

UNIVERSITY OF KWAZULU-NATAL

**The impact of managing pre-requisite programs on the quality of product at a
food processing plant: a case of Rainbow Chicken Limited**

By

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With God anything is possible, never undermine your capabilities.

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ABSTRACT

South African food manufacturers are faced with various food safety challenges during the processing stages due to knowledge gap in terms of understanding the importance of managing the prerequisite programmes in a food processing facility. It is often not clear as to who is responsible between leadership and ordinary employees for ensuring that food safety is a high priority in a particular process. Leadership thinks that employees involved in a process are responsible for food safety, some individuals think the quality assurance department should take responsibility, and employees on the ground think that business leaders should be held liable for the safety of the product.

This study is aimed at unpacking and making clear what needs to be done to ensure that product food safety is consistently maintained during the processing, and that the roles are clear as to who needs to ensure that all the prerequisite programmes are effectively managed.

The qualitative research method is selected for this study to collect and analyse non-numerical information to understand the opinions, concepts, and experiences.

The population selected for this study are heads of departments and their direct reports, assistants, and general workers from the RCL foods P2 processing site. They represent the views from the different functions such as the quality assurance department, the engineering department, and the processing department. The sample size for this research is 25 employee participants coming from each function and represents all the levels within the business structure. Research interviews are used for this study simply because they are an affordable, efficient, and a fast way of collecting a large amount of information from participants. This research adopts a thematic data analysis because it provides flexibility between the theories instead of limiting a researcher to one theory.

The study findings reveal that respondents claim that if the prerequisite programmes are not managed properly, the quality of the products will suffer which will lead to customers' dissatisfaction and the products will be unsafe for consumption. Respondents claim that the product will be of poor quality and too contaminated if the prerequisite programmes are not managed properly. Furthermore, respondents claim that a bad brand reputation

and loss of customers and revenue will be the result of compromised quality of product due to failure to manage prerequisite programmes.

The study concludes that if prerequisite programmes are not well followed they can have a severe impact on the safety of the products and the business finances, therefore everyone within the business structures should take full responsibility in terms of managing PRPs.

ACRONYMS

PRPs – Prerequisite Programmes

CCPs – Critical Control Points

RCL Foods – Rainbow Foods Limited Foods

WHO – World Health Organisation

NRCS - National Regulator for Compulsory Specifications

GMP – Good Manufacturing Practices

GHP – Good Housekeeping Practices

SSOPs - Sanitation Standard Operating Procedures

HACCP – Hazard Analysis of Critical Control Points

NSNP - National School Nutrition Programme

NICD - National Institute of Communicable Diseases

ST 6 - Monocytogenes strain

QAT – Quality Assurance Technician

QA Monitor – Quality Assurance Monitor

SHEQ Co-ordinator – Safety Health Environment and Quality Co-ordinator

HR Practitioners – Human Resource Practitioner

EV Line – Evisceration line

R – Respondent

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Chapter 1: Introduction

1.1 Introduction

Food processing across the industry is not, by design, supposed to be taken lightly as both a process and a requirement as it is a matter of life and death to both humans and the larger animal species. There needs to be a consensus in companies across the globe that profits should play a secondary role as the lives of many, poor or rich are literally in the hands of the food processing industry-once process flaw could be disastrous for millions of consumers if the requirements and regulations are not strictly adhered to. This study thus seeks to explore the effects of managing pre-requisite programs on the quality of products, focusing on Rainbow Chicken Limited foods (RCL Foods) in the province of Kwa-Zulu Natal, South Africa. In this chapter the researcher will briefly discuss the background to this study, problem statement, research objectives, research questions, conceptual framework, brief literature review, research methodology, significance of the study and lastly a brief summary of the chapter.

1.2 Background of the Study

Rainbow Chicken Limited Foods (RCL Foods) is one of the largest and leading food manufacturing chains in South Africa employing more than 21,000 employees nationwide. RCL Foods has a foods division that consists of five units which are named as follows: chicken, spreads, bakeries, groceries, and sugar. RCL Foods boast well-known brands such as RAINBOW, Sunbake, Farmer Brown, Supreme flours, Yum-Yum, Vector Logistics, Number 1 mageu, Selati sugar, and Bobtail, etc. (RCL Foods, 2021).

This study was conducted under the chicken processing unit P2 plant located in Hammersdale. The reason why RCL Foods was chosen is mainly that they are direct contributors to the economy locally and nationally and they are key players in making sure that the community is fed through the variety of products they offer.

According to Semanya (2018) Rainbow Chicken Limited is one of the companies that have also encountered food safety challenges which have resulted in some financial losses and brand integrity issues, hence the reason why this study intends to ascertain

what the possible causes are that resulted in these issues. The importance of proper management of prerequisite programmes is evident to ensure the safe manufacture of food (Semenya, 2018:63).

Management of pre-requisites programmes in food processing can lead to high product quality and it can also lead to major food safety deviations. Prerequisite programmes are made up of the following: employee hygiene, facility conditions, temperature and hygiene, ingredients' traceability, pest prevention programmes, maintenance programmes, and food security (Culler, 2015).

The above-highlighted incidents are a clear indication that as much as there are many food safety studies conducted in South Africa there are still areas that have not been adequately covered such as the importance of managing prerequisite programmes. This study is based on the researcher's experience in the workplace where employees overlook the defined PRP and the level of understanding around its importance.

The study's aim is to investigate and unpack the effects of prerequisite programmes in food manufacturing process and the role they play in maintaining high food quality standards. The results or outcomes of this study will assist the food manufacturers to have clear information on the management of prerequisite programmes.

1.3 Problem Statement

Food processing in South Africa has been dominating the news for all the negative reasons. Meat processors, soft drink producers, and other food processing industries have been facing major issues concerning foodborne disease outbreaks.

The World Health Organisation (2018) points out that hazardous food carries harmful bacteria, viruses, and chemical substances that cause more than 200 illnesses globally, varying from cancers, diarrhea, etc. The World Health Organisation (2018) further indicates that almost one out of ten people globally become ill after consuming contaminated food, and this results in 420,000 lives lost every year.

According to Bhengu (2020), at some point, canned foods such as Pilchard's tomatoes and chilli flavoured sources had to be recalled from the shelves due to lack of compliance

with specifications. If not for this early detection, the end result would have been consumers eating contaminated food. This directive, focused on the four hundred grams range, was issued to all dealers from manufacturers and all the way to informal traders.

A study by Tessema, Galaye & Chercos (2014) indicates that unhygienic handling and processing of food results in harmful viruses, bacteria, unwarranted chemical substances, and parasites, which in turn results in diseases such as, amongst others, cancer and diarrhea. Tessema et al (2014) further states that one in ten food consumers fall sick from the consumption of contaminated food (Tessema, Galaye & Chercos, 2014:26).

RCL Foods is one of the biggest local food producers and one of their divisions is poultry processing, which has Rainbow brands under their basket of products. In 2018 Rainbow was hit by a Listeria outbreak in one of their further processing plants which resulted in major financial losses due to production stoppages, product recalls, and government investigations. The Listeria outbreak was a huge threat to the Rainbow Chicken business brand, hence the significance of this study, which has helped to unpack the small contributing factors that have a tremendous effect in terms of compromising safety. It also assisted in gaining insight in terms of how much people cross-functionally understand food safety and its impact on its consumers. This research is important in that it highlights how improving the management of prerequisite programmes will ensure high product quality during the production process.

1.4 Research Objectives

- a) To determine the company's key food quality principles at a selected food processing plant.
- b) To determine if the prerequisite programmes are managed properly at the selected food processing plant.
- c) To determine how prerequisite programmes should be managed at the food processing plant.
- d) To determine the impact of managing the prerequisite programmes in a food processing plant.

1.5 Research Questions

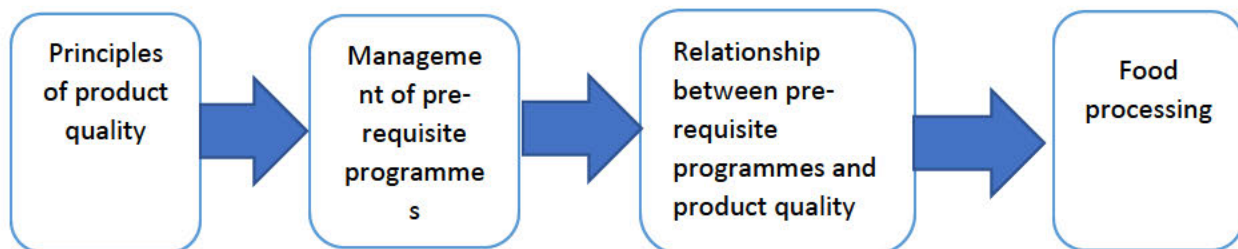
- a) What are the key principles that drive quality in food production at the selected production process?
- b) Are prerequisite programmes in food production managed accordingly?
- c) How should prerequisite programmes be managed?
- d) What is the impact of poorly managed prerequisite programmes?

1.6 Conceptual Framework

Jabareen (2009) explain conceptual framework as a plane or network of concepts that are interlinked together present a broad understanding of a phenomena or phenomenon. The author further indicates that concepts that form part of a conceptual framework support one another, they institute a philosophy that is framework specific and they articulate their respective phenomena. Conceptual frameworks have assumptions that are methodological, epistemological, ontological and each and every concept plays a key role within the framework (Jabareen, 2009:21).

Ravitch & Riggan (2016) highlight that a conceptual framework assist in identifying and clarifying what you value, what you know and care about as aspects that are central on a study and it helps to influence and connect those different aspects. The concept demonstrated below will be adopted on this study:

Figure 1 Pre-requisite programme conceptual framework



Source: Author's Compilation

1.7 Research Methodology

According to Sileyew (2019), methods of doing research are tailored to a confined process and tact that one adopts to select, identify, process and analyse data about a particular topic. The author further states that in the research paper, this allows the reader

an opportunity to have a critical evaluation on how valid and reliable the paper is (Sileyew, 2019:16).

This study outlines the understanding on how the management of prerequisite programmes contributes to product food safety in the production process within food processing plants, therefore a descriptive design is used to unpack all the known theories around food safety. Since food safety is a well-known subject, a qualitative method was conducted through interviews in a language that is easily understood by the targeted participants, and research from other authors were used to support the study.

1.8 Population and Sampling

1.8.1 Population

McCombes (2019) describes the population as the group of people who will take part in activities of interest that the researcher would like to investigate. This research was conducted at a food processing facility where the targeted population was 21000 employees, and the sample size were 25 employees from the quality department, production department, and engineering. The sample from the above-mentioned represented the views from all functions in the facility.

1.8.2 Sampling Method

McComes (2019) posits that there exist two kinds of sampling that a researcher can rely on that is sampling that is based on probability and one that is not. The former allows for one to infer statistically with regards to the entire group whereas the latter makes it easier for one to collect initial data as it is not random depending on the criterion chosen or ease of convenience (McComes, 2019:33).

The latter method was utilised for this research because non-scientific random employee samples were conducted. This method is less stringent and is subject to the researcher's expertise rather than random sampling. Opoki, Ahmed & Akotia (2016) also alludes to the fact that the method chosen for this research is not only effective in terms of cost and time, but is also much more researcher friendly in comparison to other methods when dealing with populations that are smaller.

1.9 Data Collection and Analysis

1.9.1 Data Collection

Surveys, interviews, observations, and archived data are the most prominently methods that can be employed when it comes to gathering research information (Abawi , 2017:12).

Research interviews were used for this study simply because they are an affordable, efficient, and fast way of collecting a large amount of information from participants. The research structured interviews were sent out to the targeted individuals and interviews were conducted with identified individuals in their respective functions. Interviews that are structured are those that are effected verbally by having a list of questions that are predetermined for the questioning of the participants (Gill, Steward, Treasure, and Chadwick, 2008:16). The authors further indicate that they are relatively easy to administer and may be used to clarify if certain questions are required or not. They do not require a high level of literacy or numeracy from the respondents (Gill et al., 2008:16). The participating respondents were interviewed in the RCL Foods main boardroom following COVID-19 preventive measures such as social distancing, sanitisation, temperature checking and wearing of masks. Online interview guide responses were done to further eliminate the risk of COVID-19 infection.

