used in this study related to the display of expiry/sell-by dates on relevant food items. This information may assist the consumer to make a judgment about the safe consumption of food based on whether the date on the food item is within or past the relevant expiry dates. A study conducted by Asiedu (2008) indicated that expiry date information was important to consumers, and respondents reportedly threw out food that had surpassed this date. Results in this study provided evidence that this specific quality cue occurred in the "concentrate here" quadrant. This thus implies that other than the visual cues relating to the food itself, some product information about the food, such as the display of expiry dates, seems to be easily interpreted by consumers. Consumers perceive this cue to be important, and the importance mean ratings plotted above the mean. The cue for expiry/sell-by date information appeared below the performance mean, however, this does not pose an area of concern. This information aligned with what was found in the interview responses and was widely used by the food handlers for adequate and efficient control of food ingredients for the sake of their own internal

control management systems. Such products, not fit for consumption, should be discarded by the QSRs, as reported in the interview responses of Phase 1.

The other food safety quality cue that rated as 'unimportant' and additionally performed below the mean related to the information about raw materials. This demonstrates the ambiguity in this study regarding the food safety quality cue and that the consumer is not ready to interpret information regarding the origins or possibly the traceability of the ingredients used in the foods they purchase. Spence, Stancu, Elliot and Dean (2018) found in their study that the respondents held a positive attitude and high levels of trust toward a traceable product. On the other hand, however, Rodriguez-Salvador and Dopico (2020) found that consumers have a low level of knowledge of information such as traceability and therefore do not perceive this as necessary.

(iv) Temperature control of food

The mean ratings of the "temperature control of foods" related quality cues were all plotted below the importance mean. Still, they were mostly perceived as of "high quality" in their performance.

Feng and Bruhn (2019) comment that temperature control prevents foodborne pathogens and is recognised as a best practice among both consumers and food handlers. The area of concern, therefore, is with regard to temperature quality cues. The most common factors that relate to foodborne illness include the safe keeping of food and its time/temperature treatment. In the findings of Ruby et al. (2018), it was concluded that there is a need for food safety knowledge improvement among consumers, more especially with regard to temperature control. Only 37.9% of the respondents in their study were able to demonstrate adequate knowledge with regard to temperature control. As a quality attribute of food safety, it is motivated to educate consumers on how temperature interacts with the quality of food safety and that this should be adhered to in the QSR environments. A study revealed that 62% of food handlers knew that chilled foods should be stored at or below 13°C. In the same study, however, it was revealed that 57% of food handlers did not know that consuming minced meat that has not been properly cooked may cause bloody diarrhoea. Additionally, 40% did not know that raw beef may be contaminated by germs that can cause hospitalisation or even death.

The findings in Phase 1 of the study somewhat highlighted awareness of the importance of this quality attribute. However, when delving further into the actual control process, even the managers seemed to be lacking in the relevant enforcement.

Consumers must be aware, for example, that foods that should be refrigerated should also be received at the correct temperature (like a salad, for example).

The perceived quality of the cues related to temperature control of food, therefore, presents an area of concern. This study highlighted that the consumers perceived the performance of the attribute as being 'of quality', but the consumers failed to rate the relevant food safety quality cues as important.

The above analysis presented insights of consumers and assisted in presenting the consumers' perceptions of the quality of food safety as they exist. The research revealed staff behaviour and hygiene, and food temperature control as areas of concern in the consumers' perception of the quality of food safety at QSRs.

5.3.7.2 Evaluation of the consumers' perceptions to uncover unique differences: Analysis of demographic categories

The following section addresses the ANOVA and t-test with subsequent evaluation of any areas of concern uncovered through the analysis of statistical significance found between the means of the food safety quality cues rated by the demographic categories.

This investigation was motivated by past studies pointing out that consumers are aware of foodborne illness and are conscious of food safety (Jevšnik, et al., 2008). It is further noted that due to the current global awareness regarding food safety, there is an increasing number of resources dedicated to educating and informing the public about health (Dosman, et al., 2001). Consumer perceptions and how they change in complex and integrated ways depending on age, gender, education level, or economic circumstances have been revealed in previous studies. It was, therefore, essential to examine food safety information to ensure that the guidance given to the consumer is appropriate (Jevšnik, et al., 2008). Past studies have uncovered that socio-demographic differences may influence an individual's perception of health and food safety risks (Dosman, Adamowicz & Hrudey, 2001; Ruby et al., 2018).

The findings of the ANOVA and t-test for this study are presented in Tables 5.16 to 5.33. Where significant differences were evident (i.e. ($p \leq 0.05$), relevant post-hoc tests were done to specify the differences. A One-way analysis of variance was done to identify any significant differences that were identified between the means of the food safety quality cues from the sample in terms of age, education, population group and household income. T-tests were performed to explore possible, significant differences between the two gender groups.

5.3.7.2.1 Age

The following ANOVA was performed in order to determine significant differences (p-value <0.05) between the means of the food safety quality cues in reference to the age groups. in Table 5.16 (next page).

Results indicate a statistically significant difference between the importance means of the food safety quality cues and the various age groups of the respondents for "Appearance of the food" (p-value = 0.000), "Information of the quality of ingredients" (p-value = 0.001) and "Trained and knowledgeable staff" (p-value = 0.028).

TABLE 5.16: CONSUMERS' AGE GROUPS IN REFERENCE TO THE IMPORTANCE OF FOOD SAFETY QUALITY CUES

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
Appearance of the food	Between groups	20.806	5	4.161	7.984	.000
	Within groups	248.082	476	.521		
	Total	***268.888***	***481***			
Information on the quality of ingredients	Between groups	19.367	5	3.873	4.153	.001
	Within groups	443.994	476	.933		
	Total	***463.361***	***481***			
Trained and knowledgeable staff	Between groups	8.872	5	1.774	2.533	.028
	Within groups	335.553	479	.701		
	Total	***344.425***	***484***			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

In order to identify where the significance lies, post-hoc Bonferroni tests were performed.

As illustrated in Table 5.17, significant differences among the five age groups (p≤0.05) were identified.

TABLE 5.17: POST-HOC TESTS ON CONSUMERS' AGE GROUPS IN REFERENCE TO THE IMPORTANCE OF FOOD SAFETY QUALITY CUES

Food safety quality cue	Age groups of respondents (I)	Age groups of respondents (J)	Mean Difference (I-J)	SEM	p-value
Information on the quality of ingredients	<= 25 yr	26 - 35	-0.017	.106	1.000
		36 - 45	-0.614*	.146	.000
		46 - 55	-0.258	.160	1.000
		56+	-0.163	.243	1.000
	M=3.72	66+	-0.531	.487	1.000
	26 – 35 yr	<= 25	0.017	.106	1.000
		36 - 45	-0.597*	.157	.002
		46 - 55	-0.240	.170	1.000
		56 - 65	-0.146	.249	1.000
	M=3.74	66+	-0.514	.490	1.000
	36 – 45 yr	<= 25	0.614*	.146	.000
		26 - 35	0.597*	.157	.002
		46 - 55	0.357	.197	1.000
		56 - 65	0.451	.269	1.000
		66+	0.083	.500	1.000
	M=4.33	56 - 65	0.368	.537	1.000
Trained and knowledgeable staff	<= 25 yr	26 - 35	-0.170	.091	.942
		36 - 45	-0.377*	.126	.045
		46 - 55	-0.286	.139	.595
		56 - 65	-0.057	.210	1.000
	M=4.18	66+	0.179	.422	1.000

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Food safety quality cue	Age groups of respondents (I)	Age groups of respondents (J)	Mean Difference (I-J)	SEM	p-value
Trained and knowledgeable staff (continued)	36 – 45 yr	<= 25	0.377*	.126	.045
		26 - 35	0.207	.135	1.000
		46 - 55	0.090	.171	1.000
		56 - 65	0.320	.233	1.000
	M=4.56	66+	0.556	.434	1.000
Appearance of food	<= 25 yr	26 – 35	-0.287*	.079	.004
		36 - 45	-0.599*	.110	.000
		46 - 55	-0.398*	.120	.015
		56 - 65	-0.333	.181	1.000
	M-4.14	66+	-0.363	.364	1.000
	26 – 35 yr	<= 25	0.287*	.079	.004
		36 - 45	-0.312	.117	.123
		46 - 55	-0.111	.127	1.000
		56 - 65	-0.046	.186	1.000
	M=4.42	66+	-0.076	.366	1.000
	36 – 45 yr	<= 25	0.599*	.110	.000
		26 - 35	0.312	.117	.123
		46 - 55	0.201	.148	1.000
		56 - 65	0.265	.201	1.000
	M=4.74	66+	0.236	.374	1.000

The post-hoc test indicated that the age group 36y-45y (M=4.33) perceived the importance of ***Information about the quality of ingredients*** differently (more importantly rated) as compared to the other age groups i.e., 26y-35y (M=3.74); 25 and younger age group (M=3.72).

The post-hoc test further revealed similar results in that the older age groups perceived the importance of food safety quality cues, specifically with the 36y-45y age group, with ***Trained and knowledgeable staff*** (M=4.56) and ***Appearance of the food,*** (M=4.74) differently as the quality cues were assigned higher means.

With the **increase in age group**, the data presented evidence of the importance of food safety quality cues. The findings conclude that concerning the above food safety quality cues, the younger age groups rated the importance of the food safety quality cues lower than respondents of the older age groups.

The **performance** of the food safety quality cues per age group is presented below. The following ANOVA was performed to determine significant differences (p-value <0.05) between the means of the quality cues for the age group categories.

Results reveal a statistically significant difference between the performance means of the food safety quality cues in the various age group for “Fresh ingredients” (p-value = 0.005). “Information about the quality of ingredients”, “Implementation of food safety protocols at QSR”, “Trained and knowledgeable staff”, and “Clean preparation equipment”, all presented a p-value of p = 0.000).

TABLE 5.18: CONSUMERS' AGE GROUPS IN REFERENCE TO THE PERFORMANCE OF FOOD SAFETY QUALITY CUES

ANOVA						
Food safety quality cues		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Fresh ingredients	Between groups	9.520	5	1.904	3.380	.005
	Within groups	251.285	446	0.563		
	Total	***260.805***	***451***			
Information on the quality of ingredients	Between groups	25.637	5	5.127	4.681	.000
	Within groups	488.522	446	1.095		
	Total	***514.159***	***451***			
Implementation of food safety protocols at QSR	Between groups	21.712	5	4.342	6.522	.000
	Within groups	293.635	441	0.666		
	Total	***315.347***	***446***			
Trained and knowledgeable staff	Between groups	24.911	5	4.982	5.936	.000
	Within groups	374.319	446	0.839		
	Total	***399.230***	***451***			
Clean preparation equipment	Between groups	21.093	5	4.219	6.934	.000
	Within groups	270.734	445	0.608		
	Total	***291.827***	***450***			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

In order to identify where the significance lies, post-hoc Bonferroni tests were performed (Table 5.19 – next page).

