



Exploring the critical success factors for implementing an operational improvement system in the food production sector in rural South Africa.

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DECLARATION

I, Landi van der Merwe, student number 26787350, declare that this study: "Exploring the critical success factors for implementing an operational improvement system in the food production sector in rural South Africa", is my own work apart from where sources are acknowledged.

This study is for the degree Master of Business Administration, submitted to the Faculty of Economic and Management Sciences, North-West University. It has not been previously submitted by me or any other person for a degree at any alternative institute.



Landi van der Merwe

Date: November 2024

DEDICATION

This study is dedicated to my two beautiful daughters, Hannah and Elé. May you know that you can achieve anything you put your mind to. I love you.

PREFACE

This study follows the structural requirements suggested by North-West University (NWU) for a mini-dissertation format. The research comprises an introduction, literature review, empirical analysis, and final chapter detailing conclusions and recommendations.

The dissertation is structured as follows:

Chapter 1: This chapter introduces the study, presenting the research background, problem statement, and research objectives. It also outlines the study's methodology, research approach and design.

Chapter 2: The literature review explores various continuous improvement systems, focusing on critical success factors essential for implementing these systems in rural SouthAfrica's food production sector.

Chapter 3: This section details the research methodology, covering the study design, data collection process, and ethical considerations involved in conducting empirical research within the VKB Agri Processors Group.

Chapter 4: This chapter presents the results and findings, analysing qualitative data to identify key themes and factors influencing the success of the continuous improvement system in the case study.

Chapter 5: The concluding chapter summarises findings, provides practical recommendations for continuous improvement system implementation, and suggests areas for further research. It also discusses study limitations and assesses the fulfilment of research objectives.

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ABSTRACT

This study investigates the critical success factors for implementing a continuous improvement system in the food production sector within rural South Africa, focusing on the VKB Agri Processors Group. Given the challenges and unique operational contexts of rural food production, the study aims to identify key enablers and barriers that influence the success of Continuous Improvement Systems in this setting.

The literature review outlines the foundations of continuous improvement, examining methodologies such as Lean, Six Sigma, and the 20 Keys, and evaluates how these systems enhance productivity, employee engagement, and operational sustainability. Special attention is given to the contextual challenges and modifications needed to adapt Continuous Improvement System principles for rural environments.

A qualitative research approach was adopted, utilising semi-structured interviews with middle management and supervisory staff across two diverse VKB operational facilities. Data was collected and analysed using thematic analysis through the Atlas.ti software, identifying recurring themes relevant to successful Continuous Improvement System implementation. The analysis highlighted factors such as leadership commitment, employee engagement, and training as essential for fostering a culture of continuous improvement, alongside the need for tailored strategies in resource-constrained rural environments.

The findings reveal that strong leadership, consistent employee training, and simplified process management are critical for achieving sustainable Continuous Improvement System implementation. The study concludes with practical recommendations for VKB and similar organisations aiming to leverage Continuous Improvement Systems within rural food production, emphasising the importance of a supportive leadership culture, employee empowerment, and ongoing adaptation of Continuous Improvement System frameworks to address rural challenges.

Keywords: Continuous Improvement System, critical success factors, rural food production, employee engagement, Lean, Six Sigma, 20 Keys

LIST OF ABBREVIATIONS

CI	Continuous Improvement
CIS	Continuous Improvement System
CSF	Critical Success Factors
CTQ	Critical To Quality
DMAIC	Define Measure Analyse Improve Control
GFC	Grain Field Chickens
JIT	Just In Time
KPI	Key Performance Indicator
NWU	North-West University
PDCA	Plan Do Check Act
SOP	Standard Operating Procedure
TPS	Toyota Production System
TQM	Total Quality Management
VKB	Vrystaat Koöperasie Beperk

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CHAPTER 1 INTRODUCTION TO THE RESEARCH PROBLEM AND METHODOLOGY

1.1 Introduction

In the field of production and manufacturing, the idea of continuous improvement has emerged as a pillar to improve procedures, goods, and services throughout time. Continuous improvement is a management idea that originated in Japan and has now spread throughout many different industries, including food manufacturing. In the broader context of food production, guaranteeing quality, safety, and efficiency is crucial for the general population's well-being and economic viability. Rural South Africa, renowned for its abundant agricultural resources, is essential to South Africa's food production system. However, just as in many other places worldwide, the rural food production system faces difficulties that may be resolved with the help of a robust continuous improvement system.

The increasing worldwide need for food and the difficulties caused by climate change, resource shortages, and changing consumer preferences make this subject relevant. Although there is a wealth of literature on continuous improvement in many different fields, there seems to be a theoretical and practical vacuum in our knowledge of the essential ingredients for its application in rural South Africa's food production system. By closing this gap, stakeholders in the area may gain insightful information that could improve the productivity, quality, and sustainability of regional food production.

The main goal of this study is to identify and evaluate the crucial success criteria for implementing a continuous improvement system in rural South Africa's food production sector.

The study is structured to include an introduction and background to the study, a detailed literature review, a problem statement and research objectives and questions, the study's scope that includes the study's field, the industry under investigation and geographical demarcation. The next part of the study covers the research design and methodology followed, including a secondary literature review and empirical study, which includes the research paradigm, research approach, methodological choice, research strategy, time horizon, study population and sampling, designing the measuring instrument, collection of data, statistical analysis and lastly trustworthiness. The next section of the study includes ethical considerations, the contribution and expected limitations of the study, the layout, and the planned timeframe. The final section of the study includes results and findings based on three levels of analysis, and the study ends with

a chapter that focuses on conclusions from the literature study and the empirical study, with recommendations and possible implementation actions.

1.2 Background

Manufacturing has several different obstacles that are unavoidable. A structured approach incorporating views and contributions from management and people at different levels of the hierarchy is required to address these difficulties. This study focuses on VKB, a well-known agricultural organisation. It explores the several industries (the term used in the company for the different production facilities) that make up its Agri Processors section. These facilities include the high-capacity chicken abattoir called Grain Field Chickens, the maize milling facility VKB Milling Mokopane, the two feed mills QPro Vrede and QPro Bethlehem, and, for a different perspective, the VKB Human Capital division.

VKB used the 20 Keys Continuous Improvement system to systematically address issues and support its strategic pillars—engaged workers, optimisation and efficiency, customer happiness, capital and cash flow accessibility, and sustainable profitability. The adoption of this system happened in stages: the first facility to use it was Grain Field Chickens in 2015, then the other sectors in 2019, and finally, the Human Capital department in 2021. However, the speed and effectiveness of its implementation have differed across different industries.

Given this context, this study's primary goals are to identify the crucial success criteria essential for the successful deployment and maintenance of a continuous improvement system and to identify any potential obstacles that can obstruct its seamless integration and long-term viability. This research hopes to fill in the knowledge gaps in the existing literature and provide practical advice for businesses looking to maximise the potential of continuous improvement systems.