1.9.2 Data Analysis

Analysis of information for the purposes of this study was done according to themes as this provided flexibility between the theories instead of limiting a researcher to one theory. According to Caulfield (2019) this approach is highly regarded and recommended for qualitative studies as it focuses on the opinions, views experiences and knowledge of the subjects and this can be either via social media, survey feedbacks or interview transcripts(Caulfield,2019:11).

1.9.3 Data Quality Assurance

Cai & Zhu (2015) defines research data quality assurance as a key part of research and it happens in different stages of the study. The study quality was ensured through

considering data from reliable and valid sources, the consistency of feedback and the maintaining of neutrality.

1.10 Research Context

This study was conducted under the chicken processing unit P2 plant located in Hammersdale. The reason why RCL Foods was chosen is that they rate amongst the big players in the food processing industry. The research was conducted within the context of the Covid 19 pandemic with strict lockdown regulations in place-this did not make things easy for the research to interact with the participants as the health of all involved could not be compromised.

1.11 Significance of the Study

Food safety in South Africa and globally has been a major concern that poses a huge risk to consumers and affects the integrity of brands. This study is especially important as it seeks to highlight the impact on managing prerequisite programmes which seems to not be clear or unknown to some in the industry. This research will assist food processors to understand the impact of managing prerequisite programmes in a food manufacturing process, and the necessary steps to be taken to guarantee compliance in a consistent manner. General food safety is known by food processors, but the details around the impact on the management of prerequisite programmes seems not to be fully understood by those who are directly involved in the process (Sesotec, 2020). This creates a gap because as it can lead to food safety outbreaks.

1.12 Conclusion

This chapter has presented a high-level view of the expected activities and it has also presented different theories around prerequisite programmes and food safety as a whole. The next chapter is set to focus on different kinds of literature about the importance and benefits of properly managing prerequisite programmes, and the financial impact when prerequisite programmes are not poorly managed.

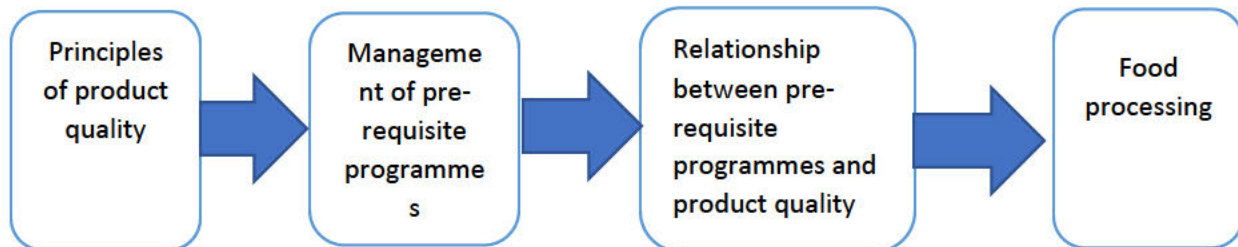
Chapter 2: Literature Review

2.1 Introduction

Management of prerequisite programmes plays a vital role in addressing potential food safety hazards. Food safety management is essential, therefore it requires commitment from the lowest level of the business to the highest level of business, as this will ensure that the entire food safety system is a success (Lopez, 2014:14). This literature review covers key topics around the management of prerequisite programmes, responsibility, financial impact due to poorly managed pre-requisites programmes, and possible causes for food contamination during the processing stage.

The concept demonstrated below will be adopted on this study:

Figure 1 Pre-requisite programme conceptual framework



Source: Author's Compilation

2.2 Food Processing Concept

2.2.1 Food processing definition

According to Fry (2015) food processing refers to operations and procedures utilised to convert raw agricultural products, which are in most cases harvested from the wild, into consumable products. The author further state that these operations are used to ensure that human beings are consuming food which is safe. Most food processors are using set industrial settings when processing food, and each producer uses different food processing methods that are suitable for the product produced (Fry, 2015:62).

2.2.2 Types of food processing

According to Fry (2015) processing of food comes in various forms and methods, some foods require minimal to zero processing, for example, pears can be harvested and consumed immediately, but other fruits need to undergo some form of processing because they are inedible (Fry, 2015:71). He further highlights the below food processing methods which fall into three categories:

2.2.2.1 Primary processing of food

This is the activity of changes the product from its natural state into products that are fit for human or animal consumption. Cases differ around the primary processing phase, some foods are ready for consumption once the primary processing phase is completed, for example there has to be dried meat first before one can get biltong as a resultant product. There are also instances where, primary food processing where the initial product is changed rather into an ingredient that enables food consumption such changing grain into flour (Fry, 2015:72). Kramer (2019) indicates that primary food processing includes the growth phase of the crops, harvesting thereof, milking, fish catching, collection of hen eggs, rearing, and livestock animals' slaughter.

2.2.2.2 Secondary food processing

Secondary processing of foods is a result of the primary process. Flour for an example has to be mixed with other ingredients such as yeast, baking powder and so on in order to produce a readily consumable product such as bread or a cake to mention but a few (Fry, 2015:71). Kramer (2019) also agree that this stage of food processing is very important because certain food processes such as fermentation, heat treatment, and packaging, may be utilised to elongate the life span of the product after being primarily processed as an ingredient (Kramer, 2019: 32).

2.2.2.3 Tertiary food processing

This process refers to the large-scale production of foods that are ready-to-eat such as bread, polony, viennas, packaged snacks, and frozen pizzas. All the foods manufactured or produced under the tertiary processing phase are referred to as "processed food" (Fry, 2019:71).

2.3 Principles of Product Quality

2.3.1 Customer focus

The first principle of quality management starts with consumers. Putting the focus on your product consumers ensures that they receive the full benefits of the offered product or service. This takes center stage for most businesses because if the business has no customers it will not exist. Ultimately, the product consumers are key to the business, and therefore achieving product quality during the production or manufacturing stage must always be of utmost importance (Chambers, 2020).

Alton (2016) indicates that the primary aim of any company is to make money. If the company makes a product that is purchased by consumers they ultimately have a business. However, the author highlights that the most successful companies have shifted their focus from primarily being only profit driven, but they also ensure that their products are of superior quality as a way to attract and retain customers.

2.3.2 Leadership

The organisation's leadership plays a key role in any quality improvement strategy and it forms the backbone for a strong product quality culture. Leaders need to offer a purpose for unity while establishing the business' direction. As such, leadership's responsibility consists of the establishment and maintenance of the internal environment. That environment should enable the employees to be involved in achieving the business' aims and goals. In that way, good leadership becomes essential to improve quality across the business, as the leading and strategic force that develops and sets objectives and helps employees to execute these objectives (Lasrado, 2015:22).

Verma (2014) highlights that ineffective leadership can destroy and hinder the efforts to have a strong total quality management base in the organisation which may ultimately compromise the quality of products or services being offered.

2.3.3 Employees involvement in quality management

One of the most important principles of managing product quality lies within the people's involvement throughout the steps of process improvement. People are the most important resource within any business, they are the very essence of the business, therefore if they are involved within each level it allows their abilities to be utilised for the benefit of the entire business. Employees or staff should be considered as the fuel that ensure the consistency of the quality of the product produced (Verma, 2014:23).

Isotracker (2015) agree with Verma that the main secret behind successful quality management is employee involvement, it creates a continuous improvement culture, it enhances competency, and the leadership gets nurtured, and the product quality is only as good as the quality understanding from the people producing it (Isotracker, 2015:27).

2.3.4 Process approach

This approach means that the business manages its activities as a system of processes that prevents silos between departments, people, and the way products are produced. This works for any organisation because if the processes are good, the quality of the product will be good. For example, if one manufactured food products and constantly followed a proven recipe and a series of processes in different manufacturing sites, one would always produce a product of high quality with the same taste regardless of the site (Biswas, 2020:43).

The process approach plays an important role in any strategy to manage quality. The primary goal for any business is to create and implement a strategy that enhances the ability to consistently deliver a product or service of good quality. As such, a process approach is where all tasks and resources are allocated, identified, and analysed so that each step of the production process is more effective to deliver the desired results (Biswas, 2020:44).

2.3.5 Systematic approach to quality management

This approach to quality management focusses on the quality management system used to manufacture the desired product. One of the goals of this management approach is to create specific procedures to be consistently utilised in completing a task (Hill, 2020:13).

The businesses that are considering the implementation of a strong quality management strategy, need to adopt certain principles of quality management. One of those principles is the system approach, it determines the understanding, identification, and management of a system that has interrelated processes with a goal to improve the organisation's efficiency (Hill, 2020:13).

2.3.6 Quality continual improvement

Quality continual improvement, sometimes called continuous improvement, is the never-ending process of improving the quality of the products, services, or processes through breakthroughs and incremental improvements (Bangert, 2019:62).

Hamel (2020) is confident that quality, continuous improvement can reduce the number of mistakes that the business makes. Products that are defective, and mistakes occurring when manufacturing products, are examples of errors that cost the business. Therefore, continuous focus on identifying courses that have the potential for mistakes and fixing them in advance can eliminate problems that might have a long-term impact on the business (Hamel, 2020:62).

2.3.7 Decision making using actual approach

For one to attain the best in terms of managing quality one ought to rely on information that is factual, thus allowing for a better flow of attaining positive results and goals in the decision making process using the performance based management system. (Fradin, 2019:30).

If one's decisions are to be informed in anyway, it is imperative to have data and information that is reliable and accurate, and it must be easily provided to those who require it. Individuals need to have the authority or be in a position to decide and act accordingly using the results from having analysed facts as the foundation, and also by striking a balance between knowledge and experience in data interpretation and insight (Fradin, 2019:30).

2.3.8 Supplier relations for mutual benefits

It is important for organisations to have a reliance on each other, a relationship that would benefit both the supplier and the organisation as this elevates the creation of value for both (Beck, 2020:48).

Beck (2020) further highlights that one of the most critical aspects to manage quality within a business is to develop and maintain a mutually beneficial relationship with suppliers.

2.4 Management of Prerequisite Programmes

2.4.1 Prerequisite programmes definition

Stier (2012) indicates that the prerequisite programme is a programme that addresses different situations within the operation to ensure that known and unknown hazards are controlled. The author further highlights that effective prerequisite programmes are directly linked to the control of hazards identified and the effectiveness of the food safety system overall.

Newslow (2021) also alludes that these processes are based on practices that ensure good manufacturing and standardising operating procedures in terms sanitisation. In other words this ensures that the manufacturing climate is conducive for food processing and production as the basis is strong and reliable (Newslow, 2021:44).

2.4.2 Importance of prerequisite programmes

Robinson (2016) puts emphasis on how crucial the nature of these programmes are. He maintains the programmes are key in ensuring safe consumption since they set the conditions for safe operations, behaviours and practices. The management process considers various aspects from how the facility is designed, which suppliers to use, the type of machinery, control of pests and the operation itself, compliance in terms of meeting the hygiene standards at a personal level and so on. Any lapse in judgement may have undesirable consequences in this regard (Robinson, 2016:30).

2.4.3 Management responsibility of prerequisite programmes

Commitment from all management levels of the company is very crucial in food safety. Without management commitment, the whole food safety system could crumble, and this

would result in the compromise of food during processing. Most certification standards and customer standards have requirements that are mandatory around senior management commitment. These requirements include adequate resource provision, effective communication implementation, continual improvement mechanisms, and a management review system (Sanson, 2018:33).

Department managers are responsible for the assignment of duties related to PRP, they have to ensure that employees are adequately trained to comply with PRP requirements, and PRP log reviews to identify nonconformities or deviations and potential hazards (Stier, 2018:47).