The post-hoc test indicated statistically significant differences between the performance means of the food safety quality cues ***fresh ingredients, information about the quality of ingredients, implementation of food safety protocols, trained and knowledgeable staff and clean preparation facilities and equipment*** from the various age groups**.** The perception of the above food safety quality cues across the board presented differently from the older age groups, with lower performance perception means for the 25 and younger age group as compared to all older age groups.

The results above consistently indicated that as the consumer groups get older, the food safety quality cues became important and were perceived to perform at a higher level as compared to how the younger age groups experienced the quality cues.

A study by Green and Knechtge (2015) focused on the knowledge of students relating to food safety and their handling practices. More knowledge may infer that one's life experiences and exposure to food safety cues over time contribute to seeking good, safe and healthy food and thus becomes a priority with age.

This is consistent with Harrington, et al. (2013), who employed multinomial logistic regression to examine differences between four groups of respondents. Their findings indicated that the older age group in their sample (35–54 year-old) had significant differentiators.

TABLE 5.19: POST-HOC TESTS ON CONSUMERS' AGE GROUPS WITH REFERENCE TO THE PERFORMANCE OF FOOD SAFETY QUALITY CUES

Food safety quality cues	(I) Age (Binned)	(J) Age (Binned)	Mean Difference (I-J)	Std. Error	Sig.
Fresh Ingredients	<= 25 yr	26 - 35	-0.261*	.085	.033
		36 - 45	-0.276	.116	.265
		46 - 55	-0.333	.128	.143
		56 - 65	-0.377	.194	.797
	M=3.94	66+	-0.315	.379	1.000
	26 – 35 yr	<= 25	0.261*	.085	.033
		36 - 45	-0.015	.124	1.000
		46 - 55	-0.072	.135	1.000
		56 - 65	-0.116	.200	1.000
	M=4.2	66+	-0.053	.381	1.000
Information about the quality of ingredients	<= 25 yr	26 - 35	-0.361*	.119	.038
		36 - 45	-0.636*	.161	.001
		46 - 55	-0.471	.178	.127
		56 - 65	-0.386	.271	1.000
	M=3.11	66+	-0.636	.528	1.000
	26 – 35 yr	<= 25	0.361*	.119	.038
		36 - 45	-0.275	.174	1.000
		46 - 55	-0.110	.189	1.000
		56 - 65	-0.025	.279	1.000
	M=3.48	66+	-0.275	.532	1.000
	36 – 45 yr	<= 25	0.636*	.161	.001
		26 - 35	0.275	.174	1.000
		46 - 55	0.165	.219	1.000
		56 - 65	0.250	.299	1.000
	M=3.75	66+	0.000	.543	1.000
Implementation of food safety protocols at QSR	<= 25 yr	26 - 35	-0.297*	.093	.022
		36 - 45	-0.495*	.126	.002
		46 - 55	-0.445*	.141	.025
		56 - 65	-0.745*	.211	.007
	M=3.50	66+	-0.495	.412	1.000
	26 – 35 yr	<= 25	0.297*	.093	.022
		36 - 45	-0.198	.135	1.000
		46 - 55	-0.148	.149	1.000
		56 - 65	-0.448	.217	.592
	M=3.80	66+	-0.198	.415	1.000
	36 – 45 yr	<= 25	0.495*	.126	.002
		26 - 35	0.198	.135	1.000
		46 - 55	0.050	.172	1.000
		56 - 65	-0.250	.233	1.000
	M=4.00	66+	0.000	.423	1.000
	46 – 55 yr	<= 25	0.445*	.141	.025
		26 - 35	0.148	.149	1.000
		36 - 45	-0.050	.172	1.000
		56 - 65	-0.300	.241	1.000
	M=3.95	66+	-0.050	.428	1.000
	56 – 65 yr	<= 25	0.745*	.211	.007
		26 - 35	0.448	.217	.592
		36 - 45	0.250	.233	1.000
		46 - 55	0.300	.241	1.000
	M=4.25	66+	0.250	.456	1.000

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Food safety quality cues	(I) Age (Binned)	(J) Age (Binned)	Mean Difference (I-J)	Std. Error	Sig.
Trained and knowledgeable staff	<= 25 yr	26 - 35	-0.367*	.104	.007
		36 - 45	-0.534*	.142	.003
		46 - 55	-0.548*	.156	.007
		56 - 65	-0.600	.237	.177
	M=3.53	66+	-0.225	.462	1.000
	26 – 35 yr	<= 25	0.367*	.104	.007
		36 - 45	-0.166	.153	1.000
		46 - 55	-0.181	.166	1.000
		56 - 65	-0.232	.244	1.000
	M=3.89	66+	0.143	.466	1.000
	36 – 45 yr	<= 25	0.534*	.142	.003
		26 - 35	0.166	.153	1.000
		46 - 55	-0.014	.192	1.000
		56 - 65	-0.066	.263	1.000
	M=4.06	66+	0.309	.476	1.000
	46 – 55 yr	<= 25	0.548*	.156	.007
		26 - 35	0.181	.166	1.000
		36 - 45	0.014	.192	1.000
		56 - 65	-0.052	.270	1.000
		66+	0.323	.480	1.000
		46 - 55	-0.323	.480	1.000
	M=4.07	56 - 65	-0.375	.512	1.000
Clean preparation equipment	<= 25 yr	26 - 35	-0.366*	.089	.001
		36 - 45	-0.515*	.120	.000
		46 - 55	-0.436*	.133	.017
		56 - 65	-0.515	.202	.167
	M=3.74	66+	-0.015	.394	1.000
	26 – 35 yr	<= 25	0.366*	.089	.001
		36 - 45	-0.149	.130	1.000
		46 - 55	-0.070	.141	1.000
		56 - 65	-0.149	.208	1.000
	M=4.10	66+	0.351	.396	1.000
	36 – 45 yr	<= 25	0.515*	.120	.000
		26 - 35	0.149	.130	1.000
		46 - 55	0.079	.163	1.000
		56 - 65	0.000	.223	1.000
	M=4.25	66+	0.500	.405	1.000
	46 – 55 yr	<= 25	0.436*	.133	.017
		26 - 35	0.070	.141	1.000
		36 - 45	-0.079	.163	1.000
		56 - 65	-0.079	.230	1.000
	M=4.17	66+	0.421	.409	1.000

It is thus concluded that age does have an impact on how a consumer will perceive the quality of food safety in their QSR environment. The findings however do not raise areas of concern as it is those individuals who are considered to belong to high-risk groups (elderly groups) that would usually be vulnerable and thus, of concern. The findings demonstrate that the older age groups are conscious of food safety, its importance and the perception of performance.

5.3.7.2.2 Gender

A t-test is conducted when an analysis is done between two population groups (Table 5.21 – next page). The importance between the means of food safety quality cues for male and female respondents is presented below (Table 5.20) in order to determine any statistically significant differences (p-value <0.05).

TABLE 5.20: DESCRIPTIVE STATISTICS OF CONSUMERS' GENDER GROUPS AND IMPORTANCE OF FOOD SAFETY QUALITY CUES

Food safety quality cues	MALE Mean	n	Std. Deviation	FEMALE Mean	n	Std. Deviation	TOTAL Mean	n	Std. Deviation
Fresh ingredients	4.11	153	0.757	4.06	279	0.766	4.08	432	0.762
Smell of the food	4.29	152	0.647	4.17	277	0.699	4.21	429	0.683
Taste of the food	4.33	154	0.667	4.21	277	0.707	4.25	431	0.695
Appearance of the food	4.08	153	0.703	3.91	279	0.856	3.97	432	0.808
Information on the quality of ingredients	3.34	.153	1.136	3.33	279	1.035	3.34	432	1.071
Implementation of food safety protocols at QSR	3.71	153	0.825	3.69	274	0.844	3.70	427	0.836
Trained and knowledgeable staff	3.82	153	0.897	3.70	279	0.969	3.74	432	0.945
Proper hygiene practices	3.94	153	0.797	3.92	279	0.842	3.93	432	0.825
Clean preparation facilities	3.95	152	0.875	3.93	278	0.866	3.94	430	0.868
Clean preparation equipment	4.00	154	0.792	3.92	277	0.824	3.95	431	0.813
Food that is cooked well done	4.11	153	0.757	4.12	278	0.767	4.12	431	0.763
Holding food during service at the right temperatures	3.92	153	0.815	3.95	277	0.871	3.94	430	0.851
Refrigerating food at the correct temperatures	3.87	151	0811.	3.97	277	0.831	3.93	428	0,824
Cooking food to the correct internal temperature	4.02	153	0.730	4.04	277	0.798	4.03	430	0.773
Expiry/sell-by dates displayed on relevant food items	3.86	152	1.100	3.79	278	1.058	3.81	430	1.072
Regular handwashing	3.88	153	0.982	3.70	278	0.984	3.76	431	0.986
Staff's use of hairnets/hats	4.07	153	1.037	3.99	277	0.969	4.02	430	0.993

TABLE 5.21: T-TEST RESULTS OF GENDER DIFFERENCES FOR THE IMPORTANCE OF FOOD SAFETY QUALITY CUES

Food safety quality cues		Sum of Squares	df	Mean Square	F	Sig.
Appearance of the food	Between groups	2.479	1	2.479	4.446	.036
	Within groups	256.467	460	.558		
	Total	*258.946*	*461*			
Regular handwashing	Between groups	1.221	1	1.221	4.022	.046
	Within groups	140.277	462	.304		
	Total	*141.498*	*463*			
Staff's use of hairnets/hats	Between groups	3.793	1	3.793	8.123	.005
	Within groups	215.286	461	.467		
	Total	*219.080*	*462*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

Results indicate a statistically significant difference between the means of the food safety quality cues from the two gender groups for the importance of "Appearance of the food" (p-value = 0.036), "Regular handwashing" (p-value = 0.046), and "Staff's use of hairnets/hats" (p-value = 0.005).

The findings presented evidence that male individuals rated the importance of ***the appearance of food*** (M=4.08), regular ***handwashing*** (M=3.88) ***and staff's use of hairnets/hats*** (M=4.07) higher as compared to the female respondents (Table 5.20).