1.3 Problem Statement

Despite the widely acknowledged value of continuous improvement systems in increasing organisational performance and competitiveness, there is still a sizable knowledge vacuum on the precise elements that lead to effective implementation. Due to a lack of understanding of the crucial success elements that support the adoption and integration of such systems, many organisations struggle to make sustainable gains. Due to this knowledge gap, leaders, managers, and practitioners struggle to successfully plan, implement, and sustain continuous improvement programmes. To provide businesses with useful information and direct the effective implementation and management of a continuous improvement system, it is necessary to

examine and identify these critical success elements, particularly in the agricultural sphere in a rural setting.

Therefore, the problem addressed is the failure of the continuous improvement culture due to its inefficient implementation.

1.4 Research Question

What are the most important success criteria that significantly impact implementing a continuous improvement system within firms, and how do these characteristics help create a long-term framework for improving productivity and efficiency?

What factors strengthen or hinder the successful sustainability of a continuous improvement system in a manufacturing sector?

1.5 Research Objectives

1.5.1 Primary Objectives and Objectives of the Research

In line with the problem statement, the primary objective of this study is to explore the critical success factors for implementing a continuous improvement system in the food production sector in rural South Africa.

1.5.2 Secondary Objectives

Secondary Objective 1: To investigate the enablers and barriers to successfully implementing continuous improvement systems through a literature study.

Secondary Objective 2: To practically investigate these enablers and barriers through an empirical study.

Secondary Objective 3: To recommend ways to improve the success of the implementation of continuous improvement systems.

1.6 Scope of the Study/Delimitations

1.6.1 Field of study

The field of this study is in the operational management sector.

1.6.2 Sector under investigation

The businesses included in this investigation will be two of the different production facilities of the VKB Agri Processors group. All of these production facilities manufacture food for either human consumption or food for animals. They consist of a high-throughput chicken abattoir (Grain Field Chickens), a maize mill (VKB Milling), two feed mills (QPro Vrede and QPro Bethlehem), and also the Human Capital department of the VKB Group. These production facilities and departments have implemented a structured continuous improvement system over the past 8 years. The two production facilities used for this study were Grain Field Chickens and VKB Milling Mokopane.

1.6.3 Geographical Demarcation

VKB has a footprint in the Free State, as well as Limpopo. The production facilities that will be part of the study will be from the eastern Free State, Grain Field Chickens, and VKB Milling Mokopane, which is situated in Mokopane, Limpopo.

At the sites mentioned above, 20 Keys have been implemented as a continuous improvement system. The details of the 20 Keys methodology are described in paragraph 2.2.3.3, and how it was implemented is described in paragraph 3.1.2.6.

1.7 Limitations of the Study

This study has limitations, even though it will add to the literature about continuous improvement. Future studies will have opportunities due to these restrictions.

Its principal limitations will be the geographical delineation and the non-probability sample method utilised in this study. This kind of sampling has the advantages of being straightforward, convenient, and affordable for the investigation.

Additionally, the study may not accurately depict South Africa as a whole because it will primarily focus on food production in South Africa, notably in the Rural areas.

1.8 Layout of the Study

The layout of the study will be linear, as the following figure illustrates:

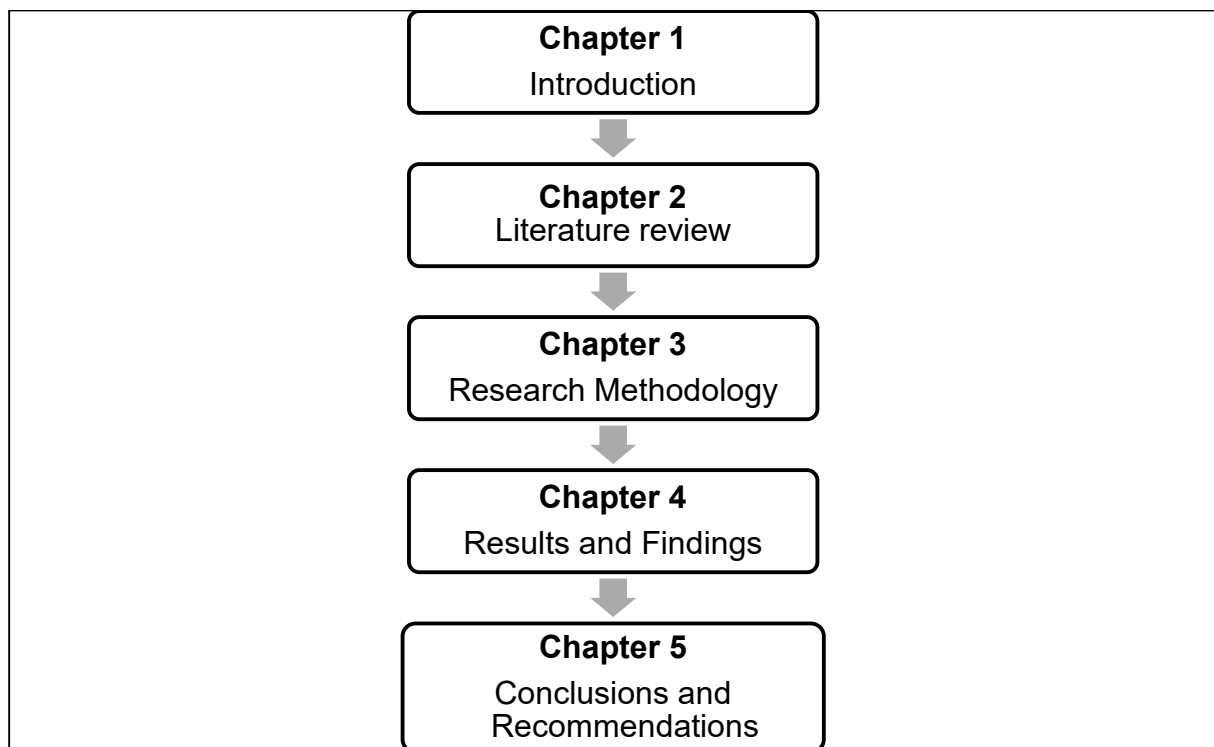


Figure 1: Layout of Study (Researcher's own compilation)

1.9 Timeframe

A time frame for the study and research plan aims to hand in a complete study by the end of November 2024.

1.10 Expected Contribution

A qualitative study can significantly add to our knowledge of complex phenomena, particularly in fields that require a thorough investigation of human experiences, perceptions, and motives. A qualitative method can offer valuable insights into the complex interaction between continuous improvement and the various critical factors influencing the successful implementation of a continuous improvement system. Our knowledge of this link would be advanced by the theoretical contribution of such a study, particularly in assessing the effect of different critical success factors components on the success of a continuous improvement system. The research can find patterns,

difficulties, and possibilities by diving deeply into the lived experiences of persons engaged that might not be seen using only quantitative methods.