The Food Safety Team Leader is responsible for identifying the prerequisite programme(s) for the company and for ensuring that they are implemented and monitored. The team leader has to ensure that PRPs are appropriately communicated to the parties and periodically reviewed (Stier, 2018:47). In other words, department employees are responsible for executing their duties in line with the relevant PRP(s) requirements and reporting on their work related to PRPs (Stier, 2018:47).

2.4.4 Health Impact due to poor management of prerequisite programmes

A study by Bhisholo, Ghuman and Haffejee (2018) states that globally, one in a group of ten people fall ill after contaminated food consumption, with Africa carrying the highest burden, Southeast Asia being the next continent with this challenge, and Europe carrying the lowest food-borne diseases burden as per reports. The food-borne diseases prevalence differs greatly from country to country.

Bhisholo et al. (2018) further indicate that in Africa, contaminated food consumption has caused about 92 million people to fall ill, which has resulted in 137,000 deaths annually. Many African countries such as Uganda, Mali, Ghana, and Kenya do not take food safety as a major concern. The authors state that in South Africa they do not have the capacity to adequately track food-borne illnesses and forecast diseases, despite the many food-borne outbreaks being reported across all provinces (Bhisholo et al., 2018:32).

Tshehle (2014) highlights that a one of the primary schools in the North west province was affected with cases of food poisoning where about one hundred and sixty learners were exposed to food provided by the National School Nutrition Programme (NSNP). The type of food eaten ranged from beans, processed mealie-meal and vegetables. This incident followed the ingestion of beans, processed maize meal, and vegetables. The cause for this outbreak was Salmonella Enterica Serovar Heidelberg (S. Heidelberg), which was discovered in 92 per cent of the cases and was caused by samp contamination due to processed maize that was poorly stored (Tshehle,2014,13).

The World Health Organisation (2018) has recently reported a Listeriosis outbreak in South Africa, a significant food-borne illness that started in the beginning of 2017. The WHO indicates that between of the months of January 2017 to March 2018, there were about nine hundred and seventy eight cases of Listeriosis that were confirmed via the National Institute of Communicable Disease across all provinces. The WHO (2018) also illustrates that high occurrences had been reported and recorded from three provinces, Gauteng recorded and reported 581 occurrences, the Western Cape recorded and reported 118 occurrences and KwaZulu-Natal recorded and reported 71 occurrences, the balance of occurrences reported and recorded across other provinces of South Africa. The most worrying being that the results of the outbreak that are known of 674 patients, of whom 183 lost their lives (WHO, 2018:82).

Clark (2018) reports that the Listeriosis illness was linked to the Tiger Brands processed meat (Enterprise) factory in Polokwane, Limpopo Province. Minister Aaron Motsoaledi indicated that selected samples taken from the facility were discovered to contain the bacterium Listeria Monocytogenes strain (ST6), which is the strain that resulted in the outbreak. The Minister further stated that other sets of samples taken from another Enterprise facility in Germiston, Gauteng province, and Rainbow Chicken Limited further processing facilities in the Free State, the results were positive for Listeriosis even though it is not known as to which strain it was (Clark, 2018:16).

Comins and Nkomo (2020) recently reported that South African retailers had to trace, track and recall canned tinned fish which could potentially cause Botulism, as per order

by the NRCS. This directive was extended to all traders from formal to informal and from retailers to wholesalers to desist from selling the affected brands. This follows the investigation outcome which the organisation conducted that revealed a canning process deficiency (Comins and Nkomo, 2020:17). Even though this might have been the case with regards to these incidents, there still exist the threat of underreporting on this matters, not only in South Africa but on the entire continent.

2.4.5 Possible causes of contamination in food processing

Many factors seek to undermine the hygiene of food. Food quality and hygiene are heavily influenced by inappropriate food storage conditions, low-quality food purchasing, unnecessarily large amounts of food cooked and left to sit in inappropriate environments, storing cooked and raw foods together, and the usage of incorrect methods when preparing, cooking, and storing food (Uçar, Yilmaz and Çakıroğlu, 2016:83).

Collier (2019) indicates that food contamination is a continuous risk with effects that range from just an illness to death and it is thus that the different types of food contaminations ought to be clearly understood as defined here under:

i) Physical contamination of food

This contamination occurs when food is exposed to foreign objects. It can take place during food preparation and food delivery. Common types of contaminants are due to lack of hygiene and other production facility neglect when it comes to how the equipment is handled and managed. (Collier, 2019:6).

ii) Chemical contamination of food

Chemical contamination may occur if the food is prepared on a surface that still have the chemicals residue that has not be cleaned thoroughly such as uncovered food materials whilst busy spray cleaning with chemicals. Additionally, in some cases, food is contaminated by chemicals during the growing stage, so by the time it reaches the kitchen, it is already spoilt. This can be attributed to the spraying of pesticides and fertilisers directly into the crops as they grow (Collier, 2019:7).

iii) Microbial contamination of food

This type manifests when food has been affected by micro-organisms, viruses, bacteria, toxins, mould amongst others (Collier, 2019:7).

Chatterjee and Abraham (2018) this contamination type is the major driver in terms of contaminate outbreaks and the best way to avoid it that standards of hygiene should be set higher by following strict measures such as:

- Food handlers taking time off from work when they are ill.
- Separation of ready foods at all stages of the food handling process, from farm and to fork.
- Raw foods being washed at all times.
- Ensure that pest control measures are always in place (Chatterjee and Abraham, 2018: 25).

iv) Allergenic contamination of food

This type happens as a result of a chain reaction once there is contact between the reaction itself and the food type. A perfect examples the leads to this reaction would be the use of the same utensil, such as a knife, against different food types. Central to allergenic reaction are foods such as eggs, peanuts and fish to mention but a few (Collier, 2019:80).

Of high importance to manufactures is the knowledge that a tiny speckle of food can be fat fatal to an individual who has an allergy to a certain food type and as such, prevention becomes better than cure in this regard (Baumert and Taylor, 2010:16).

Evans-Lara (2018) states that if food processors can work to prevent the occurrence of allergen contamination, their day-to-day life will always be a lot less stressful. If the allergens contamination is well managed the business can avoid product recall possibilities and it will ensure that the consumers are provided with a legal and safe product.

2.4.6 Financial impact of poorly managed prerequisite programmes

South Africa, of late, has experienced a concerning number of food safety-related incidents. These cases of food safety have affected companies like Rainbow Chicken and Tiger Brands Enterprises due to Listeriosis reported in 2018 which resulted in product recalls and stoppage of production. During this period, these two entities lost millions of rands in profit, and also the cost of disinfecting the bacteria was high due to the high usage of deep cleaning chemicals and fixing of structures and equipment before production resumption (Kahn, 2018:29).

The potential financial impact due to food safety outbreaks on food processing businesses or companies can be devastating. A single case of a food-borne disease outbreak can bring economic losses that are unimaginable. Globalised food trade in recent years has increased, with production processes often involved at many sites and the supply chain being very complex, and this potentially contributes towards an increased number of microbiological food safety outbreaks (Dawson and Hussain, 2013:62).

Olanya, Hoshide, Ijabadeniyi and Ukuku (2019) indicate that the estimated cost associated with Listeria outbreak is mainly for hospitalisation, production losses, illness, and deaths. The cost estimate for fatalities was more than USD 260 million, the cost associated with one-month hospitalisation being the estimated recovery period for Listeria was USD 10.4 million, and production losses due to Listeria was estimated at over USD 15 million (Olanya et al.,2019:32).

According Harvey (2018) RCL foods which produced Rainbow brands incurred an estimated loss of R75 million due to the Listeria outbreak that the South African country reported, and this situation forced RCL foods to do product recall and suspend production of its processed meat most especially polony (Harvey, 2018:23).

Comins and Nkomo (2020) indicates that the recent recall of canned fish products by Pilchard has cost West Point Processors manufacturing company about R82 million and this was due to canning process deficiencies.

The World Bank (2018) stated that Angola, Nigeria, and South Africa each incurred food-borne disease costs of more than USD1 billion. These food safety outbreaks have led to

countries' exclusion from markets due to high-risk foods, and opportunities to trade in the future are reduced (World Bank Report, 2018:12).

Dawson and Hussain (2013) further highlight that the food safety incidents estimated for the United States economy are around USD7 billion per year. Most come from consumers' incident notifications, recalling certain food types from the retailer shelves, and litigation that results in companies paying huge amounts of money for damages caused resulting in insurmountable losses (Dawson and Hussain, 2013:65).

2.5 Relationship Between Management of Prerequisite Programmes and the Product Quality

All businesses involved in the processing of foods ought to have in place prerequisite programmes (PRPs). In order to maintain and to meet conditions fundamental to a proper environment it is imperative for the businesses to excellent hygiene practices (Culler, 2015:43). The following are the PRPs that will be used to unpack their relationship with product quality:

2.5.1 Cleaning and sanitation

Severe illnesses or even death can be as a result of food poisoning or contamination. The one method for preventing such is frequent cleaning and disinfection (Culler, 2015:43).

Stier (2019) also allude that consistent cleaning and disinfection during the processing of food is very fundamental in ensuring a quality product at the end. He highlights, the below, three key factors that prove that cleaning and sanitisation prevent and ensure that product quality is not compromised:

- Cleaning and disinfecting, which serves as a protection to all stake holders
- Compliance with food safety laws and regulations.
- Avoidance of pest infestations (Stier, 2019:40).

2.5.2 Maintenance and product quality

According to Mushavhanamadi and Selowa (2018), plant maintenance is the holistic management of pieces of equipment and machines within the production or processing facility. It involves machine breakdown prevention through lubrication, identifying small

faults that can lead to product quality defects, and outdated machine replacement. Effective plant and equipment maintenance in the processing or production environment can lead to high-quality products, high productivity, and the overall performance improvement of the plant (Mushavhanamadi and Selowa, 2018:31).

Procedures and work instructions should be developed to demonstrate a high level of maintenance for equipment utilised for food processing as well as efficient practices of cleaning. Overall, well-maintained equipment will ensure the ongoing control of potential food hazards that may contaminate food (Kurniati, Yeh and Lin, 2015).

2.5.3 Personnel hygiene

Frederick (2005) posits that personal hygiene should always be prioritised by all players in the food processing business. A safety barrier between the product and employees should be a cornerstone to ensure product quality is not compromised. To have high personnel hygiene standards food processors should provide employees with coats, smocks, snoods and gloves, plastic sleeves or plastic aprons, and hairnets (Frederick, 2005:34).

Ultimately, all employees have to participate in ensuring high product quality and food safety during the processing stage, they have to do the right thing. As long as provision is made for the safety of the product and employees, product quality cannot be compromised and as such contamination of foods can be avoided (Frederick, 2005:34).

2.5.4 Training

Training and Education of employees may be seen by many food processors as time-consuming, but it will provide numerous food safety and regulatory benefits. Therefore, it should be offered to every newly recruited employee, and all employees regularly as scheduled. Records for all the training and presentations conducted should be completed and filed (Culler, 2015:51).

Meskovska (2014) states that training is the most important tool that is used to assist the goal and lead to the improvement of the overall quality for the business and customer satisfaction. Offering training to the workforce will improve product quality to the highest

standards, employee anxiety will decrease, their performance will increase, and ultimately they will give focus to the customer (Meskovska, 2014:43).

2.5.5 Working instructions

In controlling the quality of the product standard operating procedures are key in terms of deriving instructions to avoid any mistakes. It is very unfortunate that most companies fail to see the importance of work instructions to standardise their work, and they operate with inconsistent processes, which results in excessive product defects and occasionally serious consumer safety issues (Rainier, 2018:04).

Rainier (2018) further indicates that many companies have seen creating and maintaining work instructions as a task with no tangible returns. Whereas creating and maintaining work instructions is quick and easy, and it helps significantly in improving product quality (Rainier, 2018:04).