According to Dosman, et al., (2001) it was assumed that the perceptual differences between males and females might be explained by noting that women rate the range of health risks higher than men. Other literature stated that women had a higher involvement with food than males (Okumus, Shi & Dedeoglu, 2021; Haas et al., 2021). The findings in this study, however, beg to differ.

It has previously been reported that given that women have joined the workforce, they may not be considered traditional homemakers as in the past. Nonetheless, the differences in a study conducted by Lin (1995) found that full-time homemakers were more concerned about food safety than individuals who worked. This may explain the statistically significant difference between the mean ratings of the quality cues from male and female responses in that traditional roles and concerns with food provision and, thus, safety is no longer what it used to be.

The performance results between the means of the food safety quality cues for male and female respondents are presented in Table 5.22. A t-test was performed to determine any statistically significant differences (p-value<0.05).

TABLE 5.22: DESCRIPTIVE STATISTICS OF CONSUMERS' GENDER GROUPS AND PERFORMANCE OF FOOD SAFETY QUALITY CUES

Food safety quality cues	Male	N	Std. Deviation	Female	N	Std. Deviation	Total	N	Std. Deviation
	Mean			Mean			Mean		
Fresh ingredients	4.11	153	0.757	4.06	279	0.766	4.08	432	0.762
Smell of the food	4.29	152	0.647	4.17	277	0.699	4.21	429	0.683
Taste of the food	4.33	154	0.667	4.21	277	0.707	4.25	431	0.695
Appearance of the food	4.08	153	0.703	3.91	279	0.856	3.97	432	0.808
Information on the quality of ingredients	3.34	153	1.136	3.33	279	1.035	3.34	432	1.071
Implementation of food safety protocols at QSR	3.71	153	0.825	3.69	274	0.844	3.70	427	0.836
Trained and knowledgeable staff	3.82	153	0.897	3.70	279	0.969	3.74	432	0.945
Proper hygiene practices	3.94	153	0.797	3.92	279	0.842	3.93	432	0.825
Clean preparation facilities	3.95	152	0.875	3.93	278	0.866	3.94	430	0.868
Clean preparation equipment	4.00	154	0.792	3.92	277	0.824	3.95	431	0.813
Food that is cooked well done	4.11	153	0.757	4.12	278	0.767	4.12	431	0.763
Holding food during service at the right temperatures	3.92	153	0.815	3.95	277	0.871	3.94	430	0.851
Refrigerating food at the correct temperatures	3.87	151	0.811	3.97	277	0.831	3.93	428	0.824
Cooking food to the correct internal temperature	4.02	153	0.730	4.04	277	0.798	4.03	430	0.773
Expiry/ sell-by dates displayed on relevant food items	3.86	152	1.100	3.79	278	1.058	3.81	430	1.072
Regular handwashing	3.88	153	0.982	3.70	278	0.984	3.76	431	0.986
Staffs use of hairnets/hats	4.07	153	1.037	3.99	277	0.969	4.02	430	0.993
Regular cleaning of customer seating/dining areas	3.69	154	1.044	3.76	278	1.021	3.74	432	1.028
Clean establishment free from pests/rodents	4.24	154	0.784	4.15	277	0.838	4.18	431	0.819
Use clean serving wear for your food (plates/cutlery)	4.25	153	0.748	4.19	275	0.758	4.21	428	0.754

The findings from the t-test results presented in Table 5.23. indicate that there was a significant difference between the means of the food safety quality cue ***appearance of the food*** (p-value =0.043) for male and female respondents as the means for the male respondents presented to perceive the performance higher (M=4.08) than the female respondents (M=3.91) (Table 5.22).

TABLE 5.23: T-TEST RESULTS OF GENDER DIFFERENCES FOR THE PERFORMANCE OF FOOD SAFETY QUALITY CUES

ANOVA Table						
		Sum of Squares	df	Mean Square	F	Sig.
Appearance of the food	Between groups	2.672	1	2.672	4.119	.043
	Within groups	278.994	430	.649		
	Total	281.667	431			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

The results above presented that the male respondents rated the importance and performance of food safety quality cues higher than female respondents, thus indicating a difference in perceptions across genders.

Studies state different outcomes with regard to whether gender affects food safety practices, perceptions, and knowledge.

A study of consumers' food safety risk perception found that female consumers had a higher risk perception (Yu, Neal & Sirsat, 2017). In an alternative study on food safety practices, no association was found between genders (Suryani, Heru Sutomo & Tholib Aman, 2019). The awareness of food safety practices of the male and female gender groups may indicate how each comprehends food safety attributes. In this study, results demonstrated statistical significance, which is a factor to consider in measuring the perceptions of the quality of food safety from a QSR's perspective and within gender roles. In both importance and performance findings, the ***appearance of the food*** is highlighted as an essential cue in evaluating the safety of food. With this being an intrinsic characteristic of food and an evaluation process that is more easily conducted, it leads to say that QSRs need to be attentive to food safety quality cues related to visual characteristics of the food served to ensure the consumers of the establishment's efforts to provide safe food. This was evident in analysing and interpreting the importance and performance mean ratings.

On the other hand, this may pose a problem that may potentially lead to food waste. In an article by Jaeger et al. (2018) regarding fruit quality perception and food waste, it was noted that consumers use visual cues at the point of purchase and may discard food if they judge the visual quality as inferior.

This is a thin line, however, when referring to the safety of food, one cannot eliminate visual cues as the starting point for determining safety.

The above does not pose as an area of concern, but rather provides insight that the quality cue needs to be explained better for the sake of safety (within the correct classifications), and not just in regard to visual preferences of food.

5.3.7.2.3 Level of education

It is believed that the level of education may affect levels of quality perception. South Africa's literacy rate is said to stand at 87% (Naidoo, 2022). The demographic findings state that 39.8% of the respondents had up to a matric qualification at the time of completing the questionnaire. In light of education, respondents with lower education levels may not understand food safety cues or risks and, therefore, potentially have a low perception of food safety related cues and thus, of potential risk. Complex forms of information may not have been understood and, therefore, could have been ill-perceived in terms of their importance and how to evaluate the performance. In an attempt to

understand food safety from the opposite perspective, Dosman, et al. (2001) state that individuals with higher levels of education may feel more in control of the risks related to food safety.

The following ANOVA was performed in order to determine significant differences (p-value <0.05) between the means of the food safety quality cues in reference to the education groups in Table 5.24 below.

TABLE 5.24: IMPORTANCE OF FOOD SAFETY QUALITY CUES AND ANOVA RESULTS ACCORDING TO THE LEVEL OF EDUCATION

ANOVA						
Food safety quality cues		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Information on the quality of ingredients	Between groups	18.429	4	4.607	4.947	.001
	Within groups	444.226	477	.931		
	Total	*462.656*	*481*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

Results indicate a statistically significant difference between the means for the importance of the quality cues for the different groups and their levels of education with regard to 'Information about the quality of the ingredients' (p-value = 0.001).

The post-hoc test indicated that the respondents belonging to the "other" level of education group perceived the importance of ***information about the quality of ingredients*** differently by rating the cue higher (M=4.33) compared to respondents belonging to all the other education groups (Table 5.25).

In Table 5.25 below, the respondents belonging to the diploma level of education group rated other quality cues higher (M=4.05) as compared to respondents with a matric qualification (M=3.84) as well as respondents with post-graduate qualifications (M=3.40), noting the statistical significance between the means of the quality cues from the groups.

The level of education and the perceptions of the quality of food safety have been highlighted when discussing the respondents who possess postgraduate qualifications. As stated above, individuals with higher levels of education are assumed to feel more in control of the risk and thus interpret the food safety quality cues differently.

It is thus interesting how this specific food safety quality cue was rated amongst the groups. One would expect respondents with higher levels of education to value access to information, assuming they have a greater ability to interpret the information.

TABLE 5.25: POST-HOC TESTING ON THE IMPORTANCE OF FOOD SAFETY QUALITY CUES ACCORDING TO LEVEL OF EDUCATION

Food safety quality cues	(I) Level of Education	(J) Level of Education	Mean Difference (I-J)	Std. Error	Sig.
Information about the quality of the ingredients	Matric	Diploma	-0.212	.128	.971
		Degree	0.087	.107	1.000
		Postgraduate	0.441*	.156	.049
	M=3.84	Other	-0.496	.238	.375
	Diploma	Matric	0.212	.128	.971
		Degree	0.299	.134	.257
		Postgraduate	0.653*	.175	.002
	M=4.05	Other	-0.285	.251	1.000
	Postgraduate	Matric	-0.441*	.156	.049
		Diploma	-0.653*	.175	.002
		Degree	-0.354	.161	.281
	M=3.40	Other	-0.937*	.267	.005
	Other	Matric	0.496	.238	.375
		Diploma	0.285	.251	1.000
		Degree	0.583	.241	.160
	M=4.33	Postgraduate	0.937*	.267	.005

ANOVA was performed to determine any significant differences (p-value <0.05) between the means of food safety quality cues for the same education groups.

TABLE 5.26: PERFORMANCE OF FOOD SAFETY QUALITY CUES AND ANOVA RESULTS ACCORDING TO THE LEVEL OF EDUCATION

ANOVA						
Food safety quality cues		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Implementation of food safety protocols at QSR	Between groups	11.033	4	2.758	4.009	.003
	Within groups	304.822	443	.688		
	Total	*315.855*	*447*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

Results indicate a statistically significant difference between the means of the performance of the food safety quality cues from the various education groups for ***implementation of food safety protocol at*** (p=0.003).

In order to identify the differences, the post-hoc Bonferroni test was performed (Table 5.27 – next page).

TABLE 5.27: POST-HOC BONFERRONI TESTS SHOWING THE PERFORMANCE OF FOOD SAFETY QUALITY CUES ACCORDING TO LEVEL OF EDUCATION

Food safety quality cues	(I) Age (Binned)	(J) Age (Binned)	Mean Difference (I-J)	Std. Error	Sig.
Implementation of food safety protocols at QSR	Matric M=3.57	Diploma	-0.443*	.112	.001
		Degree	-0.157	.096	1.000
		Postgraduate	-0.180	.140	1.000
		Other	-0.041	.205	1.000
	Diploma M=4.01	Matric	0.443*	.112	.001
		Degree	0.286	.119	.163
		Postgraduate	0.263	.156	.930
		Other	0.402	.217	.645

The post-hoc test indicated statistically significant differences between the performance means of the food safety quality cue ***implementation of food safety protocols*** for respondents with a diploma (who rated the perception of performance higher, M=4.01), compared to respondents with a matric qualification (M=3.57).