Practically speaking, the result from the study can be applied to analyse the focus needed for the specific site to enhance its journey for further implementing a continuous improvement system, and if it is observed that the progress made is slow, the study can be used to troubleshoot and advise on where support is needed.

Chapter two comprises a literature study that includes topics of continuous improvement, key principles, details on food production in Rural South Africa and critical success factors for implementing a continuous improvement system.

CHAPTER 2 LITERATURE REVIEW

In the previous chapter, the study was conceptualised. In this chapter, the first secondary objective will be addressed. The primary objective of this study is to explore the critical success factors for implementing a continuous improvement system in the food production sector in rural South Africa. The secondary objectives include investigating the enablers and barriers to successfully implementing continuous improvement systems through a literature study, practically investigating these enablers and barriers through an empirical study and recommending ways to improve the success of implementing continuous improvement systems.

The literature study covers the following topics: food production in rural South Africa, continuous improvement systems, critical success factors for continuous improvement, strategies for overcoming implementation challenges and ending with a focus on the impact of continuous improvement.

2.1 Agricultural Industry in Rural South Africa

2.1.1 Food Production

The agricultural traditions of South Africa's rural communities are fundamental to the country's food production landscape, as many depend on small-scale and subsistence farming. Homestead gardening, livestock rearing, and small-scale agricultural cultivation are among the community and subsistence traditions historically shaping food production in these locations. Producing staple foods—like maize, beans, and vegetables—necessary for local markets and home use has attracted much attention (Trefry *et al.*, 2014:557).

Recently, there has been an increasing acknowledgement of the potential that small-scale farmers in rural South Africa have to offer to the country's food security. This is especially true given large-scale commercial agriculture's obstacles regarding land reform, climate change, and market accessibility. Homestead gardens are vital to ensuring household food security, particularly in the face of economic instability and unemployment (Hendriks, 2014:3).

However, despite these initiatives, several issues, such as poor infrastructure, restricted access to resources, and a shifting socioeconomic environment, continue restricting food production in rural South Africa. The viability of rural food production systems is further challenged by the reduction in young people's interest in farming brought about by the transition from traditional agriculture to a more sophisticated economy (Pereira *et al.*, 2014:6).

2.1.2 Challenges in Rural Areas

Many issues significantly impact food production in South Africa's rural areas. Among these difficulties are:

Resource Constraints: Lack of access to necessary resources, including water, high-quality seeds, fertiliser, and farming equipment, is a common problem for rural farmers. The issue worsens because many places lack irrigation infrastructure, leaving farmers vulnerable to erratic rainfall patterns. Furthermore, due to financial limitations, farmers cannot invest in cutting-edge agricultural technologies that could raise productivity (Hendriks, 2014:11).

Infrastructure Deficiencies: Inadequate roads, restricted electrical availability, and inadequate storage facilities are examples of poor infrastructure that makes it difficult for rural farmers to get their produce to markets. In addition to raising post-harvest losses, this lack of infrastructure restricts farmers' access to lucrative markets, which lowers their potential revenue (Bjornlund *et al.*, 2020:1).

Socioeconomic Barriers: Many rural towns experience high poverty rates, unemployment, and reliance on social subsidies. Food insecurity results from these socioeconomic circumstances when households find it difficult to produce or buy enough food. Furthermore, the sustainability of traditional farming practices is threatened by the younger generation's reduction in agricultural activities, which is affected by the desire for urban work and the attraction of non-agricultural lifestyles (Bjornlund *et al.*, 2020:23).

Cultural and Educational Barriers: Youth are becoming less interested in agriculture as a cultural pursuit and are more interested in other forms of education and employment. The agricultural labour force is declining due to this change in cultural norms, and old farming methods and knowledge may disappear altogether. Due to educational inequality, agricultural productivity is further restricted because many rural farmers lack the technical knowledge and skills necessary to implement contemporary farming techniques (Bjornlund *et al.*, 2020:25).

Environmental Challenges: Rural communities are particularly susceptible to environmental problems, including deforestation, deteriorating soil, and the effects of climate change. These environmental conditions decrease the amount of arable land accessible for farming, raising the dangers involved in agricultural production. In particular, climate variability has increased the frequency of droughts and caused irregular rainfall patterns, endangering the food security of these areas even more (Pereira *et al.*, 2014:4).

2.2 Introduction to Continuous Improvement Systems

The goal of continuous improvement (CI), as both a management concept and a technique, is to improve organisational performance over time by making minor, gradual adjustments to procedures, goods, or services. This strategy is based on the idea that even minor adjustments can significantly impact an organisation's overall effectiveness and efficiency (Singh & Singh, 2015:75).

2.2.1 Historical background and evolution

The early 20th century saw the emergence of continuous improvement, greatly aided by the pioneers of quality management such as Walter Shewhart, W. Edwards Deming, and Joseph Juran (Haddas *et al.*, 2014:3). Shewhart established the notion of statistical process control, which emphasised the necessity of ongoing production process monitoring and improvement and set the foundation for the continuous improvement (CI) philosophy (Haddas *et al.*, 2014:3). These concepts were expanded upon by Deming, who championed a systematic approach to quality improvement that was fundamental to Japanese industry after World War II. This was especially true of the Toyota Production System (TPS), regarded as the pinnacle of CI techniques (Haddas *et al.*, 2014:4).

2.2.2 Key Principles

Incremental Improvements: Continuous improvement prioritises minor, ongoing enhancements over significant, abrupt changes. This strategy lowers risk and makes it possible to make consistent, long-term development (Haddas *et al.*, 2014:4). **Employee Involvement:** CI strongly emphasises the value of including workers at all levels in the improvement process. A bottom-up technique guarantees that individuals closest to the task actively recognise issues and propose fixes (Singh & Singh, 2015:81).

Process Improvement: With continuous improvement, the emphasis is shifted from only quality-checking the finished product to enhancing the procedures that result in it. This process-oriented methodology contributes to waste reduction, error minimisation, and increased overall efficiency (Haddas *et al.*, 2014:36).

Use of data and feedback: Continuous feedback loops and data-driven decision-making are essential to effective CI. The Plan-Do-Check-Act (PDCA) cycle, Six Sigma, and Lean techniques are among the tools frequently employed to steer the process of improvement (Singh & Singh, 2015:83).