2.5.6 Premises and structure

Culler (2015) states that the location and the structure of a processing plant needs to be considered and be aligned with the operation's nature and risks associated with them. Food processing premises should be structured in a way that minimises contamination possibilities of the product. In addition, the design and layout should make it easy to maintain the plant, and cleaning and disinfection facilities should be easily accessible. All the surfaces that the food is in contact with should be non-toxic, to prevent any additional contamination. Suitable temperature and humidity control facilities should exist when required and effective pest control measures should exist to prevent pests' easy access to the food processing premises (Culler, 2015:74).

2.6 Empirical Literature

A study by Makomba (2021) indicates that adherence to product quality principles is very vital in ensuring consistency on food safety compliance, quality of the product and consumer satisfaction. Food Aware Australia (2022) highlights that companies face different consequences when they found handling food unsafe. The organization further indicate that those consequences could include a high risk of product contamination, an

increase on food poisoning cases, brand damage, bad publicity and the prosecution possibilities (Food Aware Australia, 2022:45).

A research by Tramontana (2018) indicates that businesses which operate with proper or formal systems to manage pre-requisite programmes are assured to last long because of their brand integrity which drives consumer loyalty but businesses that does not pay attention into proper management of pre-requisite programmes are bound to have market share loss which results to financial losses.

A study by Culler & Conklin (2015) shows that pre-requisite programmes has a strong relationship with product quality because of they are not managed accordingly foodborne illnesses and fatalities. Moreover, the overall business image and brand integrity gets dented heavily if the relationship between PRPs and product quality is not clearly unpacked to all the stakeholders involved (Culler & Conklin 2015:7)

A study by Kelly (2017) highlights the fact that prerequisite programs are required in a food process to provide the operating conditions and environment where food safety and product quality is ensured.

2.7 Conclusion

A broad overview and understanding of managing prerequisite programmes has been outlined in this chapter. It has also broadly unpacked the impact to the business and the consumers if the total focus is not maintained when managing these programmes. The principles of food safety were covered fully with a clear guideline as to who is responsible for what during the journey of processing food, and the clear role of management in ensuring that prerequisite programmes are managed successfully. The following chapter will cover a broad overview of the method being adopted when executing this study.

Chapter 3: Research Methodology

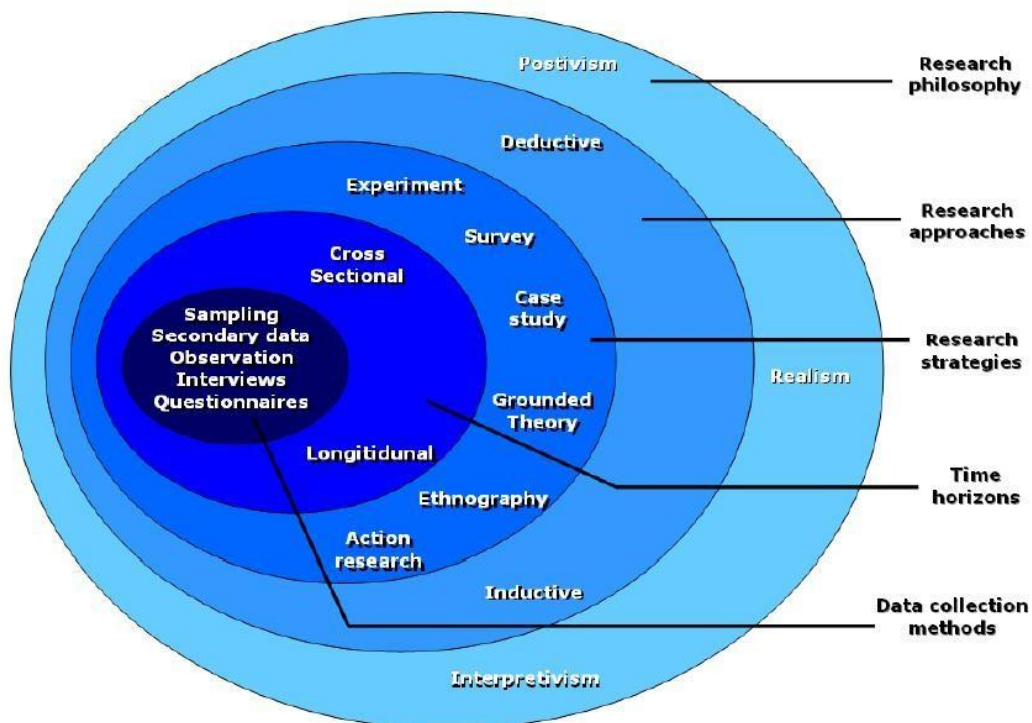
3.1 Introduction

This chapter is an overview of methods employed by the researcher to ascertain the effect of managing prerequisite programmes on the quality of products at a food processing plant. The chapter is structured in the following manner: research design/approach, population targeted, method of sampling, size of the sample, collection of data, interview questionnaire design, quality assurance data, reliability, validity, considerations of ethics, analysis of data, and chapter summary.

3.2 Research Philosophy

Researchers consider philosophies that come in different categories that are available as indicated by the below research process onion:

Figure 2 Research Onion



Source: Analysis of Saunders Research Onion by Thesismind, 2019.

Thesismind (2019) state that the research onion has some benefits such as availing to the researcher various stages where the various methods of gathering data can be explored and also outlines processes to follow when ones conducts a study.

3.3 Research Approach

Streefkerk (2019) indicates that the two ways of approaching reasoning are inductive and deductive reasoning. Inductive reasoning moves from the specific observation to generalisation which is broad, while deductive reasoning moves from the generalised observation to a specific observation (Streefkerk, 2019:16).

The approach chosen for this study was deductive reasoning as existing theories were used. Doyle (2020) indicates that the main benefit of deductive reasoning is that, if your original premises are true in all situations and your reasoning is correct, your conclusion is guaranteed to be true(Doyle,2020:13).

3.4 Research Design

There are different explanations of the research design. McCombes (2020) defines it as a framework for the research plan and the answer to research problems. De Vaus (2001) argues that the design of the research has no association to any particular data collection technique or any type of data. He further gives a detailed definition that the research design talks to the overall strategy that is selected to cover all aspects of the study in a logical and coherent manner in order to address the research problem effectively (De Vaus, 2001:13).

To collect and analyse non-numerical information to understand the opinions, concepts, and experiences the qualitative research method was used for this study. Bhandari (2020) states that the qualitative approach is key because as it allows for a deeper understanding of the various way people come to a common understanding. The author further states that qualitative research uses images and words to help in creating better understanding as to why and how something is occurring (Bhandari ,2020:19).

3.5 Target Population

McCombes (2019) describes the population as the group of people who will take part in activities of interest that the researcher would like to investigate. Whaley (2020) cites that, given the fact that the targeted population stands for the entire population for which a study intends to examine, the definition of the targeted group is important. The population selected for this study is 1500 off which a sample of 25 participants comprised of heads of departments and their direct subordinates, assistants, quality assurers and general workers from the RCL foods P2 processing site, were selected. The sample chosen represents the views from different functions such as the quality department, engineering department, and processing department.

3.6 Sampling Method

McComes (2019) sampling refers to selecting a portion of participants for your research from the larger population as the researcher collects data. He further posits that there exist two kinds of sampling that a researcher can rely on that is sampling that is based on probability and one that is not. The former allows for one to infer statistically with regards to the entire group whereas the latter makes it easier for one to collect initial data as it is not random depending on the criterion chosen or ease of convenience (McComes, 2019:22).

The latter method was utilised for this research because non-scientific random employee samples were conducted. This method is less stringent and is subject to the researcher's expertise rather than random sampling. McComes (2019) further state that the method chosen for this research is not only effective in terms of cost and time, but is also much more researcher friendly in comparison to the former, more so when dealing with populations that are smaller (McCombes,2019:23).

3.7 Sample Size

The size of the sample size refers to the number of those chosen from which the research data will be collected (Lavrakas, 2008:38). Zamboni (2018) indicates that sample size is

an important thing to be considered for the study to be a success, as larger sample sizes give more accurate mean values and smaller samples have a small room for errors. Sample size can result in some challenges during data collection because the bigger the size of the sample the opposite is true in terms of the standard deviation accuracy. On the other hand, if the size of the sample is smaller reliability of the results may be impacted due to a variability that is high and it may result to biasness (Simmons, 2018:22).

The sample size for this research was 25 participants comprising of senior leadership of the plant, middle management, first line leaders, engineers, artisans, and general workers.

3.8 Data Collection Method

These are the most common methods to collect data during research such as surveys, interviews, observations, and archival data (Streefkerk, 2019).

Research interviews were used for this study simply because they are an affordable, efficient, and a fast way of collecting a large amount of information from participants. The research structured interviews and observations were sent out to the targeted individuals and interviews were conducted physically and online with identified individuals in their respective functions.

According to Gill, Steward, Treasure and Chadwick (2008). Two options used for data collection: those with computer access, their interviews were conducted via Microsoft teams, and those with no computer access their interviews were conducted under strict RCL Foods plant COVID19 measures, which is social distancing of 1.5 meters, wearing of masks, checking of temperatures, properly ventilated boardroom, and sanitisation. Interviews that are structured refer to questionnaires that the researcher administers where only the questions determined prior are asked from the participants, in which only a list of questions that are predetermined are being asked. The authors further indicate that they are relatively easy to administer and may be used to clarify certain questions if they don't require a high level of literacy or numeracy from the respondents (Gill et al., 2008:17).

3.8.1 Interview Guide

Bird (2016) sees an interview guide as a simplified list of topics that you are planning to cover during the interview with the list of questions per topic that you want answers on.

Jamshed (2014) states that interview guides are crucial in the process of an interview for the qualitative study. The author further states the interview guide must be designed such that all the participants are comfortable, they can easily understand the questions, and they should be in an easily understood language (Jamshed, 2020:87). The most important part of the interview guide is that if it is not done properly it will build a shaky foundation of questions which can result in feedback that cannot benefit the study's purpose (Jenn, 2006:4).

This research used open-ended questions because they made it easy to collect qualitative data where the respondent freely gives feedback with limited or zero restrictions (Allen, 2017:22).

The interview guide used in this study was categorised into two, one section covers the demographic details of the participant, and the second section has questions around the management of prerequisite programmes.

Section A

Demographics

This section gave detailed information about the participants and it also provided a view as to who is represented in the sample.

Section B

Management of Prerequisite Programmes

This section consisted of questions that seek to gain a deeper understanding of the responsibility, determination and management of prerequisite programmes.

3.9 Data Analysis

Durcevic (2020) views analysis of data as not only a process of mining information but also selecting the most relevant and useful one and change it accordingly in order for one to effect decisions.

Analysing data is the most important part of any study, during this process collected data gets analysed and interpreted using logical and analytical reasoning to determine trends, patterns, and relationships (Dillard, 2017:27).

The qualitative method of research is the most frequently used for data analysis. Data is mainly analysed using methods such as the analysis of content, of the narrative the discourse including grounded theory. (Bhatia, 2019:18).

This research adopted a thematic data analysis because it provided flexibility between the theories instead of limiting the researcher to one theory. According to Caulfield (2019) thematic analysis is a well-known approach to qualitative research where one is trying to determine people's opinions, views, experiences, and knowledge from social media, survey feedback, and interview transcripts(Caulfield, 2019:28).

3.10 Data Quality Assurance

According to Bhandari (2021) quality assurance refers to the procedures and efforts that the researchers put in to ensure that data being collected using chosen study methodologies is of good quality and accurate. The author further indicates that the efforts to control quality vary from research to research and can be applied to questionnaires and systems to manage samples so that the processing is properly executed(Bhandari,2021:12).

Lotame (2019) cites that if data is of a high quality, it leads to better informed decisions and it gives more confidence in the decisions that have been made or are about to be made. The study's quality was ensured through considering data from reliable and valid sources, consistency of feedback and neutrality was maintained (Lotame, 2019:10).