The results varied between perceived importance and perceived performance with regard to the level of education groups. Research has found that education levels do affect food safety perceptions. In a study by Han, Yan and Fan (2020), the conclusions were that those who were more educated were more concerned with food safety than those who were less educated. This is supported by Haas, Imami, Miftari, Ymeri, Grunert and Meixner (2021), commenting that higher-educated consumers tend to pay more attention to information related to food safety. Those who were better educated checked for food safety and quality-related information more often than individuals with lower levels of education.

Considering the level of education and food safety, none of the quality cues presented any areas of concern but instead provide findings that education impacts one's perception.

5.3.7.2.4 Employment status

Minimal literature has been published regarding consumers' employment status and general quality perceptions of food safety. However, employment status may closely align with income levels.

The statistically significant difference between the means of the food safety quality cues and their importance per employment status groups of respondents is presented in Table 5.28 (next page).

TABLE 5.28: IMPORTANCE OF FOOD SAFETY QUALITY CUES AND ANOVA RESULTS REGARDING EMPLOYMENT STATUS

ANOVA						
Food safety quality cues		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Appearance of the food	Between groups	11.761	4	2.940	5.324	.000
	Within groups	162.379	294	.552		
	Total	*174.140*	*298*			
Trained and knowledgeable staff	Between groups	11.672	4	2.918	3.973	.004
	Within groups	216.675	295	.734		
	Total	*228.347*	*299*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

ANOVA results indicate a statistically significant difference between the importance means of the food safety quality cues from different groups and their employment status for "Appearance of the food" (p=0.000) and "Trained and knowledgeable staff" (p-value = 0.004).

To identify where the significance lies, post hoc Bonferroni tests were performed (Table 5.29).

TABLE 5.29: POST-HOC BONFERRONI TESTS SHOWING THE IMPORTANCE OF FOOD SAFETY QUALITY CUES REGARDING EMPLOYMENT STATUS

Food safety quality cues	(I) Level of Employment	(J) Level of Employment	Mean Difference (I-J)	Std. Error	Sig.
Appearance of the food	Full time	Part time	-0.095	.209	1.000
		Student	0.309*	.094	.011
		Unemployed	-0.524	.288	.704
	M=4.33	Self employed	-0.167	.160	1.000
	Part time	Full time	0.095	.209	1.000
		Student	0.404	.210	.548
		Unemployed	-0.429	.344	1.000
	M=4.43	Self employed	-0.071	.246	1.000
	Student	Full time	-0.309*	.094	.011
		Part time	-0.404	.210	.548
		Unemployed	-0.833*	.289	.042
	M=4.02	Self employed	-0.476*	.160	.033
	Unemployed	Full time	0.524	.288	.704
		Part time	0.429	.344	1.000
		Student	0.833*	.289	.042
	M=4.86	Self employed	0.357	.316	1.000
	Self employed	Full time	0.167	.160	1.000
		Part time	0.071	.246	1.000
		Student	0.476*	.160	.033
	M=4.50	Unemployed	-0.357	.316	1.000
Trained and knowledgeable staff	Student	Full time	-0.214	.108	.484
		Part time	-0.396	.242	1.000
		Unemployed	-0.539	.333	1.000
	M=4.03	Self employed	-0.660*	.185	.004
	Self employed	Full time	0.446	.184	.160
		Part time	0.264	.284	1.000

Food safety quality cues	(I) Level of Employment	(J) Level of Employment	Mean Difference (I-J)	Std. Error	Sig.
	M=4.69	Student	0.660*	.185	.004
		Unemployed	0.121	.365	1.000

The post-hoc test presented evidence that the respondents perceived the importance of the food safety quality cues for groups belonging to the unemployed groups (M=4.86) in terms of the ***appearance of the food*** differently with a higher mean, compared to respondents who are self-employed (M=4.50), full-time employed (M=4.33) as well as students (M=4.02).

Statistical significance between the means of the food safety quality cue and the importance of ***trained and knowledgeable staff*** was perceived higher by the self-employed respondents (M=4.69) than the student respondents (M=4.03).

Employment status was shown to be of significance in the consumers' perception of the quality of food safety with regard to importance.

In Table 5.30 the ANOVA presents the statistically significant differences between the means of the performance of the food safety quality cues (p-value <0.05).

TABLE 5.30: ANOVA SHOWING THE PERFORMANCE OF FOOD SAFETY QUALITY CUES WITH REGARD TO EMPLOYMENT STATUS

ANOVA						
Food safety quality cues		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Fresh Ingredients	Between groups	9.060	4	2.265	3.787	.005
	Within groups	160.885	269	.598		
	Total	*169.945*	*273*			
	Within groups	140.876	269	.524		
	Total	*142.277*	*273*			
Expiry/sell-by dates displayed on relevant food items	Between groups	15.733	4	3.933	3.419	.010
	Within groups	309.497	269	1.151		
	Total	*325.230*	*273*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

Results indicate a statistically significant difference between the means of the food safety quality cues with regard to the "Fresh ingredients" (p=0.005) and "Expiry/sell-by dates displayed on relevant food items" (p-value=0.010) in the different groups and their employment statuses.

In order to identify where the significance lies, post hoc Bonferroni tests were performed (Table 5.31 – next page).

For both the food safety quality cues, post-hoc test indicated that "Full-time employed" groups perceived both the ***use of fresh ingredients*** (M=4.11) and ***expiry/sell-by date information on relevant food items*** (M=3.81) differently, with higher mean ratings than the other employment groups.

TABLE 5.31: POST-HOC TESTS SHOWING THE PERFORMANCE OF FOOD SAFETY QUALITY CUES WITH REGARD TO EMPLOYMENT STATUS

Food safety quality cue	(I) Employment	(J) Employment	Mean Difference (I-J)	Std. Error	Sig.
Fresh ingredients	Full time	Part -time	0.540	.219	.142
		Student	0.330*	.102	.013
		Unemployed	-0.175	.301	1.000
	M=4.11	Self employed	0.157	.180	1.000
	Student	Full time	-0.330*	.102	.013
		Part-time	0.209	.219	1.000
		Unemployed	-0.505	.301	.947
	M=3.78	Self employed	-0.174	.180	1.000
Expiry/sell-by dates displayed on relevant food items	Full time	Part-time	0.889*	.314	.049
		Student	0.338	.141	.169
		Unemployed	-0.021	.449	1.000
	M=3.81	Self employed	-0.143	.249	1.000
	Part-time	Full time	-0.889*	.314	.049
		Student	-0.551	.314	.801
		Unemployed	-0.910	.529	.867
	M=2.92	Self employed	-1.031	.375	.064

Employment status may be assumed to work hand-in-hand with income levels and education. A study by Nie, Bo, Lui and Li (2021) stated that income influences how consumers value food in that they consider the potential health risks and the price they pay for the food. It is further stated by Nie et al. (2021) that as incomes rise, consumers begin to pursue higher quality and healthier food products. This may be the reason for the above results. It emphasised that there was statistical significance found between the means of the food safety quality cues of the unemployed or self-employed respondents and they rated the food safety cues of higher importance (higher mean ratings) as compared to those who had full-time employment; the ability to pursue healthier food may not have been as easy for the unemployed due to financial constraints (Nie et al., 2021).

Low-income consumers, such as some students, who have either low or tight budget constraints are said to be more likely to choose safe food that is above the minimum quality standard. With the performance ANOVA findings, it is noted that there was significance between the mean ratings of the cues for the full-time employed who rated the performances of the food safety quality cue more highly. This corresponds with the literature that higher-income people can avert food safety risks by purchasing safer and higher-quality foods.

In both importance and performance ANOVA results, no specific food safety quality cues were revealed as of concern.

5.3.7.2.5 Income levels

Income levels in South Africa vary, and there is a reported large gap between those considered to fall in the low-income and those in the upper-income groups. In terms of food safety, the level of income has often been related to the willingness to pay for food safety as well as the purchasing power and ability to avoid risk concerns (as linked to the employment status section above). In conducting ANOVA, there was no statistical significance between the means of the food safety quality cues from income levels groups in this study. However, the study considers the findings as an area of concern, having noted the large gap between low and upper-income groups. The perception of the quality of food safety cannot truly be ascertained as being consistent across the different groups due to the allowances; financial constraints play a part in influencing where, what, and how the groups will purchase and subsequently how they will make quality evaluations. Hoffmann, Moser and Saak (2019) state that there are factors that contribute to food safety problems in low- and middle-income countries, which affect consumer awareness and the ability to afford the guarantee of safe food.

5.3.7.2.6 Population

The statistical significance between the means of the food safety quality cues per population group is presented in Table 5.32. The following ANOVA was performed in order to determine significant differences (p-value <0.05).

TABLE 5.32: ANOVA SHOWING THE IMPORTANCE OF FOOD SAFETY QUALITY CUES WITH REGARDS TO SIGNIFICANCE BETWEEN POPULATION GROUPS

Food safety quality cues		Sum of Squares	df	Mean Square	F	Sig.
Appearance of the food	Between groups	10.576	3	3.525	6.528	.000
	Within groups	257.072	476	.540		
	Total	*267.648*	*479*			

M* = Mean maximum of 5; SEM = Standard error of the mean; p – values indicate significant differences, (p≤0.05)

Results indicate a statistically significant difference between the means of the food safety quality cues from the population groups specifically relating to the importance of the appearance of the food (p-value = 0.000).

In order to identify where the differences lie, post-hoc Bonferroni test was performed (Table 5.33).

TABLE 5.33: POST-HOC BONFERRONI RESULTS ON THE IMPORTANCE OF FOOD SAFETY QUALITY CUES WITH REGARDS TO SIGNIFICANCE BETWEEN POPULATION GROUPS

Food safety quality cues	(I) Population Group	(J) Population Group	Mean Difference (I-J)	Std. Error	Sig.
Appearance of the food	African	White	0.265*	.069	.001
		Indian	-0.143	.265	1.000
		Coloured	0.573	.228	.073
	White	African	-0.265*	.069	.001
		Indian	-0.407	.264	.738
		Coloured	0.308	.226	1.000

The post-hoc test indicated the statistical significance between the means in that the African population group perceived the importance of the ***appearance of the food*** differently (higher mean rating M=4.48) than the respondents in the White population group (M=4.22).

No significance was noted in the performance of the food safety quality cues between populations.

Only two of the population groups that participated in the study have shown to be of significance. It is noted that a small amount of the Indian and the Coloured population groups participated and thus results are not wholly representative of the South African population.