2.2.3 Modern Continuous Improvement Techniques

These days, CI is applied via various tools and approaches that have developed over time. Among the most well-known are Lean Manufacturing: Derived from the Toyota Production System, Lean emphasises reducing waste and enhancing process flow. Value stream mapping, Kaizen (continuous improvement), and Just-In-Time (JIT) production are some of the methods that define it (Haddas *et al.*, 2014:2). Six Sigma: Developed by Motorola, Six Sigma aims for near-perfect quality by reducing process variance and defects through statistical approaches. A key element of Six Sigma TM is the DMAIC (Define, Measure, Analyse, Improve, Control) structure (Singh & Singh, 2015:108). Total Quality Management (TQM): Total Quality Management (TQM) is a comprehensive management strategy that unifies all organisational functions to satisfy customer expectations and attain ongoing improvement across the board for the firm (Lahidji & Tucker, 2016:160).

The 20 Keys methodology integrates well with Lean and Six Sigma principles, enhancing both frameworks by providing a holistic and structured approach to continuous improvement (Erceg *et al.*, 2018:5). Developed by Iwao Kobayashi, the 20 Keys methodology focuses on improving organisational efficiency through systematic enhancements across 20 interconnected areas, from cleaning and organising (Key 1) to leading technology (Key 20) (Kobayashi, 2018:15).

Lean and Six Sigma both focus on waste reduction, process improvement, and efficiency gains. Lean emphasises eliminating non-value-adding activities, while Six Sigma focuses on reducing variability and defects. The 20 Keys methodology complements these by offering a broader, more comprehensive system that incorporates elements from both Lean and Six Sigma but applies them across all organisational areas, ensuring that improvements are balanced and collaborative (Erceg *et al.*, 2018:8). For example, Key 13 focuses on waste elimination, aligning closely with Lean's focus on reducing unnecessary activities, and Key 6, which emphasises manufacturing value analysis, ties into Six Sigma's emphasis on process optimisation and defect reduction (Kobayashi, 2018:20).

Moreover, the 20 Keys methodology emphasises a balanced, incremental approach to improvement that aligns with Lean's focus on continuous incremental improvement (Kaizen) and Six Sigma's structured, data-driven methodology. Keys such as Key 3 (improvement team activities) promote cross-functional collaboration and employee involvement, which are crucial in Lean and Six Sigma initiatives (Erceg *et al.*, 2018:7). Additionally, the system's focus on benchmarking and continuous performance evaluation provides a framework for ongoing assessment and alignment with Six Sigma's DMAIC cycle.

In essence, the 20 Keys methodology serves as an integrated approach that enhances the scope and effectiveness of Lean and Six Sigma by ensuring that improvements are implemented across all areas of the organisation, fostering a culture of sustained continuous improvement and operational excellence.

For further context, the three methodologies are described below, focusing on pros, cons, critical success factors and challenges. There is an overlap between these subheadings, and the methodologies are summarised at the end of the section.

2.2.3.1 Lean Methodology

Positive Attributes

Focus on waste elimination: The main goal of lean methodology is to reduce waste, or non-value-adding operations, to improve operational efficiency and cut costs (Alhuraish *et al.*, 2017:327).

Improved customer satisfaction: Lean matches production with customer value to guarantee that goods and services meet consumer expectations (Wahab *et al.*, 2013:1293).

Flexibility and adaptability: Lean may be combined with other management approaches, such as Six Sigma or Agile, and is flexible across industries (Kumar *et al.*, 2022:4).

Employee empowerment: Lean strongly emphasises involving staff members in process enhancements and problem-solving to promote a continuous improvement culture (Alhuraish *et al.*, 2017:328).

Negative Attributes

Overemphasis on cost-cutting: Lean methodology can occasionally result in an overemphasis on cost-cutting, overshadowing goals like long-term planning and innovation (Kumar *et al.*, 2022:2).

Implementation challenges: Lean transformation calls for a cultural shift, which can be difficult, particularly in big or resistive establishments (Alhuraish *et al.*, 2017:327).

Risk of narrow focus: Lean may overlook aspects like customer experience or product innovation by concentrating primarily on waste (Alhuraish *et al.*, 2017:327).

Critical Success Factors

Management support and commitment: Strong leadership is required to drive cultural change and ensure sustained improvements (Alhuraish *et al.*, 2017:328).

Employee engagement: Workers must be given the authority and skills to recognise inefficiencies and suggest fixes (Alhuraish *et al.*, 2017:328).

Continuous improvement mindset (Kaizen): Success depends on fostering a culture where continuous improvement becomes part of daily operations (Alhuraish *et al.*, 2017:328).

Effective communication: Regular progress sharing and alignment of Lean initiatives with company goals are ensured via clear communication (Alhuraish *et al.*, 2017:328).

Customer focus: The primary objective of lean methodology is to provide value for customers by prioritising their requirements in all aspects of improvement (Alhuraish *et al.*, 2017:328).

Challenges

Cultural resistance: Employee resistance to change might make it difficult to shift an organisation's culture toward lean (Mostafa *et al.*, 2013:5).

Sustainability of gains: Without long-term leadership commitment, it may be challenging to maintain the quick successes that come with lean (Alhuraish *et al.*, 2017:333).

Overemphasis on efficiency: The lean methodology's emphasis on waste can occasionally result in an overemphasis on cost-cutting at the price of customer pleasure or innovation (Kumar *et al.*, 2022:5).

2.2.3.2 Six Sigma

Positive Attributes

Data-driven decision-making: Six Sigma drives process improvements with extreme precision using statistical techniques and thorough data analysis (Tjahjono *et al.*, 2010:223).

Reduced process variation: Six Sigma guarantees better product quality consistency by lowering variability and defects (Tjahjono *et al.*, 2010:228).

Measurable financial benefits: Six Sigma projects appeal to executives because they frequently produce measurable financial improvements (Tjahjono *et al.*, 2010:216).

Comprehensive training (Belt system): The methodical certification process guarantees team members exceptional process improvement skills (Klefsjö *et al.*, 2001:33).

Negative Attributes

Time-consuming: Six Sigma implementation may be sluggish due to its meticulous data analysis and statistical rigour (Antony *et al.*, 2019:5).

High-cost implementation: Six Sigma is costly, particularly for smaller businesses, due to its extensive training program and data collection tools (Antony *et al.*, 2019:4)

Over-reliance on data: When data is the primary focus, qualitative aspects that are more difficult to measure but crucial for process improvement may be overlooked (Antony *et al.*, 2019:7).

Critical Success Factors

Data-driven decision-making: Defect root cause identification depends on precise data collection and analysis (Ismyrlis & Moschidis, 2013:111).

Leadership involvement: To direct and finance Six Sigma programs, there must be strong leadership and evident support from high management (Tjahjono *et al.*, 2010:225).

Structured training: Project managers are guaranteed to possess the requisite knowledge thanks to specialised training (Ismyrlis & Moschidis, 2013:113).

Clear financial goals: Six Sigma initiatives are guaranteed to align with organisational objectives when quantifiable financial advantages are defined from the start (Tjahjono *et al.*, 2010:222).

Focus on customer needs: To ensure direct customer benefit, projects are created with the customer's critical-to-quality (CTQ) requirements in mind (Klefsjö *et al.*, 2001:3).