3.10.1 Trustworthiness

According to Gunawan (2015) a qualitative study cannot solely rely on just reliability and validity, the researcher has to ensure that it is trustworthy. In ensuring that the study was trustworthy, the researcher not only shared the work done with the supervisor but also peers within the university to proofread and give an honest feedback. Further to this the researcher ensured that the interview transcripts were detailed recorded. This was made

possible by ensuring that there was a systematic and coding plan in place that was agreed to with the researcher's supervisor (Gunawan, 2015:11).

3.10.2 Ethical considerations

The consideration of ethics is imperative in all the stages of the study to keep a fair balance between the potential benefits and risks of the research (Arifin, 2018:11). Arifin (2018) further highlights that human subjects' protection through ethical principles application is very important in all research studies.

There was no manipulation or deception of the respondents to give information that was set to achieve anything else other than the aim of this study. The researcher did not stress, harm, or pressurise the respondents to participate in this study.

Data collected during this study was highly protected and secured and most of all it was only utilised for this study. The information collected for this study will be kept safe, with access limited or restricted to the research school, and will be destroyed as per set requirements after the fifth year. Lastly, a high level of confidentiality regarding the respondents was ensured along with the information given, and even the employer will not know who has participated in this study.

3.11 Conclusion

The research methodology chapter has broadly unpacked all methodologies adopted by the researcher in executing and obtaining the results of the study. The research approach and design have been broadly unpacked, the sample size and targeted population were clearly explained. The methods used to gather, analyse and ensure reliable data were properly covered. Different theories from different researchers were used to explain the importance of using the methods selected. On the chapter that follows, the focus will be on the interpretation and findings from the data collected.

Chapter 4: Data Presentation and Discussion

Section 1: Presentation of results

4.1 Introduction

In this chapter, data collected from the field influenced the presentation, analysis, interpretation, and discussion of findings informing the Impact of Managing prerequisite programmes on the quality of products at the food processing plant. The data presentation and discussion are presented according to the structure of the interview guide and the research objectives of this study.

4.2 Research Objectives

4.2.1 To determine the company's key food quality principles at a selected food processing plant.

4.2.2 To determine if the prerequisite programmes are managed properly at the selected food processing plant.

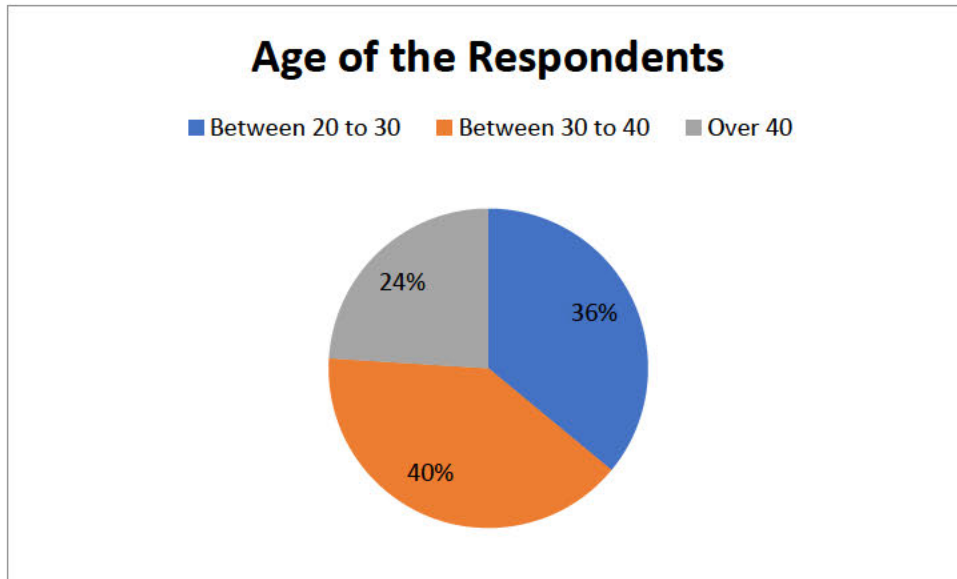
4.2.3 To determine how prerequisite programmes should be managed at the food processing plant.

4.2.4 To determine the impact of managing the prerequisite programmes in a food processing plant.

4.3 Response Rate and Demographic Profile of Respondents

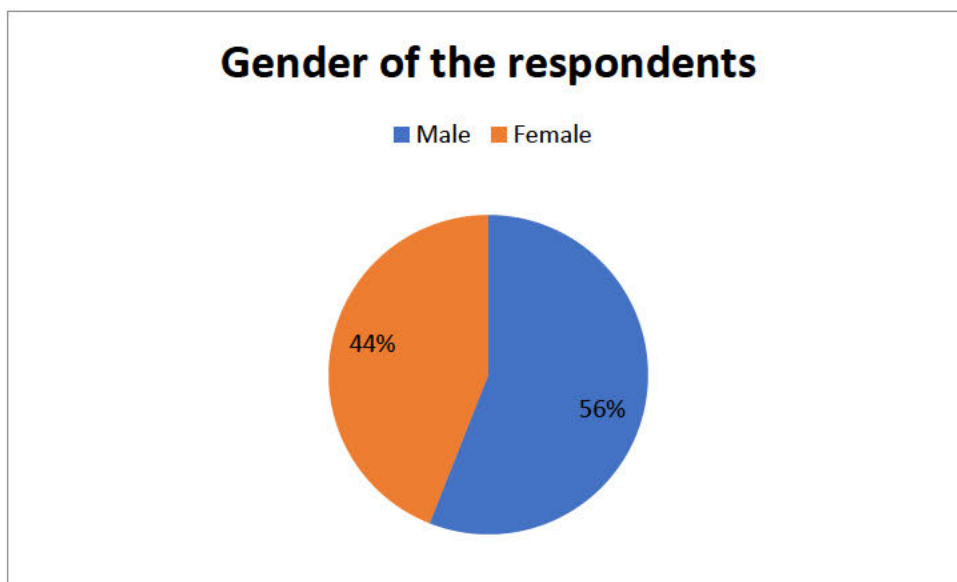
The initial sample of this study was 25 participants but only managed to receive feedback from twenty-four respondents. The response rate was 100 per cent.

Graph 4.1 Description of the age of the respondents



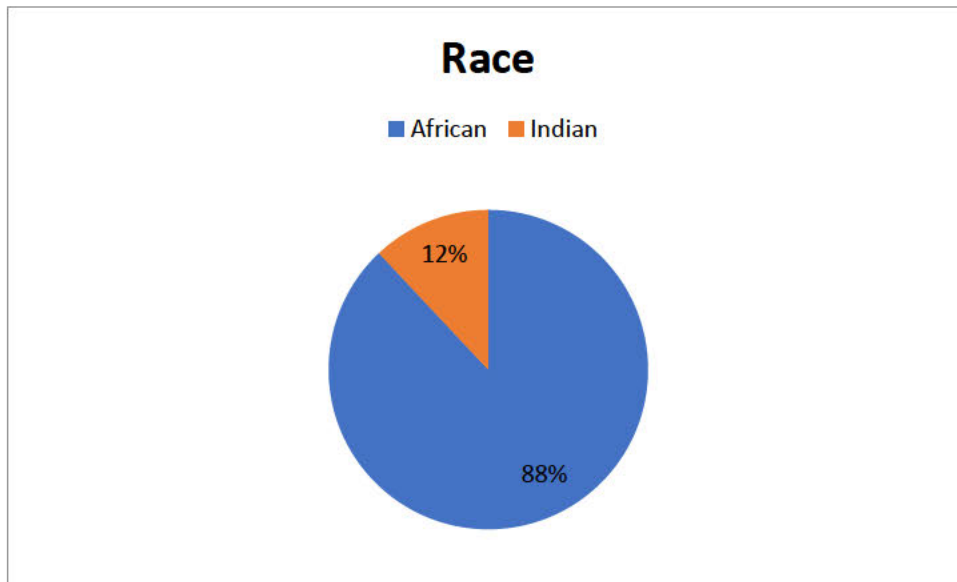
The analysis of this study as shown in Graph 4.1 informs us that most of the participants that responded were of the ages ranging from thirty to forty years (40%), followed by those between 20 years old to 30 years old (36%) and over 40 years old (24%). This informs us that employees of this organisation are relatively young. Young employees tend to be open to learning more (Torsello, 2019), which can be an advantage in teaching them prerequisite programmes.

Graph 4.2 Description of respondents by gender



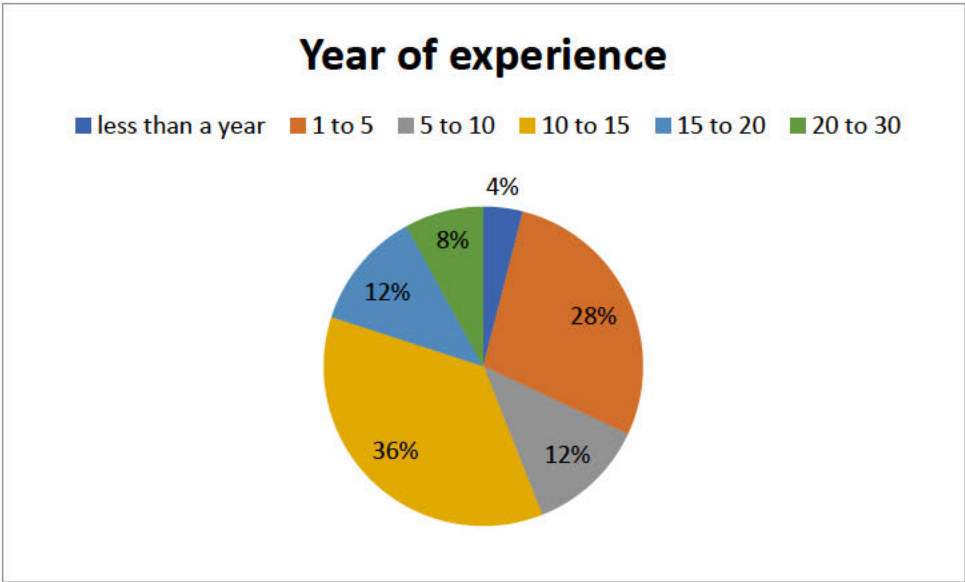
The analysis of this study as seen in Graph 4.2 informs us that most of the participants that responded were male (56%), followed by females (44%). This informs us that the gender difference is less than 15 per cent in this organisation. Although the parity has not yet been achieved in this organisation regarding gender, the data informs the study that this organisation is making an effort in reducing the gap.