However, in reference to the different population groups, a study was found covering consumers' food safety knowledge, practices, and demographic differences. The study commented that consumers differ according to demographics, and that the differences or even similarities can be cultural, social and/or economic (Patil, et al. 2005). Another study's commentary regarding ethnicity stated that foodborne illness has not traditionally been tracked by race, ethnicity, nor income but only in evaluating reported cases. It was found that there are increased rates of foodborne illness amongst minority racial and ethnic populations. Ethnic groups with lower levels of income experience greater risks of foodborne illness due to the different patterns of access to food (Signs, Darcey, Carney, Evans and Quinlan, 2011). With regards to the ANOVA finding above, and similarly in line with income vs employment findings previously discussed, the difference between the means of the food safety quality cues from the population groups and their perceptions may be attributed to the inability to access healthier and safer food. As seen above, one population may therefore perceive the food safety cues and their importance differently from the other.

The analysis of the population groups specifically, however, does not pose an area of concern.

5.4 SUMMARY

This chapter was initiated by presenting the results derived from the mixed-method data collection approach employed in this study. The chapter presented Phase 1's findings and a discussion of the results in consideration of the objectives formulated for the research.

Identifying food safety quality cues through a qualitative technique of semi-structured interviews conducted with management at various QSRs contributed to providing the 20 food safety quality cues/signals aligned with the literature. The observations also strengthened this process by providing insight from the QSR environments. The chosen cues were thereafter incorporated into Phase 2 of the study, using quantitative research techniques in a consumer survey for data collection.

The study's quantitative phase (the study's core focus) gathered 487 responses across the Gauteng region. Most of the respondents were female 61.8%, and 33.9% were male. Regarding respondents' ages, the 25-year-old and younger age group had the highest representation in the sample.

The analysis of the quantitative data collected in phase 2 employed descriptive statistics (central tendency and standard deviation) to get an understanding of the importance of the food safety quality cues (M=4.52) and the performance of the food safety quality cues in terms of experience (M=3.9). The results showed an overall “negative” perception of the quality of food safety at QSRs in the Gauteng province.

The employment of the IPA framework has previously and most frequently been applicable in the study of customer satisfaction. This study applied the rules of IPA, which enabled the interpretation of the descriptive statistics. The food safety quality cues were plotted in the four IPA quadrants. These quadrants provided different and unique evidence and interpretations based on where the food safety quality cues were positioned. The evaluation of the IPA framework raised areas of concern; this was in the achievement of Objective 3.

The ANOVA and t-test enabled the study to narrow in on and examine the sample's various demographic categories. The evidence gave way to a discussion on other areas of concern, where differences were found to be of statistical significance.

The study found a general misalignment between consumers and managers of QSRs, more specifically relating to the temperature control quality cues and how these cues may relate to food safety attributes sought by the consumer for the assurance of quality food safety.

Highlighted in the demographic categories and analysis of variance between the means of the food safety quality cues, the relationships of gender, age, income levels/employment status, and population groups were evaluated where they may or may not demonstrate significance.

The following chapter (Chapter 6) will discuss the conclusions of the study, as well as limitations and recommendations for future research.

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the conclusion of the study in terms of the aim and the objectives set for the study. The chapter further discusses the limitations experienced and makes recommendations for future research.

6.1 INTRODUCTION

Food safety will continue to be an ever-occurring topic to address across the globe. In Africa, around 91 million FBI cases have been documented, with over 137 000 fatalities. (Yu-Gang & Wen-Hwa, 2022). The issue of foodborne illness and thus the need for food safety assurance can never be underestimated. The lack of food safety assurance and consequential FBI has been reported in several contexts and will always require the full participation of all stakeholders across the food supply chain. Beyond the supply chain, FBI incidences have been reported in schools, feeding schemes, and restaurants. Research has highlighted common mistakes that cause foodborne disease, including cross-contamination and improper food handling (Kaskela, et al., 2021). This is also proven to be true in the foodservice industry, notably in restaurants.

There are several reasons why people opt to eat out. The decision to dine out or purchase from a restaurant is believed to be impacted by various factors, one of which has been confirmed to be food quality. Food quality is recognised as an essential aspect of restaurant quality (Yu-Gang & Wen-Hwa, 2022). More importantly, in a consumer's evaluation of food quality, food safety becomes a marker (Harrington, et al., 2013). A consumer's faith in foodservice has been demonstrated to be founded on food quality-related aspects drawn from their perceptions. This is due to the consumer becoming more aware, better educated and more concerned about the safety of the food that they consume. Understanding that perception is a subjective construct concludes that all consumers go through a perceptual process in their food safety assessments. This has been emphasized by the quality perception model, which verifies the consumer's use of signals (cues) in their quality evaluations. It is, therefore, critical to comprehend how the customer responds to these cues and, as a result, makes a quality-based judgment on food safety.

With the consumers' demand for affordable fast food, the industry has witnessed the expansion of QSR brands (Jooste, 2021). The rapid urbanisation, changing eating patterns and lifestyles of the South African people contribute to a shift from consuming traditional foods to more convenient fast foods (Jooste, 2021).

Considering the constant expansions and shifts within the QSR sector, providing food safety information to consumers is vital to support their dining decisions. This information, however, will only be beneficial to the consumer to protect them by comprehending what and how they perceive food safety.

It is with these aspects in mind the researcher sought to investigate and describe Gauteng's consumers' perception in terms of the importance and performance of food safety quality at quick service restaurants (QSRs). This information provided scholarly conclusions and further assisted the researcher in understanding the consumer. In addition, it improves efforts on how to educate the general population to reduce foodborne-related illnesses incidences (Verdú et al., 2021).

6.2 CONCLUSIONS OF THE RESULTS

6.2.1 To identify cues that indicate the quality of food safety at QSR (Objective 1)

The data collection provided quality cues (intrinsic and extrinsic) of which consumers were able to make evaluative judgments. This process commenced with building a foundation for quality cue identification through the investigation of legislation, food safety guidelines, food safety management programmes, and past studies. Common terms highlighted in the findings included 'HACCP', cross-contamination', and 'staff hygiene', which were confirmed to be easily explained by the managers and hence, measures enforced by the staff. Other literature across different sources contained more complex constructs and interpretations of food safety such as "pathogens", guidelines such as "Codex Alimentarius", 'ISO22000' and definitions of food safety that would not necessarily align with what consumers may perceive.

The process proceeded with aligning food safety quality attributes which would need to correlate with possible food safety quality cues. These attributes are related to the intangible characteristics sought by each individual consumer when purchasing products and services. The quality attributes are related to the four pillars of food safety, which, when controlled, contribute to food safety assurance, i.e., staff behaviour and hygiene, temperature control of food, presence of pathogens/cross-contamination and raw materials/ingredients.

To support the evidence presented from the processes undertaken above (literature guidelines and policy reviews), the findings drawn from 35 QSR managers' interview responses provided information regarding the enforcement of food safety practices in the QSR environment. Concurrent observations were conducted to identify any cues from the staff's tasks, again, within the QSR environment. Thus, the challenge was to filter the information alongside the Quality Perception theoretical model to give life to the cues that supported the theory and were relatable to food safety quality evaluations.

Through the three processes applied above, 20 identifiable quality cues to be considered by the consumer were identified and used in the quantitative consumer survey.

The cues proved to integrate with and emphasize constructs of the food safety environment encompassing its technical intentional identifications.

A lesson learned from this process was that one cannot presume that food safety guidelines, definitions, and terminology are wholly understood by the average consumer. One can further not conclude that food safety quality cues are always present, familiar, easily identifiable, and interpretable in the QSR environment to every consumer equally. It is therefore suggested that a consumer food safety criterion be developed to provide a broader understanding of what the consumer may measure, which is to be aligned with all relevant food safety foundations.

6.2.2 Investigation of consumers' perceptions of the quality of food safety at QSRs (Objective 2)

Discoveries in past studies have made mention of factors consumers rated highly in their consideration of service quality. The conclusions from a study conducted by Bai et al. (2019), found that the cleanliness of a food establishment is one of the most important indicators of service quality in foodservice (Bai et al., 2019). Within that specific study, the quality and safety of the food served factor were rated the highest (M=4.54) amongst others. Following that factor, the cleanliness and maintenance in the restaurant resulted in a mean of M=4.53. The review of past literature thus confirmed that consumers were indeed perceptive of food safety in its holistic context and when considering where to eat or purchase.

To achieve this second objective, the study undertook to evaluate the importance of the food safety quality cues of the consumer as well as how they perceived the performance of food safety in QSRs. This was why the identification of food safety quality cues had to be the first step. The evaluations of the quality cues, how they would be perceived in terms of importance and performance, and the findings of the negative correlations between the two constructs allowed the study to determine the ultimate perceptions of food safety. The study's findings established that consumers did consider the importance of the food safety quality cues, which had mean ratings closer to the higher end of the Likert-type scale (i.e., 5= Extremely important) with an overall mean of M=4.52. Findings specifically highlighted that the quality cues related to cross-contamination and staff behaviour/hygiene were regarded highly and were perceived to be accordingly important to the consumer. The importance of food safety assurance is indeed embedded in the consumer.

Further investigation of the mean ratings of food safety quality cues, the findings uncovered that cues more extrinsic to the construct of food safety had lower importance mean ratings and were thus interpretable as having a lower perception in terms of importance and even performance. The findings

shed light on the idea that more complex constructs or concepts of food safety that do not directly insinuate food safety and its assurances are not easily integrated into a consumer's perceptual process.

This finding was proven truthful when regarding the consumers' perceptions in relation to the importance and performance of the quality cues related to the temperature control of food and information about the ingredients/raw material. The quality cues found themselves rating across all the IPA matrix quadrants but, more often, below the importance mean. It is therefore imperative to stimulate efforts to better align food safety education and communication according to the consumers' vocabulary.

Findings on the performance of the food safety quality cues demonstrated that consumers perceived it from their experiences to be negatively associated with the importance of the cues. The consumers showed unsatisfactory or lower perceptions of the performance on the food safety quality cues across the board, specifically staff hygiene/behaviour.

This finding is fair but again brings to question the constructs within the food safety environment versus the consumers' levels of comprehension. It sheds light on whether the consumers' are able to perceive the true performance of a quality cue, given that all the cues had a negative correlation to the importance of the same cues. As noted in the quality perceptual process model, past experiences, education, situational factors as well as usage goals come into play in a quality evaluation. Questions that arose, therefore, are whether the consumer is evaluating the performance of the quality of food safety from their own experiences; is the perception of the performance of food safety quality cues based on their education? Do consumers' usage goals and the different situational factors affect their performance evaluations, possibly to the extent that no evaluation and perception are even had?