Challenges

Complexity and cost: It might be challenging to allocate the substantial time and funds needed for Six Sigma programs, which include training and data collection (Sony *et al.*, 2019:13).

Over-reliance on statistical methods: When data analysis is the primary focus, qualitative elements like staff morale may be underestimated (Antony *et al.*, 2019:16).

Time-consuming processes: If not handled effectively, the DMAIC (Define, Measure, Analyse, Improve, Control) technique may cause the implementation to be delayed (Sony *et al.*, 2019:27).

2.2.3.3 20 Keys

Positive Attributes

Holistic approach: The 20 Keys ensure thorough organisational improvements by addressing various improvement areas (Kobayashi, 2018:6).

Flexibility: The approach can be modified to fit various business sizes and sectors (Erceg *et al.*, 2018:2).

Focus on employee development: Encourages empowerment and skill development through employee-driven continuous improvement (Erceg *et al.*, 2018:28).

Systematic improvement: A clear road map for steady, incremental advancement is provided by the organised 20-step process (Kobayashi, 2018:6).

Negative Attributes

Complexity of implementation: Coordinating and allocating substantial resources is necessary to manage improvements across 20 areas, which can be rather demanding (Erceg *et al.*, 2018:13).

General focus: Compared to Lean or Six Sigma, 20 Keys may not have as deep of specialisation, although covering many topics (Dabic *et al.*, 2016:4).

Long-term commitment required: Since 20 Keys is a long-term program, there's a chance that results won't show up right away, which can cause dissatisfaction (Kobayashi, 2018:5).

Critical Success Factors

Holistic integration: The key to success is ensuring advancements in different operational domains align with the overarching business plan (Kobayashi, 2018:8).

Employee development: Employee participation and training are essential, especially in areas like organising and cleaning (Key 1) and participating in improvement team activities (Key 3) (Kobayashi, 2018:7).

Cross-functional collaboration: The success of 20 Keys programs depends on departmental collaboration (Kobayashi, 2018:10).

Focus on gradual, systematic change: The 20 Keys' gradual approach guarantees that improvements are long-term, sustainable and controlled (Kobayashi, 2018:6).

Challenges

The complexity of implementation: It can be daunting and resource-intensive to implement 20 distinct improvement areas at once (Erceg *et al.*, 2018:13).

Long-term commitment required: Because the process may not always yield evident short-term advantages, effort is required (Kobayashi, 2018:5).

Data and performance monitoring: Thorough data collection and reporting are necessary to track development in all 20 categories (Kobayashi, 2018:5).

At the different production facilities that form part of this study, 20 Keys are implemented using a staggered approach. The implementation is kicked off with external benchmarking, which an outside consultation firm does. During the onsite visit, a detailed plant walk is conducted, and each head of the department is interviewed and asked to present the goals or measurements that the department uses. After this two-day session, feedback is given to the management team in the form of a Radar Chart, as illustrated in the below figure, scoring the site between 1 and 5 for each Key. The score is determined using a Checksheet for each Key that indicates what systems or steps are in place to support the specific Key.

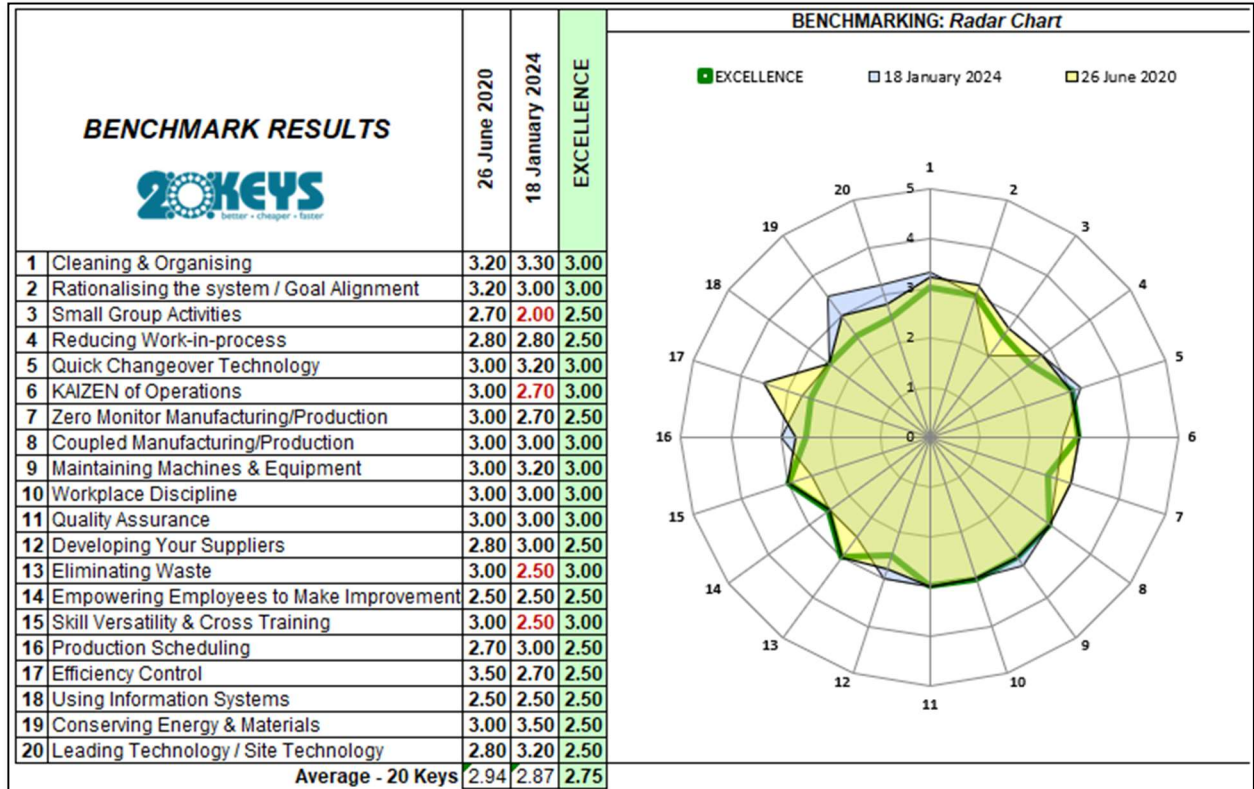


Figure 2: Example of a 20 Keys Radar Chart (Researcher's own compilation)

Accompanying this Radar chart are proposed kick-off actions per Key that can be used when the company wants to prioritise a specific Key.

The production facility is strongly suggested to start with the foundational keys: Key 1: Cleaning and Organising, Key 2: Goal Alignment, Key 3: Small Group Activities and Key 10: Workplace Discipline.

In the figure below, a rudimentary Gantt chart illustrates the proposed staggered approach.