Graph 4.3 Description of respondents by race



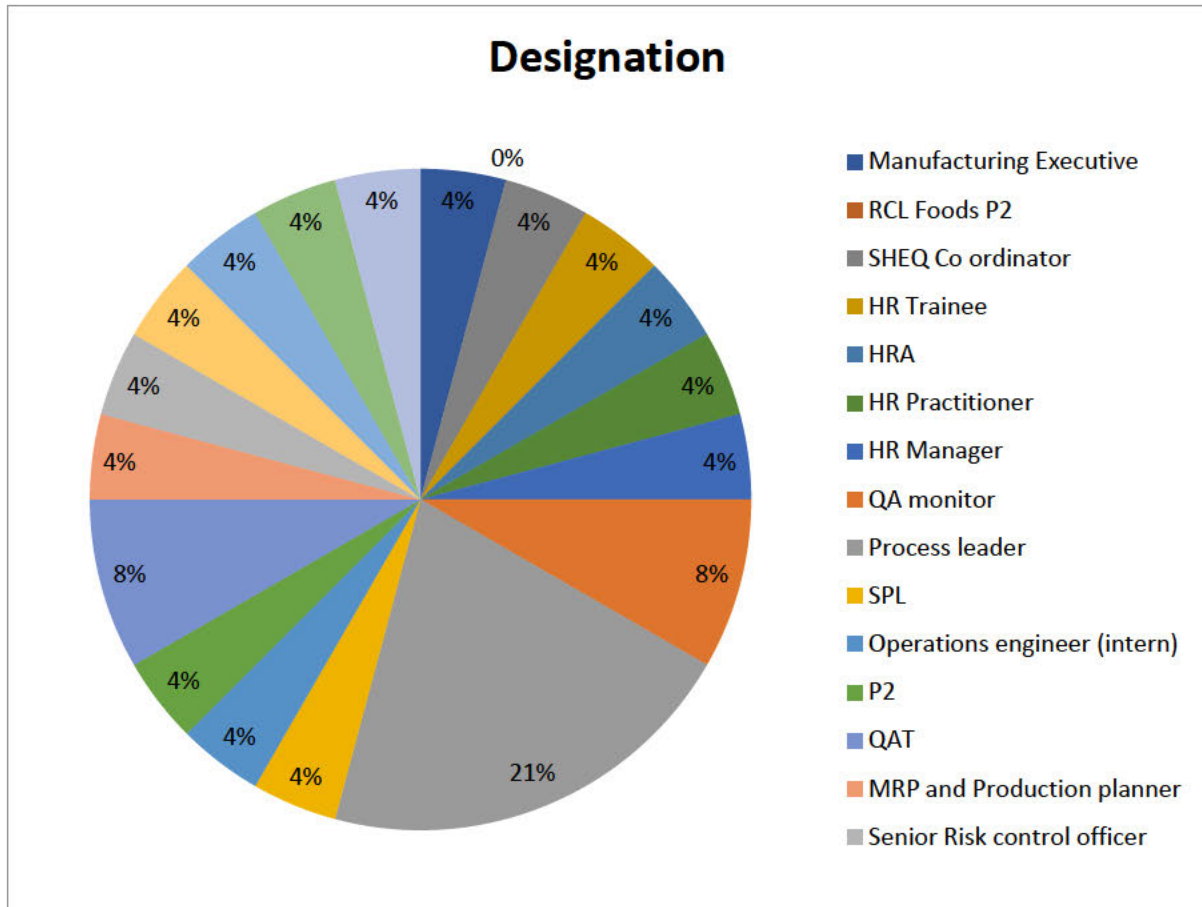
The result of this study as seen in Graph 4.3 reveals that most of the participants that responded were African (88%) next were Indian (12%). The data informs the study that the population where the study was conducted is mainly Black Africans, which talks to the total population of South Africa as a country that is dominated by Blacks. This population has a vital role in making sure that the prerequisite programmes are properly managed if they fully understand the impact.

Graph 4.4 Description of respondents by years of experience



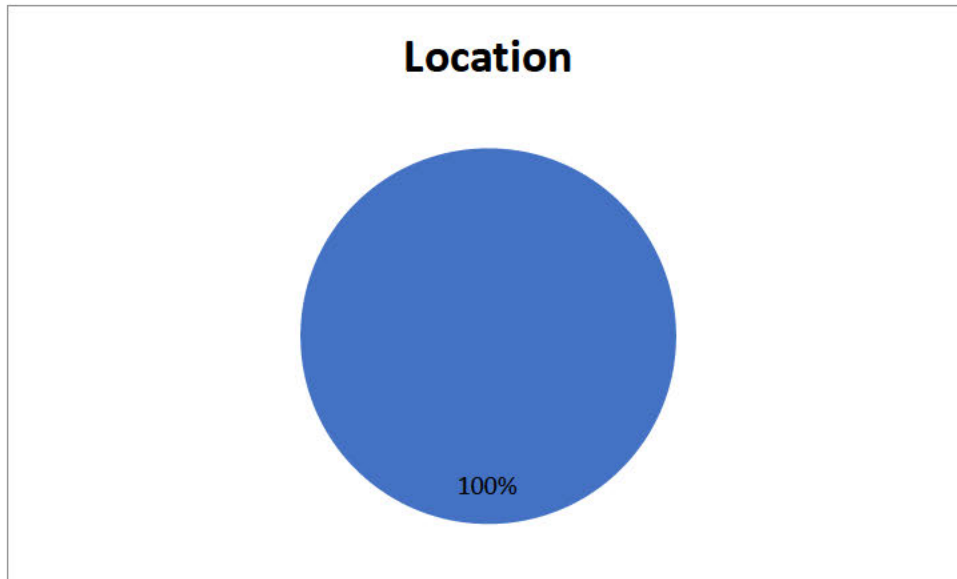
The results in Graph 4.4 reveal that most of the participants that responded have experience of between 10 to 15 years (36%), followed by between 20 to 30 years (28%), five to ten years (12 years), 15 to 20 years (12%) and less than a year of experience (4%). This informs us that majority of the workers have been working with this organisation for some time, thus, the workers are familiar with the prerequisite programmes.

Graph 4.5 Description of respondents by designation



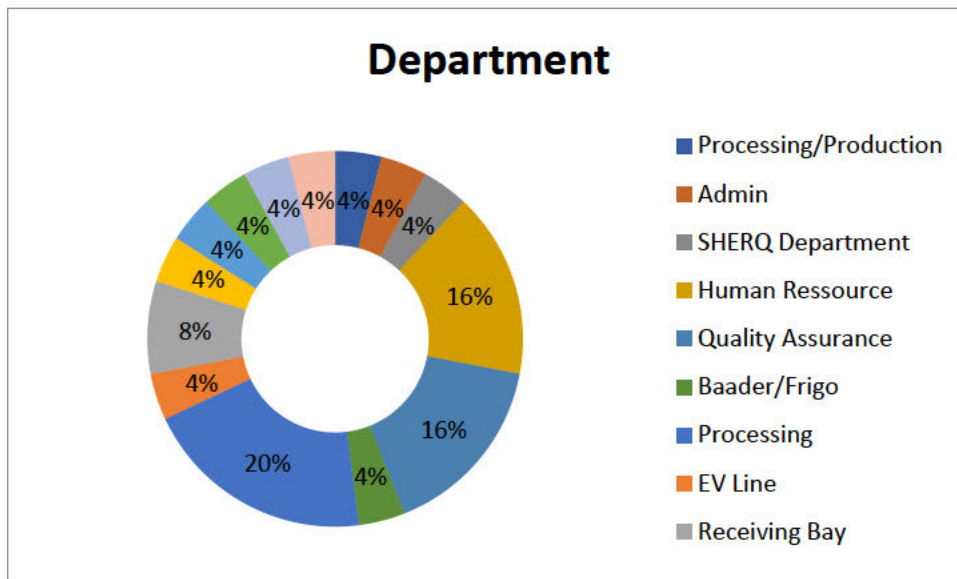
The analysis on Graph 4.5 reveals that most of the participants that responded were senior risk control officers (21%), followed by Quality Assurance Technologists (8%), Manufacturing Executive (4%), RCL Foods P2 (4%), Safety Health Environment and Quality coordinator (4%), Human Resources trainee (4%), Human Practitioners (4%), Quality Assurance Monitor (4%). The data informs the study that respondents of this study should be accustomed to prerequisite programmes as the majority of them are either senior risk officers or from the Quality Assurance Technologists.

Graph 4. 6 Description of respondents by location



The data on Graph 4. 6 informs the study that all of the twenty-four respondents were located at the Hammarshdal P2 Plant.

Graph 4.7 Description of respondents by department



The results in Graph 4.7 reveal that most of the participants that responded were from the processing (20%), next was the quality assurance section (16%), the human resources section (16%), the receiving bay (8%), processing/production (4%), and administrative section (4%). The data informs the study that most of the participants that responded

were involved in the processing, production, and quality checking of the products. Thus, respondents were involved and knowledgeable about the implementation and control of prerequisite programmes.

Section 2: Discussion of Results

4.4 Management of Prerequisite Programmes

4.4.1 An Understanding of Food Quality Principles

Table 4.1 Understanding of food quality principles

Themes	Frequency of responses	Respondent Number
Guidelines to meet customer satisfaction	8	R1, R4, R14, R17,R19,R21,R22,R23,
Standards and procedures to ensure food safety	17	R2, R3, R5, R6, R7,R8,R9,R10,R11, R12, R13,R15,R16, R18, R20, R24,R25

Regarding the understanding of food quality principles, as revealed in Table 4.1, seventeen respondents understand food quality principles as standards and procedures to ensure food safety.

“Quality principles are a set of standards and procedures used for quality and food safety management in the food industry environment” Respondent 2.

Furthermore, eighteen respondents understand food quality principles as guidelines to meet customer satisfaction.

“They are certain guidelines, precautions that ensure standard quality of foods” Respondent 23.

“Food quality principles are [a] set of guidelines that are there to help produce a good quality product” Respondent 14.

“They are practices and procedures put in place to ensure that the degree at which the final product is delivered [is] safe and excellent” Respondent 5.

Table 4.2 Understanding of prerequisite programme

Themes	Frequency of responses	Respondent Number
Practices and operational conditions	12	R3, R8, R9, R10, R11,R 12, R14, R21,R22,R23, R24, R19
Control procedures	8	R2, R4, R5, R6, R15, R17, R20, R25
Requirements prevention to be implemented	5	R1, R 7, R13, R16, R18

Regarding the understanding of the prerequisite programme as revealed in Table 4.2, twelve respondents understand prerequisite programmes as practices and operational conditions, while eight respondents understand it as control procedures, and five respondents understand it as requirements prevention to be implemented by the organisation.

“These are practices and operational conditions that are necessary to ensure food safety eg CCP’s and HCCP” Respondent 3.

“Prerequisite programmes are the minimum control measures, actions, and procedures that must be performed to manufacture a good quality product that meets these needs. As no single policy or set of standards can be applied to every plant or distribution system, PRPs are used as guides in establishing individual plant policies” Respondent 2.

“These are programmes put in place to ensure that food handling requirements are in place, like housekeeping, GMP and GHPs” Respondent 7.

According to the Canadian Food Inspection Agency (2001) prerequisite are universal steps or procedures that control the operational conditions within a food establishment allowing for environmental conditions that are favourable for the

production of safe food (Wallace, and Williams, 2001:235). The results of this study reveal that respondents understand food quality principles as standards and procedures to ensure food safety, as well as guidelines to meet customer satisfaction. Furthermore, respondents understand prerequisite programmes as practices and operational conditions, control procedures as well as requirements prevention to be implemented by the organisation, this understanding is in line with Robinson (2016).

Thus, the findings reveal that employees have sufficient knowledge about food quality principles and prerequisite programmes, and this in line with studies (Sneed and Henroid, 2007; Strohbehn *et al.*, 2008; Abidin, 2013) that indicated that most workers have enough knowledge in terms of ensuring safety and quality when it comes to food handling. However, even with extensive knowledge and understanding of food safety, there was a lack of consistency on their practices with the required standards. The results of this study are, however, contrary to the study by Baş, Ersun, and Kivanç (2006) which claimed that good hygiene is ignored by workers from senior to lower levels.

4.4.2 To determine the quality of the products if the prerequisite programmes are not managed properly at the selected food processing plant.

Table 4.3 The quality of the product if the prerequisite programmes are not properly managed

Themes	Frequency of responses	Respondent Number
Poor quality leads to customer dissatisfaction	13	R2, R3, R4, R5, R6, R7, R8, R11, R13, R19, R20, R24, R25
Unsafe for consumption	12	R1, R9, R10, R12, R14, R15, R16, R17, R18, R21, R22, R23

Regarding the quality of the product, if the prerequisite programmes are not properly managed as revealed in Table 4.3, thirteen respondents claim that if the prerequisite programmes are not properly managed, the company will have products of poor quality that leads to customers' dissatisfaction.

“It will highly affect the quality of the end product by causing food-borne diseases that can be harmful and unsafe for consumers, affect shelf-life, cause customer complaints” Respondent 23.

While twelve respondents claim that if the prerequisite programmes are not properly managed it will lead to products that are unsafe for consumption.

“Very poor and not suitable for human consumption and company stands a risk of product being cross-contaminated” Respondent 11.