The study's second objective (Objective 2) was achieved by the evidence presenting the negative correlation between the perceptions of the food safety quality cues in terms of importance and performance.

Overall and in considering the quick service restaurant environment, food safety quality cues may be poorly received, i.e., interpretable or evaluated by the consumer. It is motivated in the literature that consumers seek the services of QSRs for their time-saving advantages (Jooste, 2021). Consequently, it cannot be assumed that a consumer will experience the related cues frequently, as the associated signals may not stimulate them during their perceptual process of evaluating the importance and performance of certain quality cues. Perhaps in a different context, such as a sit-down restaurant, the consumer will have the time to make the necessary assessments. However, it must also be considered that in the consumers' evaluation of food safety, they may not associate some cues with the assurance of food safety.

To further investigate the perception of the quality of food safety at QSRs, the application of the importance-performance analysis (IPA) framework as the core focus of the study allowed for the means of the food safety cues to be plotted on the importance-performance matrix as developed by Martilla and James (1977). With the overall importance mean of 4.52 with an STD of 0.26 serving as the y-axis and the performance mean of 3.9 with an STD of 2.1 as the x-axis, four quadrants were created, and quality cue means ratings were plotted.

From the IPA, the food safety quality cues that were plotted in the "Concentrate here" quadrant included: "Proper hygiene practices (at the specific QSR), Regular handwashing, Regular cleaning of seating/dining areas and Expiry/sell-by dates displayed on the relevant food items." Here the consumers presented their perceptions of food safety quality as being substantially important but lacking in performance from their experiences. The "concentrate here" quadrant may be interpreted as a poor perception of the quality of food safety. A study justifies how the above may affect the consumer in having investigated the food handlers' level of awareness and personal hygiene, the task of acquiring food from unknown sources and evaluation of the food facilities' sanitary requirements as a need for staff training (Yu-Gang & Wen-Hwa, 2022).

The IPA results are in-line with the evidence presented in Phase 1 of this study which found that managers demonstrated intention to employing food safety practices within their specific work environments. Staff had been trained in one way or another (in-house or off-site) on the behaviours and practices they need to adopt, and the QSR environment demonstrated a sense of support towards food safety assurance efforts. The evidence also revealed, however, that although the relevant steps were known, some monitoring and control efforts were lacking, i.e., consistent monitoring and actual control of storage areas. With regard to what the consumer may be experiencing in the QSR environment, the gap between what should be done versus what is being done has been negatively perceived by the consumer.

Further research would be needed to explain the consumers' perceptions of food safety. The findings of specific food safety quality cues not being perceived well in terms of importance and performance, such as temperature control, for example, an explanatory analysis will allow comprehension of how the consumer associates with these constructs of food safety and why this may be so. This is so efforts can be employed within the QSR and other food environments to provide the consumer with more assurance.

6.2.3 To evaluate the consumers' perceptions of the quality of food safety in QSRs in order to identify areas of concern (Objective 3)

The study uncovered special relationships between the food safety quality cues through their plotting in the IPA matrix. Identifying the areas of concern required investigating the perceptions of specific quality cues, where they plotted and how they may be addressed and understood. The areas of concern in the IPA are focused on the "concentrate here" quadrant as these are food safety quality cues that the consumer demonstrated the highest comprehension and thus appreciation of. The 'low performance' of the relevant quality cues highlighted that consumers make use of specific cues that are quick and intrinsic to a product/service/attribute in their subjective interpretations. Overall, it is essential to note that consumers may demonstrate discomfort and dissatisfaction when they cannot easily observe cues that they deem familiar.

Another area of concern related to food safety quality cues revealed that most of the temperature control-related cues had been deemed unimportant by the consumer. This poses a concern due to the importance of heat and proper cooling when interacting with food. This is true for both the home and foodservice. If considered unimportant, consumers will not give attention to the attribute and thus the possibility of the presence and growth of microorganisms is enhanced in the consumer's possession of food. On a general scale, consumers need to understand the implications of temperature control. The plotting of the cues therefore may infer that additional or more cues that the consumer may identify with must be communicated to allow for adequate judgments.

The study uncovered areas where statistical significance existed between the means of the food safety quality cues from the sample's demographic categories. The information proved to be thought-provoking as few studies have made the connections between food safety and how it was perceived amongst different demographic groups (Verdú et al., 2021).

Demographic categories, such as age, gender, income levels/employment status, levels of education, and population groups, were evaluated.

The findings provided evidence that there were significance differences between some of the importance and performance mean ratings of the food safety quality cues.

With regard to gender, the analysis demonstrated that men had higher importance and performance ratings of some of the food safety quality cues ("Appearance of the food"). This finding is a shift from what the literature had previously stated, i.e., women are more concerned/paid attention to food safety (Hu et al., 2017; Verdú et al., 2021). Women were traditionally the homemakers and responsible for purchasing and providing meals in the household. A majority of past studies concluded that women had a higher involvement with food safety, given their frequent interaction with food preparation. The

findings in the study provided evidence that traditional male and female gender roles may have changed, and men are as perceptive as women are expected to be. In terms of this being an area of interest rather, gender differences need to be considered and more inclusive concerning food safety communication efforts and strategies. The power of food safety assurance and its consciousness in consumers no longer lies in the hands of one gender alone, and therefore, communication, as well as education, cannot be biased. How the different genders look at the cues/signals of food safety may provide useful educational material. There are cues that one may consider and may subsequently be useful, that the other gender may not.

With regard to the age groups of the sample, the findings were in line with past studies. The younger generations do not necessarily have the life experiences with food that the older groups may have (Harrington, et al., 2013). Thus, this may mean that the younger groups are not as aware of the importance of food safety quality cues or food safety assurance. The study concluded that the importance of food safety quality cues was consistently rated lower by respondents in the younger age groups as compared to respondents in the higher age group brackets. As an area of interest rather, the younger age groups may be more resilient in their recovery, but as noted in the literature review, there are several FBI cases reported when children were involved and thus affected much younger age groups. Small acts of hygiene need to be communicated to individuals from a younger age in order to build focused and safe food safety-related habits. These habits will be enforceable throughout life and even in environments where the youth groups grow and become employed. It is noted that awareness through the importance and performance of the food safety quality cues increased in their mean ratings with increased age. Given the access to information that the younger groups have in this day, education and communication to these groups are far more accessible compared to times past. There is, therefore, an opportunity to lay foundations correctly, that will subsequently feed into those who form part of the vulnerable groups i.e., their children and their elders.

The study's findings were somewhat contradictory with regard to the impact of the levels of education and its influence, as based on other studies. The results showed that the significance between the means of the food safety quality cues from respondents with higher levels of education did not consider the importance of food safety quality cues as highly as those with lower levels of education. This may be justified though in considering that those who are more knowledgeable about food safety can better avert any potential risks and may possibly also engage in the evaluation of other food safety quality cues, compared to the cues chosen within this study. Therefore, the given food safety quality cues may not be interpreted compared to those individuals with less knowledge and experience with food safety practices, concepts, or constructs. This may further be due to the more educated groups' ability to avert risk, thus meaning that they do not feel the need to frequently engage in a perceptual process of evaluating cues in terms of importance and performance.

Another finding is related to the different income groups and employment status of the respondents. It was noted that there was no statistical significance between the food safety quality cues from the groups regarding income, however, those regarded as unemployed or students (i.e., little to no income) perceived the food safety quality cues differently to those who were employed. Income can influence consumers' relationship with food. It is easier for a consumer with more money to again, avoid food safety risks, as they will be more willing to pay for 'protection' and thus may source their food from agencies where they do not feel they have to question the quality of food safety. As an area of concern, those who cannot afford to openly avoid any risks through finances need to have the access to food safety information as well as education so that in the event of perceiving the poor quality of food safety in any eating establishment, they may address their concern in the foodservice environment.

In conclusion, the study provided evidence that demographic categories play a role in the perceptions of food safety quality. The changes experienced in the world (pandemics, exposure to information, and changes in gender roles), as well as relevant changes in society (education, and communication channels), are all aspects to consider when developing teaching and learning strategies for communication of food safety and its assurance.

6.3 EVALUATION OF THE STUDY

6.3.1 The study in retrospect

The researcher will now assess the study's objectivity after completion. In doing so, it confirms that all of the research goals have been achieved.

Objectives 1 – 3 were addressed in Section 6.1.

The QSR industry differs from other foodservice segments in that it serves food faster, is cheaper, and is more accessible. It is also found that QSRs are dispersed throughout more locations. This industry is experiencing growth in Southern Africa (Jooste, 2021), and having come out of a shocking pandemic, there is an increased focus on health and safety overall. One aspect that could not initially be predicted from the COVID-19 pandemic and its outcomes is the increased reliance on QSR establishments, their expansion into delivery services as well as quick, contactless collection options now available to consumers. This behaviour is due to the change from social interactions of dining out to the consumers' general need to feel safe within their habitual environments. This shift resulted from unprecedented restrictions, the shutting down of multiple industries, and the pure fear of survival (Lee & Ham, 2021; Schwabe, 2021). Over the past five years, the outcomes of the Listeriosis outbreak (2017-2018), the COVID-19 epidemic (2020-2022), and various product recalls in South Africa have made consumers increasingly exposed and vulnerable.

Research has followed the National Institute of Communicable Diseases, which presented findings that individuals' food illnesses and related mishaps are under-reported (Shonhiwa, Ntshoe, Essel, Thomas, McCarthy & Lapen, 2019; Ramalwa et al., 2020). A contextual gap was identified, and there was a need to explore and describe Gauteng's consumers' perception of the quality of food safety. The importance of food safety assurance in general, the responsibility of food safety assurance of all who participate in the food supply chain, and in light of the changing foodservice environment, made the aim of the research all more significant to achieve.

Before the study's commencement, ethical approval was sought and obtained from the Ethical Committee at the University of Pretoria (EC170915-150).

The choice of the theoretical model and the completion of the literature review permitted the researcher to gain insight and understand the important constructs to address the research problem These constructs included perception, quality perception and food safety signals and food safety evaluations.

The operationalisation framework and conceptual framework were developed to ensure all corners were covered in the collection of data and its subsequent analysis. The study employed a mixed-method research approach to identify the food safety quality cues that consumers would be able to employ in their assessment of the quality of food safety in the QSR environment. The phase one data was gathered for the study to incorporate into a second phase to analyse customer perceptions of the quality of food safety decisively.

In its finality, the study provided findings and discussion of the consumers' perceptions of the quality of food safety in quick service restaurants (QSRs). Findings were further concentrated on, to evaluate any areas of concern, which intended to drive scholarly and industry initiatives (foodservice and food safety agencies) regarding considerations of how consumers perceive and thus interact with food safety-related cues in certain environments, with the aim of providing enhanced assurance in the foodservice and consumer's context.