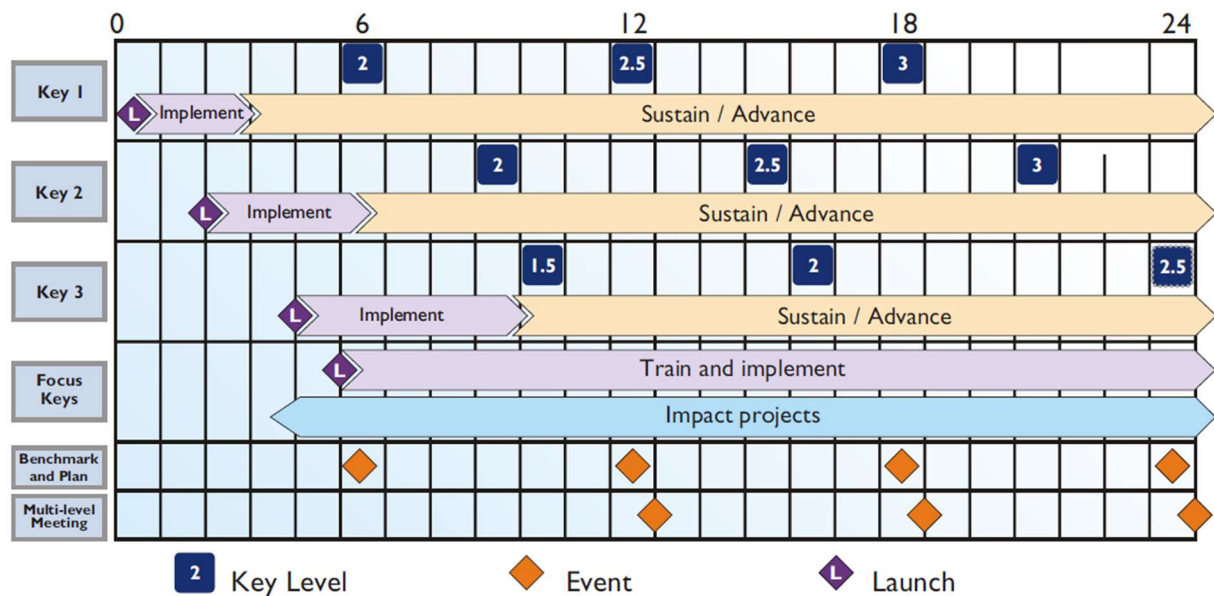


Figure 3: Illustration of a staggered rollout (Researcher's own compilation)

The actions are driven by the onsite facilitator, usually an industrial engineer. Key 1 is measured monthly using a detailed plant walk and feedback to staff with photos of issues to be addressed. This is usually accompanied by job cards the onsite maintenance planner makes.

To prevent frustration, the following prompts, seen in the table below, have been developed to show what foundations must be in place before a specific Key is kicked off.

Table 1: Prompts for each Key (Researcher's own compilation)

	What must be in place			
Key 1	Health and Safety Officer	Maintenance Team	Buy In from Management	Key Leader
Key 2	Defined organogram	Update Job Descriptions	Relevant KPIs	Key Leader
Key 3	Online system	Morning meeting	Key Leader	
Key 4	Available Stock Sheet	Cycle stock counts in place	Key Leader	
Key 5	Asset register	Process Flow Diagram	Key Leader	
Key 6	Access to Visio	Key Leader		
Key 7	Asset register	Key Leader	Ability to implement improvements	
Key 8	All MBUS score at 8	All stores identified and combine	Key 10 on a level 3	
Key 9	Maintenance Manager	Planner	OnKey	SOPs
Key 10	HR Manager	Clock system	Report tool used	
Key 11	Quality Manager	SOPs	Access to Microsoft Forms/SharePoint list	
Key 12	Procurement Champion	Item Specification		
Key 13	Process Flow Diagram	Manload	Standard Times	Key Leader
Key 14	Ability to implement Kaizen corner			
Key 15	SOPs	Training Champion		
Key 16	Sales Forecast	Actual Production Data	Key Champion	
Key 17	Production Data	Production Plan		
Key 18	List of Hardware and Software per user	Key Leader	Access to Power BI	
Key 19	Be able to measure resource usage	SHEQ Officer	Maintenance Department	
Key 20	Asset register	Maintenance Manager	Planner	Cost Accountant

In conclusion, Lean, Six Sigma, and 20 Keys each offer unique approaches to continuous improvement but have distinct advantages and challenges. Lean is highly effective in eliminating waste and fostering a culture of continuous improvement, making it suitable for organisations looking to improve efficiency and customer satisfaction through employee engagement. However, its focus on cost-cutting and the challenges of cultural change can pose obstacles to long-term sustainability. With its data-driven methodology, Six Sigma is ideal for those who require precision in reducing process variation and achieving measurable financial benefits. Nonetheless, it can be time-consuming and expensive, with a reliance on statistical methods that may overlook qualitative factors like employee morale. The 20 Keys method provides a comprehensive, systematic framework for improvement across various operational areas. While it promotes holistic, gradual change, the complexity of managing multiple improvement areas and the long-term commitment required can be overwhelming for some organisations. Each methodology serves a different organisational need, and the choice depends on the company's specific goals, resources, and capacity for cultural transformation.

2.3 Critical Success Factor for Continuous Improvement

The above description of each continuous improvement methodology touched on the importance of critical success factors in implementing and sustaining any continuous improvement system. As seen above, there are specific common denominators between the different methodologies. These are discussed in more detail in the section below.

2.3.1 Identification of Critical Success Factors (CSFs)

Critical Success Factors (CSFs) are the crucial tasks that must be completed successfully to meet a continuous improvement system's objectives (CIS). These elements are essential to CIS effectiveness in any organisational context, including South Africa's rural food production industry. The following CSFs are determined based on the literature studied:

Leadership commitment: Having a dedication to leadership is fundamental. The dedication of senior management to advancing efforts for continuous improvement is critical to the success of CIS. In addition to allocating resources and offering clear direction and vision, leaders must actively encourage and engage in the process (Errida & Lotfi, 2021:4).

Employee involvement and empowerment: It is essential to involve staff members in the CIS process at all levels. Workers must be empowered to point out problems, offer fixes, and take charge of making the necessary adjustments. Giving workers decision-making authority promotes creativity and a culture of constant development (Cichosz *et al.*, 2020:220).

Training and education: To successfully deploy CIS, staff must receive ongoing training and education. Employees who receive training are guaranteed to possess the abilities and know-how to contribute successfully to improvement initiatives. Additionally, it aids in ingraining continuous improvement ideas into the company's culture (Errida & Lotfi, 2021:4).

Process management and standardisation: One essential component is efficient process management, which includes standardising procedures. Standardisation aids in preserving operational consistency, which is essential for spotting deviations and potential improvement areas. To do this, process management techniques like Six Sigma and Lean are frequently applied (Cichosz *et al.*, 2020:226).