“Product may be of the poor quality...” Respondent 2,

Table 4.4 Possible contaminants if prerequisite programmes are not properly managed

Themes	Frequency of responses	Respondent Number
Chemical, microbiological, physical, and allergenic	18	R1, R 3, R4, R5, R6, R8, R9, R10, R11, R13, R15, R16, R18, R21, R22, R23,24, R25
Foreign objects	7	R2, R7, R12, R14, R17, R19, R20

Regarding the possible contaminants, if the prerequisite programmes are not properly managed as revealed in Table 4.4, eighteen respondents listed chemical, microbiological, physical, and allergenic as possible contaminants, while seven respondents claim the possible contaminants if prerequisites programmes are not properly managed are foreign objects.

“Foreign objects eg metal and plastic” Respondent 2.

“Chemical contaminants, microbiological contaminants, physical contaminants” Respondent 10.

“You can get various contaminants such as foreign objects, like hair, jewelry, etc, chemicals, microbiological contaminants” Respondents 5.

The results of this study reveal that respondents claim that if the prerequisite programmes are not managed properly, the quality of the products will suffer which will lead to customers' dissatisfaction and the products will be unsafe for consumption. Furthermore, as for possible contaminants, if the prerequisite programmes are not properly managed, the respondents acknowledge chemical, physical, allergenic, foreign objects, and microbiological agents as possible contaminants.

The results further supports a study by Robinson (2016) who asserts that not implementing standard operating procedures and less quality products has dire effects for the consumer. The failure of prerequisite programmes may have an immediate harmful or serious impact on the quality and safety of food. The finding is in line also with the studies by Agüeria, Libonatti, and Civit (2020), and Baş, Ersun, and Kıvanç (2006) which found that mishandling of prerequisite programmes results in food contamination which can then affect the consumers of the food.

Furthermore, the results are in line with the report by Culler (2015) which highlights that failure to align properly with prerequisite programmes often results in possible chemical, physical, allergenic, foreign objects, and microbiological contaminants. Mohaydin, Chand, Aziz, Bashir, and Irfan (2017) claim that the safety of the product is a determinant of whether customers are happy or not with the product. Al-Tit (2015) asserts that high-quality products have a positive effect and makes most customers to want more of the same. Thus, it is important to properly manage prerequisite programmes to ensure the safety of products.

4.4.3 Proper Management of Prerequisite Programmes.

Table 4.5 Responsibility to control or manage prerequisite programmes

Themes	Frequency of responses	Respondent Number
Everyone in the organisation	16	R1, R7, R9, R10, R11, R12, R13, R14, R15, R18, R19, R21, R22, R23, R24, R25
Top management and quality department	9	R2, R3, R5, R6, R8, R16, R17, R20, R4

Regarding the person(s) responsible for controlling or managing prerequisite programmes as shown in Table 4.5, sixteen respondents claim that it is everyone's responsibility to control or manage prerequisite programmes, while nine respondents claim it is the top management and quality department who are supposed to be in charge of controlling or managing prerequisite programmes.

“Every employee on-site, with management providing required resources” Respondent 1.

“A quality assurance or risk department must ensure the application of prerequisite programmes is implemented, active and yields results in the producing quality products. It then becomes the overall responsibility for staff to comply to the standards of prerequisite programmes” Respondent 4.

“Everyone in the process” Respondent 10.

“In my view, all employees are responsible for controlling prerequisite programmes, however, it should be driven by the quality department, they are responsible for implementing and managing prerequisite programmes” Respondent 6.

The results of this study reveal that respondents think that everyone in the organisation is responsible for controlling or managing prerequisite programmes. Furthermore, some respondents think the top management and quality department are responsible for managing and controlling prerequisite programmes. This result is in line with Jackson

(2011) who listed managers, food safety team leaders, department employees, and trained employees as the people involved in ensuring prerequisite programmes.

Furthermore, Singh (2015) claims that the onus is on managers to make sure the commitment of everyone in the organisation to ensure control and effective management. **According to Jackson (2011), one person should be in charge of each prerequisite programme area to ensure that it is properly handled. Responsibilities must be specified in the job description, which should be endorsed by the person accepting responsibility. It is critical to have different people in charge of different prerequisite programme areas.**

4.4.4 Management of Prerequisite Programmes at the Food Processing Plant.

Table 4.6 Understanding prerequisite programmes’ management procedure

Themes	Frequency of responses	Respondent Number
Compliance with food (product) safety.	7	R2, R6, R7, R8, R11, R16, R18
Control for operational conditions.	11	R1, R3, R4, R5, R9, R10, R17, R19, R21, R22, R23
Programme to prevent hazard.	7	R12, R13, R14, R15 R20, R24, R25,

Regarding the understanding of prerequisite programmes’ management procedure as shown in Table 4.6, eleven respondents describe prerequisite programmes’ management procedure as the control for operational conditions.

“Prerequisites are steps or procedures, including GMPs and SSOPs, which control the operational conditions within a food establishment and promote environmental conditions that are favourable for the production of safe food. Prerequisite programmes are the foundation of a food safety or HACCP system” Respondent 4.

“A system which controls the operational conditions within a food manufacturing company to ensure food safety” Respondent 3.

While seven respondents describe prerequisite programmes’ management procedure as a programme to prevent hazard.

“PRP is implemented to prevent the likelihood of introduction of food safety hazards...” Respondent 16.

While seven respondents describe prerequisite programmes’ management procedure as compliance with food safety.

“A system which controls the operational conditions within a food manufacturing company to ensure food safety” Respondent 3.

“These are required management systems or duties to ensure compliance with food safety” Respondent 7.

Table 4.7 The Process of Prerequisite Programmes Management

Themes	Frequency of responses	Respondent Number
Regular audits	5	R1, R3, R4, R7, R12
Control and monitor	15	R5, R8, R9, R10, R11, R14, R15, R16, R17, R18, R20, R21
Training of personnel	5	R2, R6, R11, R17, R21

Regarding how prerequisite programmes should be managed in a food manufacturing process as shown in Table 4.7, fifteen respondents claim that the control and monitoring of the process should always be in place.

“The processor must manage or monitor the process, it is their responsibility to correct conditions and practices that are not met” Respondent 5.

“...Controlling e.g chlorine, temperature...” Respondent 10.

While five respondents claim that regular audits are key in ensuring proper management of prerequisite programmes in the food manufacturing process.

“ ... Regular audits (internal/external), to verify if the systems of the prerequisite programmes in the food plant are effective or meeting the required objectives...”
Respondent 4.

Five respondents claim that training of personnel will ensure the efficiency of prerequisite programmes in a food manufacturing process.

“A quality assurance department must be formed and all employees must be trained.”
Respondent 2.

“They are the operational status which is used to control the standard of food safety production” Respondent 8.

The results of this study reveal that respondents understand prerequisite programmes' management procedure as the control for operational conditions, a programme to prevent hazards, and compliance with food safety. Furthermore, respondents believe the control and monitoring of the process should always be in place to effectively manage prerequisite programmes in a food manufacturing process. Culler and Conklin (2015) said that the verification of the prerequisite programmes should be done during the production operation. Regular audits are key in making sure proper management of prerequisite programmes in the food manufacturing process as well as the training of personnel will ensure the efficiency of prerequisite programmes in a food manufacturing process. Osimani, Aquilanti, Tavoletti, and Clementi (2013) assert that the enhancement of training of personnel is an important factor in managing prerequisite programmes in food processing. Food handlers who come into direct or indirect contact with food should be qualified and or trained in food hygiene to a degree suitable for the operations they will be performing (Bourquin and Thiagarajan, 2010). Furthermore, the findings are in line with the studies by Kotsanopoulos and Arvanitoyannis (2017); Powell, Erdozain, Dodd, Costa, Morley and Chapman (2013) which claim that auditing is important to ensure food safety. To ensure uniformity and continuity in the implementation of the prerequisite programmes, the strategy's objectives should be explained, and useful details should be

given. Systems of early warning, risk assessments, and corrective measures should be in place to effectively manage prerequisite programmes in a food manufacturing process (Aftais and Benchacho, 2017).

4.4.5 The Impact of Managing the Prerequisite Programmes

Table 4.8 Poor Management of Prerequisite Programmes

Themes	Frequency of responses	Respondent Number
Contaminated product	9	R4, R7, R8, R17, R18, R20, R21, R23, R24
Poor quality	16	R1, R2, R3, R5, R6, R9, R10, R11, R12, R13, R14, R15, R16, R19, R22, R25

Regarding what would happen to the product if the prerequisite programmes are not managed properly as shown in Table 4.8, sixteen respondents claim that the product will be of poor quality.

“Poor quality product with defects will be produced” Respondent 1.

“... This will mean the product will not be favorable to sell to the market and consumers will complain about the products...” Respondent 3.

While nine respondents claim that it will result in contaminated products.

“Could run an increased risk of producing a contaminated product (hazards). Can result in poor environmental control (rise or drop in temperatures can affect the quality of product)” Respondent 4.

“Product will be contaminated” Respondent 7.

Table 4.9 The Impact of Poorly Managed PRPs

Themes	Frequency of responses	Respondent Number
Loss of customers and revenue	11	R8, R9, R10, R11, R19, R20, R21, R22, R23, R24, R25
Bad brand reputation	14	R1, R2, R3, R4, R5, R6, R7, R12, R13, R14, R15, R16, R17, R18

Regarding the impact on the business, if the quality of the product is compromised due to failure to manage prerequisite programmes as shown in Table 4.9, fourteen respondents claim that it will result in bad brand reputation.

“Branding damaged...” Respondent 12.

While eleven respondents claim that it results in loss of customers and revenue.

“It would reduce their credibility which would result in a loss in the business due to customers not wanting their product, and investors not wanting to associate with the brand” Respondent 5.

“ ...Will end up impacting the finances of the company...” Respondent 25.

“...the business will have an unnecessary cost of recalling all the stock in the market” Respondent 13.

The results of this study reveal that respondents claim that the product will be of poor quality and lead to contaminated products if the prerequisite programmes are not managed properly. Furthermore, respondents claim that a bad brand reputation and loss of customers and revenue will be the result of compromised quality of product due to failure to manage prerequisite programmes. This result is in line with the study by Bekker (2020) who claims that the potential financial impact due to food safety outbreaks on food processing businesses or companies can be devastating. Olanya, Hoshide, Ijabadeniyi

and Ukuku (2019) indicate that financial loss due to the compromised product quality can be devastating for a business.

Child and Gernetzky (2020) indicate that the impact of Listeria has pushed Tiger Brands to sell its facilities linked to the Listeria outbreak. Furthermore, Al-Tit (2015) asserts that poor implementation and management of prerequisite programmes leads to a loss of customers.

4.5 Conclusion

This chapter consisted of presenting the collected data, the discussion concerning the literature. The interview guide and the research objectives guided the presentation of the analysed data. Tables and some graphs were used to present and summarise the data.

The following final chapter will provide the study conclusion, the recommendations, and will also highlight opportunities for future research.

Chapter 5: Conclusion and Recommendations

5.1 Introduction

In this chapter, a summary of all chapters and the recommendations of the study is outlined. Thus, the below steps were adopted:

Firstly, section 5.2 provides study summary. Secondly, the presentation and interpretation of the key findings is provided in section 5.3, where all the issues concerning research objectives were grouped and discussed. Lastly, limitations and recommendations for further research are provided.

5.2 Summary of the study

The study commenced by introducing and contextualising the impact of managing prerequisite programmes on the quality of products at the food processing plant. Second chapter positioned the phenomenon under investigation in the body of knowledge and highlighted the gap. The study concentrated on the management of prerequisite programmes as it plays a vital role in addressing potential food hazards. Management of food safety is essential and therefore requires commitment from the lowest level of the business to the highest level of business. The third chapter 3 outline the methodology adopted for this study. This study opted for a qualitative approach and collected data from a sample of 24 out of 25 participants planned. Chapter 4 presented and discussed the analysed data. The last chapter provides recommendations and concluding statement. In the sections below, a summary of key findings, and recommendations are provided.