6.3.2 Achievements of the objectives

The researcher focused on the objectives in order to fully address them. In conducting the research, the participants did not encounter problems regarding the structure or the content of the interview schedule or the consumer survey. As a result, it is expected that the report and its findings, as well as the study's conclusions, will contribute to the body of knowledge and literature when reflecting on Gauteng's consumers' perceptions of the quality of food safety in QSRs, with the application of the importance-performance framework.

6.3.3 Significance of the research findings

For the purpose of the study, the consumer needed to be considered. The findings were also to aid foodservice industries in understanding how the consumer perceives cues in their immediate environments. In addition, using the quality perception model may benefit academics as it has not been extensively applied in relation to consumer perceptions.

- **Significance for consumers**

The study highlights the need for consumers to understand the concepts and any characterisations of food safety in order to approach all foodservice interactions with mindfulness. It is assumed that the role players and stakeholders will carry the responsibility of food safety, but as seen with the Listeriosis outbreak and other product recalls, the industry may lapse or take time before they can communicate foodborne illness outbreaks and associated risks. The consumer cannot, with their blind eye, ever evaluate whether food is indeed safe for them to consume. Nevertheless, better decisions may be made with a higher degree of awareness of the identifications/dimensions/attributes of food safety assurance. The conclusions drawn from the study demonstrated that consumers with various demographic characteristics would perceive and make dissimilar judgements on the quality of food safety. This may be due to where one lives, whether one can afford to take food safety precautions, or if they have ever been exposed to food illness. It is therefore significant for the consumer to realise how they comprehend their food environments in their own right and perhaps how they may seek to be better educated or informed.

- **Significance for industry**

For industry, Ophuis and Van Trijp (1995) once stated that the evaluation of quality had been recognised, leading marketing strategies as a core concept in building customer value. This is supported by Verdú et al. (2021) in line with food safety, stating that the importance of food safety and its quality will generate more trust and increasingly more knowledgeable consumers who are concerned about their health and wellbeing. To add to this, a business will only be able to survive if it can cater to and satisfy its customers. Results present that food safety assurance is indeed important to consumers and that they regularly seek and patronage products from the QSR segment (average of 1.5 times a week). Additionally, consumers have expressed that they make evaluative judgements on cues related to food safety quality attributes. It is through the management of this that industry players may gain a competitive advantage, but more importantly, identify ways to communicate appropriately to their consumers on measures they have employed to adhere to food safety regulations and practices.

As discovered in Phase 1 managers' interview responses, the study demonstrated that there is a gap between the intention to train and maintain positive food safety practices and processes versus the adherence to those practices and processes. The findings from this study can therefore provide insight into what the consumer perceives versus what is being executed within the QSR environment with the aim of improving employee training. Between the off-site training (head office/formal training) and on-site training (peer training or induction programmes), there is an opportunity to better focus the programmes to enhance the QSR offering. Through the IPA application, the study witnessed how consumer inputs may be interpreted in the quadrants and thus drive business resources and initiatives. In light of this, food safety should never be understated, and learnings from this study can aid the industry in identifying the elements that the consumer may be misinterpreting (through the IPA quadrants and interpretations). It allows industry to find effective and creative ways to communicate to their consumer on how they will ensure food safety assurance and food that is safe for consumption.

- **Significance for literature and academics**

The mixed-methods approach and its application in this study as well as the quality perception model have yet to be adopted and explored for the purpose of evaluating the quality of food safety. Using these contexts may provide further opportunities for the literary and academic communities to evaluate food safety, quality perception, and consumer perception (other than just for marketing purposes) in non-traditional environments. This too can be said about the importance-performance analysis framework. This paradigm has been used across hospitality studies, and more should be done to apply the concept to other South African consumer domains.

Furthermore, the study's findings may help orient educational or informational content at all levels to be more efficiently absorbed.

6.4 LIMITATIONS OF THE STUDY

It was of great importance that the researcher employed all efforts throughout the investigation to obtain accurate and reliable results. The research process, however, was still restricted by some limitations.

Time presented its challenges as the fieldworkers were only available for a specific period of time. This impacted the project in some ways:

- The envisaged collection of 400 or more paper-based questionnaires was initially not achieved. When arriving at designated QSRs, there would be very few to no people available for participation. This was due to the time chosen for the data collection, i.e., weekdays before 12 pm (lunchtime). The restriction was countered, however, through the adoption of the online strategy for the study to achieve its targets. Some of the data were still

disregarded as some requirements were not achieved (e.g., respondents purchasing from/dining at a QSR exclusively).

- The time of the month chosen for the data collection also impacted collection numbers. Mid-month collection was not the best option due to a possible lack of disposable income at that particular time.
- Data collection during the day found some potential participants and respondents facing a lack of time to patiently complete the questionnaire as they had to return to work.

Additional limitations were related to the use of convenience sampling to collect data from those who were easily accessible. It is noted that a convenience sampling method is not necessarily always representative of the population, and this was pointed out in the large quantity of student participation in the study.

In the end, the sample size was substantial, N=487. Although the sampling method was nonprobability sampling, the larger sample size that was achieved allowed for some inferences.

6.5 RECOMMENDATIONS FOR FUTURE STUDIES

As the study followed an exploratory and descriptive nature, the “what” was asked, not the “why”. Future research on why consumers perceived specific food safety cues in the manner they did would greatly assist in understanding where information gaps may lie. This was evident in the ANOVA results, which revealed that demographics indeed played a role in the perception of the different means of food safety quality cues from the groups.

Various food safety studies have been conducted worldwide, but South Africa has shown a gap in investigating this topic. This is evident in the general under-reporting of food safety and illness (Ramalwa et al., 2020). Foodborne illness outbreaks have most frequently been reported when children in school feeding programmes have been involved, but rarely reported with regards to the commercial foodservice sector. Other research has stated that restaurants have been implicated as one of the most frequent settings for illness outbreaks (Bai et al., 2019; Kaskela, et al., 2021).

The cultural and diverse landscape of South Africa presents difficulty in taking other international studies and applying them in the South African context. It is vital to have the ability to understand how South Africa compares to other African countries as well as any grander world contexts. Future research may also contribute to truly understanding the South African consumers’ motivations to purchase from QSRs post the COVID-19 pandemic to provide new data. Furthermore, research may prove valuable on the consumers' consideration of food safety in light of the country’s experiences (Listeriosis outbreak and the COVID-19 outbreak) and their subsequent interactions with food.

The final recommendations for future studies are to investigate the holistic misalignment in what staff in foodservice are trained to do, what they are indeed doing and how the consumers perceive any efforts. This recommendation is made to produce communication strategies suited for the consumer and reduce the adverse effects of any potential foodborne illness occurrences across the foodservice sector and its segments.

6.6 FINAL CONCLUSIONS

Since past research has demonstrated that the consumers' food safety practices in the home are of low standard, it is indeed difficult to assume that consumers themselves would be able to judge other unsatisfactory practices when they step into a foodservice environment. There is, however, some consciousness with regard to food safety, as demonstrated in this study. Handwashing, the taste of the food, and its appearance are some quick food safety quality cues noted by consumers in the consumption of food they deem to be safe. The research has uncovered that Gauteng consumers consider food safety when choosing a QSR establishment, but it would be incorrect to say that the quality of food safety is not up to a standard at all in these establishments. This is because of the underlying possibility that consumers do not know how to make fair judgements of the quality of food safety and practices that truly verify and ensure the safety of food. This calls for further investigation so that educational and informational programmes may be developed and targeted correctly to the consumer world. Through this, the consumer may be able to preliminarily assess food and may begin to hold QSRs and other foodservice establishments responsible for poor food safety practices.

Ultimately, the consumer trusts and renounces responsibility to the industry when they consume from this ever-growing, dynamic, and thriving industry. It is therefore also imperative that the industry does not operate imprecisely at the expense of the consumers' well-being.

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ADDENDUM A: ETHICS SUBMISSION: LETTER OF APPROVAL

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Natural and Agricultural Sciences
Ethics Committee

E-mail: ethics.nas@up.ac.za

29 January 2018

ETHICS SUBMISSION: LETTER OF APPROVAL

Dr Gerrie du Rand
Department of Consumer and Food Sciences
Faculty of Natural and Agricultural Science
University of Pretoria

Reference number: EC170915-150
Project title: Consumers perceptions and experiences of food safety and the contribution to food waste in Gauteng

Dr Gerrie du Rand,

We are pleased to inform you that your submission conforms to the requirements of the Faculty of Natural and Agricultural Sciences Ethics committee.

Also note that you are required to submit annual progress reports (no later than two months after the anniversary of this approval) until the project is completed. Completion will be when the data has been analysed and documented in a postgraduate student's thesis or dissertation, or in a paper or a report for publication. The progress report document is accessible of the NAS faculty's website: Research/Ethics Committee.

If you wish to submit an amendment to the application, you can also obtain the amendment form on the NAS faculty's website: Research/Ethics Committee.

The digital archiving of data is a requirement of the University of Pretoria. The data should be accessible in the event of an enquiry or further analysis of the data.

Yours sincerely,

Chairperson
NAS Ethics Committee

ADDENDUM B: INFORMED CONSENT FOR PARTICIPATING IN AN ACADEMIC RESEARCH STUDY AT THE DEPARTMENT OF CONSUMER SCIENCE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Consent for participation in an academic research study Department of Consumer Science:

Gauteng's consumers' perception of the quality of food safety at QSRs:
an importance-performance application

Research conducted by
Ms. Lesego Marule (11204151) Cell: 076 143 2614

Dear respondent

You are invited to participate in an academic research study initiated by the University of Pretoria, and is conducted by Lesego Marule, a Master's student from The Department of Consumer Science at the University of Pretoria.

The purpose of this study is to evaluate the consumers' perceptions and experiences of food safety and how this may contribute to food waste.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person judged by the answers you give.
- Your participation in this study is very important to us.
- Please answer the questions as completely and honestly as possible. This should not take more than 10 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact the study leader, Dr. G du Rand on tel. (012) 420 3547 (e-mail: gerrie.durand@up.ac.za) if you have any questions or comments regarding this study.
- By completing the questionnaire, you indicated that you have read and understand the information provided above and give voluntary consent to participate in the study.

Important concepts and how to complete the questionnaire:

- Demographic information

The first section of the questionnaire pertains to demographical information. Please select/specify where necessary.