Measurement and feedback system: To track developments and assess the success of improvement projects, robust measurement and feedback systems must be implemented (Cichosz *et al.*, 2020:227). Data-driven decision-making, where performance measurements are routinely collected and analysed to inform ongoing modifications, is the foundation of continuous improvement (Errida & Lotfi, 2021:7).

Technology utilisation: It is becoming more widely acknowledged that utilising technology is essential to implement CIS successfully. Technology may help with communication, process monitoring, and data collecting, increasing the effectiveness and efficiency of the continuous improvement process (Cichosz *et al.*, 2020:216).

2.3.2 Adapting critical success factors to a rural context

To effectively handle the distinct problems and limitations of the rural setting, the identified CSFs must be modified when establishing a Continuous Improvement System in the food production sector of rural South Africa. The ensuing modifications are advised:

Leadership commitment in resource-constrained environments: Cooperative management and local community leaders are standard components of leadership in rural settings. Getting their support is essential. To maintain CIS efforts in these environments, leaders may need to be more creative in pooling their limited resources and taking advantage of outside assistance (Blanton & Harmon, 2005:2).

Tailored employee involvement: Customised engagement tactics should be a part of CIS programs because rural workers differ in their educational backgrounds and skill levels (Courtney, 2020:75). Employee involvement can be increased, for instance, by making improvement tools and processes more straightforward to fit the workers' comprehension better and by offering interactive, real-world training sessions (Errida & Lotfi, 2021:9).

Context-specific training and education: It is essential to create training programs with the local context, language, and educational levels of rural workers in mind. More effective training may come from hands-on, practical instruction emphasising regional difficulties and drawing on examples from employees' everyday lives. Furthermore, encouraging a knowledge-sharing culture within the community might support the maintenance of the training results (Courtney, 2020:7).

Simplified process management: Process management in the food production industry should prioritise fundamental efficiency and waste reduction concepts, as rural settings may not have as complicated processes as their industrial counterparts. The assortment of rural resources should be considered in standardisation attempts, and when appropriate, local expertise and input from employees should be incorporated (Cichosz *et al.*, 2020:224).

Low-cost measurement and feedback system: In rural locations with limited resources, implementing sophisticated measurement systems might not be possible. Alternatively, basic checklists, manual record-keeping, and employee feedback sessions are examples of low-cost, simple tools that can assess progress and suggest areas for improvement (Soković *et al.*, 2009:8).

Appropriate technology utilisation: Using affordable, suitable technology is crucial in rural areas. This could entail utilising basic mechanical equipment to increase efficiency or mobile data collection and communication technology (Cichosz *et al.*, 2020:214). Encouraging CIS success

can be significantly increased by using technology that is easily maintained, accessible, and appropriate for the local environment.

2.4 Strategies for overcoming implementation challenges

There are several obstacles to overcome when implementing a Continuous Improvement System (CIS) in any company, but this is particularly true in the South African rural food production sector. The literature analysis indicates that the following tactics can be used to address these obstacles successfully:

Enhancing leadership commitment and engagement: Leadership is essential for the deployment of CIS to be successful. However, a typical problem is leaders' lack of commitment, especially in small or resource-constrained contexts (Signoretti, 2020:151). To deal with this:

Creating Social Networks: For leaders, forming connections with colleagues who have effectively applied CIS can be a significant source of inspiration. Leaders can better understand the practical advantages of CIS and strengthen their commitment to the process by participating in networks where best practices and success stories are exchanged (Kurpjuweit *et al.*, 2019:3). **First, Areas of High Impact:** It is best to start CIS implementation in areas where improvements are most likely to produce immediate and noticeable outcomes to create momentum. Early wins from this strategy may strengthen the leadership's resolve to see the project through to completion (Khan *et al.*, 2019:23).

Addressing resource constraints: Resource constraints, including financial limitations and lack of expertise, are significant barriers to CIS implementation in rural settings (Signoretti, 2020:157). Strategies to overcome these include:

Leveraging External Expertise: Consulting outside specialists or experts can assist in closing knowledge gaps. However, it's crucial to choose experts who can operate within the resource limitations of rural groups and are trustworthy and reasonably priced (Signoretti, 2020:162). **Practical and On-the-Job Training:** Put more emphasis on practical, hands-on training that enables staff members to learn by doing rather than costly, theoretical training programs (Signoretti, 2020:157). This approach minimises the impact on ongoing activities while simultaneously cutting expenditures.

Engaging and empowering employees: Employee resistance and low involvement are common challenges in CIS implementation. Overcoming these requires:

Structured employee involvement: Formalising employee involvement in the improvement process can be accomplished by implementing established frameworks such as quality circles and Kaizen. By encouraging employees to participate in decision-making and offer suggestions for improvements, these techniques can lower resistance and raise engagement (Khan *et al.*, 2019:6).

Focus on continuous feedback: By implementing regular feedback channels like suggestion boxes or weekly meetings, staff members can observe that their opinions are heard and considered. Motivation and engagement require an ongoing cycle of action and feedback (Singh & Singh Ahuja, 2014:10).

Overcoming cultural and organisational resistance: Cultural resistance, especially in environments where traditional methods are deeply entrenched, can be a significant barrier (Singh & Singh Ahuja, 2014:14). Strategies to address this include:

Gradual implementation: By implementing CIS gradually, the organisation can adjust and lessen the shock of change. Additionally, this tactic gives time to deal with cultural barriers and create a welcoming atmosphere for CIS (Signoretti, 2020:160).

Inclusive communication strategies: Facilitating open and inclusive communication among all members of the organisation can assist in bringing all parties in line with the objectives of the CIS (Cătălin *et al.*, 2014:3). To encourage buy-in, leaders should clearly explain the advantages of CIS and involve staff members in the planning and execution stages.

Utilising technology effectively: Adopting appropriate technology is crucial for successfully implementing CIS, but it can also be challenging due to limited access or high costs. To overcome this:

Focus on appropriate technology: Choose affordable, easily maintained technologies suitable for the rural environment (Signoretti, 2020:150). These could be straightforward process monitoring tools or mobile data collection and sharing platforms.

Training on technology use: Ensure every staff member has received the necessary training on the technology being used. To increase competence and confidence, this training should be continuous and incorporate hands-on exercises (Khan *et al.*, 2019:24).

Building a supportive organisational culture: Creating a culture that supports continuous improvement is essential for the long-term success of CIS (Keating *et al.*, 1999:10). This can be achieved by:

Embedding Continuous Improvement Systems into daily operations: The process of continuous improvement can be made easier to implement by incorporating CIS principles into the organisation's everyday procedures and activities (Kurpjuweit *et al.*, 2019:10). This may eventually cause a cultural change such that CIS is integrated into the organisational culture.