5.3 Summary of the Key Findings

5.3.1 A Determination of the Rainbow Chicken's Key Food Quality Principles.

The data collected informs the study that respondents are aware of food quality concepts such as standards and procedures for ensuring food safety, as well as guidelines for ensuring customer satisfaction. Moreover, respondents recognise prerequisite programmes as practices and operating conditions, control protocols, and standards prevention that the organisation must enforce. Thus, it can be concluded that workers

have adequate awareness of food safety principles and prerequisite programmes. The understanding and awareness of key food quality principles can lead workers to safety compliance.

To protect consumers' health and safety, effective food quality principles are needed. They are also important for food processing plants to ensure the protection and quality of their products. Chambers (2020) indicates in the literature review that achieving product quality during the production or manufacturing stage should always be of importance because consumers expect protection from hazards that occur in the food chain. Thus, having adequate food quality principles are mandatory.

5.3.2 A Determination of the Quality of the Products if the prerequisite programmes are not managed properly.

According to the outcomes of this research, respondents believe that if prerequisite initiatives are not adequately controlled, product quality would suffer, resulting in consumer dissatisfaction and unsafe goods for consumption. The company would have to recall products or have their products cause illness. Moreover, the respondents identify chemical, physical, allergenic, foreign objects, and microbiological pollutants as potential contaminants if the prerequisite initiatives are not properly controlled. Failure to implement prerequisite programmes can have an enormous negative health effect on food quality and safety. Many of the food related outbreaks are not as a result of CCPs, but are caused by a failure of one or more PRPs. Robinson (2016) highlights in the literature review that the failure to manage prerequisite programmes has dire effects on the quality and safety of the product.

5.3.3 A Determination to ensuring that prerequisite programmes are managed properly

According to the outcome of this research, respondents believe that everyone in the company is responsible for controlling or handling prerequisite programmes. Also, some respondents believe that top management and the quality department are in charge of overseeing and monitoring prerequisite programmes. People involved in ensuring prerequisite systems include supervisors, food safety team leaders, department staff, and

qualified professionals. Sanson (2018) agrees with the respondents on the literature review that the responsibility of managing prerequisite programmes starts from top management to the lowest level of the organisation.

5.3.4 A determination on prerequisite programmes management

The study shows us that respondents perceive prerequisite programme management procedures as operating conditions monitoring, a hazard prevention programme, and food safety enforcement. Besides that, respondents agree that to effectively handle prerequisite programmes in a food manufacturing process, process management and monitoring should always be in place. There should be a general process that explains how the programme will be run and what the goals are. These include each task step by step completion procedure, as well as how supervision will be carried out and any disciplinary steps that need to be taken. The prerequisite programmes should also be checked during the development phase. Frequent audits are essential to ensure successful prerequisite management in the food manufacturing process, as is personnel training. The improvement in personnel training is a critical factor in handling prerequisite programmes in the food processing industry (Culler, 2015).

5.3.5 A Determination of the impact of managing the prerequisite programmes in a food processing plant.

As the study illustrated, respondents believe that if the prerequisite programmes are not properly handled, the product would be of low quality and polluted. Further to that, respondents argue that failing to handle prerequisite programmes would result in a tarnished brand image, as well as a loss of consumers and revenue. Food-borne illness outbreaks can have a devastating financial effect on food processing businesses and corporations. Khanya, Bisholo, Ghuman and Haffejee (2018) state in the literature review that globally, one in every ten people fall ill after contaminated food consumption, with Africa carrying the highest-burden, Southeast Asia is the next continent with this challenge, and Europe carries the lowest food-borne diseases burden as per reports.

5.5 Recommendations

The following recommendations are made based on the above findings and interpretation.

- The senior leadership of the organisation should ensure that prerequisite programmes are effectively implemented, and employees adhere to them to avoid any financial loss, bad brand reputation, or loss of customers due to poor quality products.
- The site management should reinforce the prerequisite programme knowledge of its employees by providing up-to-date workshops.
- Middle management should reinforce the control and monitoring of the process in place to effectively manage prerequisite programmes in a food manufacturing process.
- The quality assurance management must schedule regular audits to ensure the effective management of prerequisite programmes. The audits should be carried out separately by qualified personnel.
- The site management should offer regular training to employees. Thus, it will ensure the efficiency of prerequisite programmes in a food manufacturing process. The employees can be trained in-house or by an outside company.
- The departmental managers should specify the role of each employee and department in ensuring the effective implementation of prerequisite programmes.
- The senior management should be the ones to oversee all prerequisite programmes in the organisation.
- Middle management should reinforce employees' knowledge of prerequisite programmes by continually updating them with new guidelines and standards.
- Senior management needs to ensure that everybody in the organisation is committed to ensuring control and efficient management.
- Senior management must demonstrate its dedication to the creation and implementation of the food safety management system, as well as to continuously enhancing its effectiveness, by demonstrating that food safety is sponsored by the organisation's business goals, communicating the value of fulfilling the

requirements to the organisation, performing pre-requisite programme reviews, and ensuring the availability of the resources.

5.6 Limitations

The study used only one research approach namely the qualitative approach, a mixed method could yield more data and better results for generalisation purposes. A bigger sample was going to assist in furnishing us with broad feedback in this regard.

5.7 Proposed Areas for Further Research

Researchers may need to look at and measure the level of implementation of prerequisite programmes. Moreover, researchers may look into the level of satisfaction of different customers regarding the quality of products. Researchers may need to critically investigate how different departments monitor, implement, and manage prerequisite programmes.

5.8 Conclusion

This chapter summarised the findings. The findings concerning the study objectives were also provided. The chapter also provided recommendations to improve the impact of managing prerequisite programmes on the quality of products at the food processing plant. The purpose of this study was to explore the impact of managing prerequisite programmes on the quality of products at the food processing plant, to this end, five research objectives guided the study. The findings informed the study that employees are aware of prerequisite programmes, and that mismanagement of prerequisite programmes will lead to contaminated products that will cause a bad brand reputation, loss of revenue, and or customers. Regular auditing and training of personnel should be part of the control management of prerequisite programmes.

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APPENDICES

Appendix 1

Interview Guide

My name is Mlungisi Lucky Khumalo from RCL Foods processing department, I am a Master of Commerce student in Management at University of KwaZulu Natal, I am currently conducting my dissertation as one of the requirements to complete the M-Com degree.

My Details and my Supervisor's details are as follow:

-Researcher: Mlungisi Lucky Khumalo, Cell 0824740381, email: mlungie@yahoo.com

-Supervisor: DR. Bamata, cell 072 942 1363, email: hermanbamata@gmail.com

Topic: The Impact of Managing prerequisite programmes on the quality of product at food processing plant: A Case of Rainbow Chicken Farm

Management of prerequisite programmes has a direct impact on the quality of food during the processing phase, my study is about the understanding of the possible impact if the prerequisite programmes are poorly or well managed. This interview will only take a maximum of 15 minutes.

A. Demographic Questions

1. Gender:
2. Age:
3. Race:
4. Designation
5. Factory Location
6. Department:
7. Years of Experience:

B. Management of Prerequisite Programmes

a) To determine company's key food quality principles at a selected food processing plant

8. What is your understanding of food quality principles?
9. What is your understanding of prerequisite programme?

b) To determine the quality of the products if the prerequisite programmes are not managed properly at selected food processing plant.

10. What will be the quality of product if the prerequisite programmes are not properly managed?
11. What are possible contaminants if prerequisite programmes are not properly managed?

c) To understand as to who is responsible to ensure that prerequisite programmes are managed properly at food processing plant.

12. Whose responsibility is it to control or manage prerequisite programmes?

d) To determine as to how prerequisite programmes should be managed at a food processing plant.

13. What is your understanding of prerequisite programmes management procedure?
14. How should prerequisite programmes be managed in a food manufacturing process?

e) To determine the impact of managing the prerequisite programmes in a food processing plant.

15. What will happen to the product if the prerequisite programmes are not managed properly?

16. What will be the impact to the business if the quality of the product produced is compromised due to failure to manage prerequisite programmes?

Thank you for participating in this research.

Appendix 2

INFORMED CONSENT

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

INFORMED CONSENT RESOURCE

Information Sheet and Consent to Participate in Research

Date:

Greeting: Dear RCL Foods Employee

My name is Mlungisi Lucky Khumalo from RCL Foods processing department, I am a Master of Commerce student in Management at the University of KwaZulu Natal, I am currently conducting my dissertation as one of the requirements to complete the M-Com Degree.

My Details and my Supervisor's details are as follow:

Researcher: Mlungisi Lucky Khumalo, Cell 0824740381, email: mlungie@yahoo.com

Supervisor: DR. Bamata, cell 072 942 1363, email: hermanbamata@gmail.com

You are being invited to consider participating in a study that involves research on

The impact of managing pre-requisite programs on the quality of product at a food processing plant: a case of Rainbow Chicken Limited. The aim and purpose of this research is to unpack the small contributing factors that have high impact in terms of compromising food safety and to gain the insight in terms how much people cross-functionally understand food safety and its impact to its consumers. The study is expected to enroll only 25 employees from different functions at P2 processing site. The duration of your participation if you choose to enroll and remain in the study is expected to be 20 minutes. The study is self-funded.

There are no risks associated with study, we hope that the study will create better understanding of the importance of prerequisite programmes in a food manufacturing process and their contribution to food safety. There is no compensation associated with the study and no medical intervention expected. This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee. In the event of any problems or concerns/questions you may contact the researcher at (0824740381) or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Participation in this research is voluntary and the participants may withdraw participation at any point, and in the event of refusal/withdrawal of participation the participants will not incur penalty or loss of treatment or other benefit to which they are normally entitled. There will be no consequences to the participant for withdrawal from the study and the procedure/s required from the participants for orderly withdrawal. No costs will be incurred by participants because of participation in the study.

Participants' confidentiality will be protected none of the personal/clinical information will be shared and information will only be used for the purposes of this study.

CONSENT

I have been informed by Mlungisi Lucky Khumalo about the study entitled The impact of managing pre-requisite programs on the quality of product at a food processing plant: a case of Rainbow Chicken Limited

I understand the purpose and procedures of the study.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at (0824740381).

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to be interviewed by the researcher.

Signature of Participant

Date

Signature of Witness
(Where applicable)

Date

Signature of Translator
(Where applicable)

Date

Appendix 3

Gatekeepers Consent from RCL FOODS

Gatekeeper's Consent

I Simon Dladla in my capacity as Manufacturing Executive hereby give permission to
Student name: M.L. Khumalo (Student No. 220019853) to conduct research in my organization.

The student MAY/MAY NOT (delete whichever is not applicable) use the name of the organisation in the dissertation.

Signature of Manager/Owner/Gatekeeper: 

Company Stamp:

Date: 10/11/2020

RCL FOODS CONSUMER (PTY) LTD
REG No. 1960/002377/07
SIX THE BOULEVARD
WESTWAY OFFICE PARK
P.O. BOX 2734
WESTWAY OFFICE PARK 3635

Appendix 4

Ethical Clearance



22 February 2022

Mlungisi Lucky Khumalo (220019853)
School Of Man Info Tech & Gov
Pietermaritzburg Campus

Dear ML Khumalo,

Protocol reference number: HSSREC/00002544/2021

Project title: The impact of managing pre-requisite programs on the quality of product at the food processing plant: a case of Rainbow Chicken Limited

Amended title: The impact of managing pre-requisite programs on the quality of product at a food processing plant: The case of Rainbow Chicken Limited

Approval Notification – Amendment Application

This letter serves to notify you that your application and request for an amendment received on 10 February 2022 has now been approved as follows:

- Change in title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

Best wishes for the successful completion of your research protocol.

Yours faithfully



.....
Professor Dipane Hlalele (Chair)

/dd