- Importance

These questions pertain to the importance of food safety cues at the quick service restaurant you are in. Please select the rating that best describes the level of importance of the cue to you with (5) Extremely important, (4) Very important, (3) Moderately important, (2) Slightly important, and (1) Not important at all. With this section, the researcher would like to know from the participant which food safety cues they deem as important/ not important when purchasing food and eating at a quick-service restaurant.

- Performance

These questions pertain to the performance/experience you have had at the quick service restaurant you are in. Please select the rating that best describes your opinion on the rating scale of (5) Excellent, (4) Good, (3) Average, (2) Poor, and (1) Terrible. With this section, the researcher would like to know from the participant which food safety cues they feel the quick service restaurant performed well on or did not perform well on.

- Evaluation

These questions pertain to what factors you consider when choosing to eat out at a quick service restaurant. Please select the rating that best describes your opinion on the rating scale of (5) Extremely important, (4) Very important, (3) Moderately important, (2) Slightly important, and (1) Not important at all. With this section, the researcher would like to know from the participant which factors they deem as important/ not important when choosing to purchase/eat at a quick service restaurant.

Kind Regards
Dr. Gerrie du Rand

ADDENDUM C: MANAGEMENT INTERVIEW SCHEDULE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Location of store:

Please note if the participant is Male or Female

Age of the participant

What is your current position at this establishment?

How long have you been employed at this establishment?

What is your ordering process for ingredients/food supplies?

In the event of receiving ingredients/ food supplies that are damaged or spoilt, what do you do?

Please describe your storage/ inventory policy for all ingredients/ supplies (dry goods, frozen goods, refrigerated goods)?

How do you evaluate the safety of your: -Bread products-Sauces-Meat products?

Please describe the cleaning and hygiene practices at your establishment.

How is the staff trained with regards to learning how to prepare the menu items?

What are the common mistakes that the production staff make when preparing food? How are these mistakes corrected?

Please describe the food safety training have you received?

Please give examples of any time when you received a food illness complaint/report, and how you handled the situation?

What protocols does this establishment follow to prevent the contamination of food?

In what circumstances have you had to discard food?

Do you consider food wastage as a problem in your store and why do you think it should be addressed?

Which areas in your establishment do you perceive as concerning to the contribution to waste?

Please provide possible solutions that could be implemented to limit unnecessary waste.

ADDENDUM D: CONSUMER QUESTIONNAIRE

Demographics

What is your gender?

- ○ Male
- ○ Female

What is your current age in years?	
Age	

What is your highest educational qualification?

- ○ Matric
- ○ Diploma
- ○ Degree
- ○ Post-graduate degree
- ○ Other

To which ethnic group do you belong?

- ☐ **African**
- ☐ **White**
- ☐ **Indian**
- ☐ **Coloured**
- ☐ **Other (Specify)** _____

Please indicate your current employment status

- ○ Full time employee
- ○ Part time employee
- ○ Self employed
- ○ Student
- ○ Unemployed

Please indicate your monthly household income

- ○ Less than R6000
- ○ R 6000 - R24 999
- ○ R25000 - R39 999
- ○ R40 000 - R99 999
- ○ More than R 100 000

Please indicate the name / area of the fast food establishment that you most frequently visit. (Steers Montana / Mc Donalds Woodlands)

_____

Please indicate how many times a week, on average, you eat out/purchase food from a fast food establishment.

Days per week	

Please rate each of the following food safety cues based on their importance when you visit a quick service restaurant.

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
Fresh ingredients	o	o	o	o	o
Smell/scent of the food	o	o	o	o	o
Taste of the food	o	o	o	o	o
Appearance of the food	o	o	o	o	o
Information on the quality of ingredients	o	o	o	o	o
Implementation of food safety protocols at QSR	o	o	o	o	o
Trained and knowledgeable staff	o	o	o	o	o
Proper hygiene practices	o	o	o	o	o
Clean preparation facilities	o	o	o	o	o
Clean preparation equipment	o	o	o	o	o
Food that is cooked well done	o	o	o	o	o
Holding food during service at the right temperatures	o	o	o	o	o

Refrigerating food at the correct temperatures	o	o	o	o	o
Cooking food to the correct internal temperature	o	o	o	o	o
Expiry/ sell-by dates displayed on relevant food items	o	o	o	o	o
Regular hand washing	o	o	o	o	o
Staffs use of hairnets/hats	o	o	o	o	o
Regular cleaning of customer seating/dining areas	o	o	o	o	o
Clean establishment free from pests/rodents	o	o	o	o	o
Use of clean serving wear for your food (plates/cutlery)	o	o	o	o	o

Food safety experience:

Please rate each of the following food safety cues based on your personal experience during recent visits to quick service restaurants (QSRs)

	Excellent (5)	Good (4)	Average (3)	Poor (2)	Terrible (1)
Fresh Ingredients	o	o	o	o	o
Smell/scent of the food	o	o	o	o	o
Taste of the food	o	o	o	o	o
Appearance of the food	o	o	o	o	o
Information about the quality of the ingredients	o	o	o	o	o
Implementation of food safety protocols at QSR	o	o	o	o	o
Trained and knowledgeable staff	o	o	o	o	o
Proper hygiene practices	o	o	o	o	o
Clean preparation facilities	o	o	o	o	o
Clean preparation equipment	o	o	o	o	o
Food that is cooked "well done"	o	o	o	o	o
Holding food during service at the correct temperatures	o	o	o	o	o

Refrigerating food at the correct temperatures	o	o	o	o	o
Cooking food to the correct internal temperature	o	o	o	o	o
Expiry/sell-by date on the relevant food items	o	o	o	o	o
Regular hand washing	o	o	o	o	o
Staffs use of hairnets/ hats	o	o	o	o	o
Regular cleaning of customer seating/dining areas	o	o	o	o	o
Clean establishment, free from pests/rodents	o	o	o	o	o
Use of clean serving wear for your food (plates/cutlery)	o	o	o	o	o

Please rate the level of importance of the following when choosing to eat out at a QSR

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
Time saving benefits of eating out	o	o	o	o	o
Cleanliness and maintenance of restaurant	o	o	o	o	o
Past news/ Reputation of the QSR	o	o	o	o	o
Quality and safety of the food served	o	o	o	o	o
Reasonable cost of the food	o	o	o	o	o

Complete Survey

Thank you for participating in this consumer survey!!

ADDENDUM E: CONFERENCE ATTENDANCE AND CONTRIBUTION

{1}

Attended: 13th International SAAFECS Conference

Venue: St George Hotel AND Convention Centre, Pretoria, South Africa

Congress theme: Consumer Science in pursuit of the future" 5 – 9 March 2018

Abstract presented: Gauteng's consumers' perceptions of food safety and in quick service restaurants: an importance-performance analysis.

{2}

Attended as a delegate: FOOD NEXT AFRICA

Venue: Gallagher Convention Centre, Richard Drive, Midrand, Johannesburg, South Africa

Congress theme: Food disruption from farm to fork. 24- 25 June 2019

{3}

Attended: 23rd SAAFOST Biennial International Congress and Exhibition 2019

Venue: Birchwood Hotel and Conference Centre, Johannesburg, South Africa

Congress theme: Food Science and Technology for the 21st Centenary 1-4 September 2019

Poster presented: Gauteng's consumers' perceptions of the quality of food safety and in quick service restaurants: an importance-performance analysis.

ADDENDUM F: LANGUAGE EDITING/PROOFREADING DECLARATION

Robbie Hift
Freelance Editing, Proofreading and Assessing of Manuscripts
Member of Cape Peninsular University of Technology Language Editing Team
Member of Mandela University Language Editing Team
Cell: 0833 202 944
E mail: info@ecmirror.co.za

LANGUAGE PRACTITIONER DECLARATION OF PARTIAL THESIS EDITING

I, Robert Hift, being the holder of these qualifications: B.A. HONS. (English) H.D.E.

Certify that I am the language editor for Lesego Marule **who hired me to do partial editing of her thesis** entitled

Gauteng's consumers' perception
of the quality of food safety at quick-service restaurants:
An importance-performance application

I edited the following areas of her thesis:

1. Chapters One, Three and Six only
2. I did not attend to formatting, Table of Contents, Lists of Tables and Figures
3. I checked the cited references to see if they appeared in the List of References. Where there was a discrepancy, I made suitable comments showing Miss Marule where changes were needed.

Miss Marule informed me that she had checked with her supervisor to see if this partial editing would be acceptable to the University of Pretoria

LANGUAGE PRACTITIONER

Date 23/2/2023

ADDENDUM G: TECHNICAL EDITING DECLARATION

Cartocom Cartographic Solutions CC
CK 2004/036325/23

Ingrid Booysen
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South Africa
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27 February 2023

TECHNICAL EDITING OF DISSERTATION

Gauteng's consumers' perception of the quality of food safety at quick-service restaurants: An importance-performance application
by Lesego Marule (11204151)

I, Ingrid Booysen, hereby acknowledge to have technically edited Lesego Marule's Master's in Consumer and Food Sciences, at the University of Pretoria.

The process involved broadly a pass for grammar and consistency in spelling, structure, readability, and adherence to relevant style guides. It also included proofreading, and suggestions to rewrite selected paragraphs for clarity reasons. Consistency of specialised terminology was checked and improvements in the structure (levels of headings) were suggested. The verifying of all of the above took place after the document's content was approved by the supervisor and co-supervisor.

Graphic and cartographic design skills (for tables, figures and maps), creating or improving visual content to enhance the communication of the message, were also implemented.

SUMMARY OF WORK: 2018 - FEB 2023
- ***As Technical Editor***
  11 x Master's and PHds (University of Pretoria, University of South Africa & Sefako Makgatho Health Science University)
  2 x Reports (University of Pretoria)
  3 x Journal Articles (University of Pretoria, University of South Africa & Sefako Makgatho Health Science University)
- ***As Geographer***
  Chapter content contribution by Prof G du Rand & Dr H Fisher, University of Pretoria)
- ***As Graphic Designer***
  3 x creation and design of conceptual models (University of Pretoria)
  3 x Academic posters & PowerPoint presentations
  15 x figures for Journal articles (University of South Africa)
- ***As Cartographer***
  18 x creating original maps from text descriptions. (University of Pretoria & University of South Africa)
  7 x maps for Protea Bookshop & Publishing

Ingrid Booysen
(Technical editor, cartographer & geographer)
BA (Geography, Psychology), University of Pretoria;
Higher Education Postgraduate Teachers Diploma, University of Pretoria;
B.SocSci. Hons in Geography (specialising in GIS), University of Pretoria.

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Members of cc: I Booysen & O Lubbe