Recognition and rewards: Recognising and rewarding employees who contribute to the CIS process can reinforce the desired behaviours and encourage others to participate actively (Singh & Singh Ahuja, 2014:2).

A multifaceted strategy that considers staff involvement, cultural opposition, leadership, resource limits, and technology use is needed to overcome the obstacles associated with adopting a Continuous Improvement System in rural food production. By using these techniques, firms can augment their likelihood of effectively integrating CIS into their operations, resulting in long-term enhancements in productivity and quality.

2.5 The Impact of Continuous Improvement

The following section explores the significant positive impacts a continuous improvement system can have in a production environment. Please note that the negative attributes are described in the summary of the different methodologies that can be used.

2.5.1 Performance enhancement

Across all industries, CI has a significant impact on raising operational performance. Methodically locating and getting rid of process inefficiencies increases efficiency. Studies indicate that companies implementing continuous improvement (CI) approaches, like Lean, Six Sigma and 20 Keys, can significantly lower cycle times, defect rates, and expenses, which boosts output (Costa *et al.*, 2020:1). Additionally, CI enhances operational flexibility, enabling businesses to quickly adjust to shifting market conditions. These enhancements frequently impact areas other than manufacturing, like supply chain management, where improved procedures result in better resource usage and fewer operational bottlenecks (Scott *et al.*, 2009:1).

Continuous invention is encouraged by continuous innovation and improving operational efficiency. Businesses incorporating continuous innovation and learning into their operational frameworks establish a feedback loop. Minor, gradual adjustments add up over time to create significant breakthroughs that help businesses stay competitive in quickly changing markets (Scott *et al.*, 2009:4). Organisations that can innovate continuously are better equipped to handle new possibilities and difficulties.

2.5.2 Employee engagement and empowerment

CI significantly impacts organisational culture because it creates a participatory atmosphere. It is recommended that staff members at all organisational levels participate in the improvement process by pointing out inefficiencies and suggesting fixes. In addition to improving performance, this inclusive strategy raises work satisfaction and staff engagement. According to research, employee participation in CI initiatives increases motivation and retention rates by fostering a sense of accountability and ownership (Akhmetova *et al.*, 2019:7).

Additionally, by using structured techniques like process mapping and root cause analysis, continuous improvement equips staff members with necessary problem-solving abilities (Costa *et al.*, 2020:3). Employees' overall capabilities improve as they grow more skilled at recognising and resolving problems, which increases their ability to adjust to changes in the work environment. This skill-building supports an organisational culture that values continuous learning and growth, where employees are empowered to make meaningful contributions to organisational success (Costa *et al.*, 2020:5).

2.5.3 Strategic alignment and competitiveness

CI assures that improvement initiatives contribute to long-term corporate objectives by coordinating operational tasks with strategic goals. By continuously improving the processes that generate competitive advantage, CI aids firms in staying focused on their strategic goal (Akhmetova *et al.*, 2019:10). Organisations may guarantee that operational improvements are not simply tactical but also support broader corporate goals like growth, market expansion and cost leadership by integrating CI into strategic management (Costa *et al.*, 2020:10). Furthermore, CI is essential for raising organisational competitiveness. Businesses consistently using CI principles are better equipped to adapt to shifting consumer needs and market conditions. Through lowering environmental effects and increasing resource efficiency, CI supports sustainability programs and improves the organisation's standing among stakeholders (Stimec & Grima, 2019:35). In this process, CI supports both operational efficiency and corporate sustainability, positioning organisations for long-term success.

2.5.4 Customer satisfaction

A significant result of CI activities is customer satisfaction. Organisations may provide better products and services more quickly by constantly upgrading their processes. Research has demonstrated that continuous integration lowers the frequency of failures, expedites delivery, and enhances product dependability, all of which enhance the customer experience (Akhmetova *et*

al., 2019:17). Steady enhancements in the quality of products and services rendered result in increased market competitiveness and client loyalty. Additionally, CI helps businesses adapt to the shifting demands of their customers more quickly. Organisations can modify their services in response to real-time consumer input by implementing continuous improvement, which increases customer happiness and loyalty (Costa *et al.*, 2020:7). In marketplaces that are changing quickly, having a competitive advantage depends on this customer-centric strategy.

2.5.5 Long-term cultural transformation

Organisational culture transformation is one of CI's most important long-term effects. The organisation's DNA is gradually altered by CI principles, which promote an environment that values innovation, adaptation, and constant learning. CI fosters a mindset adaptable to change and dedicated to excellence by pushing staff members to question the current quo and look for little but meaningful improvements (Scott *et al.*, 2009:3).

One of the main characteristics of the CI-induced culture shift is a shift toward proactive problem-solving and strategic thinking (Costa *et al.*, 2020:13). Companies with a strong CI culture are better able to foresee and address external obstacles, resulting in sustained performance and long-term competitiveness (Costa *et al.*, 2020:4). In this sense, CI positions companies for success while also improving existing performance.

2.6 Chapter Conclusions and Important Takeaway Points from the Literature Review

Systems for continuous improvement have a significant and varied influence on the competitiveness, culture, and performance of organisations. CI ensures that organisations constantly change and set themselves up for long-term success by encouraging little improvements. This literature review highlighted several important CI features, including its basic ideas and historical backgrounds, as well as its contemporary applications and related difficulties in particular situations, such as the rural food production industry in South Africa.

The key takeaways from this literature study include:

Historical and theoretical foundations: Pioneers like Walter Shewhart, W. Edwards Deming, and Joseph Juran are credited with laying the foundation for the systematic use of continuous improvement in sectors like the Toyota Production System. Modern approaches that concentrate on waste reduction, process optimisation, and quality improvement, such as Lean, Six Sigma, and the 20 Keys, were developed as a result of the emergence of continuous improvement.

Core principles of continuous improvement: The foundation of continuous improvement efforts comprises essential concepts, including process optimisation, employee involvement, incremental improvements, and data-driven decision-making. These guidelines help increase overall effectiveness and efficiency by ensuring that the organisation consistently enhances both the end product and the procedures that led to it.

Impact on performance and competitiveness: It has been demonstrated that by optimising workflows, cutting down on inefficiencies, and boosting adaptability, continuous improvement significantly improves operational performance. Better resource use, a decrease in defect rates, and quicker reaction times to changes in the market are the outcomes of this. Improvements in continuous improvement initiatives guarantee that the company's long-term objectives—such as growth, market expansion, and cost leadership—are supported.

Employee engagement and cultural transformation: A key outcome of continuous improvement is its capacity to promote an empowered and inclusive workplace culture. By integrating employees at all levels of the organisation in the improvement process, continuous improvement fosters a culture of continuous learning and innovation, improves engagement, and develops problem-solving abilities. This cultural change eventually results in long-term organisational success.

Customer satisfaction: Better products and services delivered more quickly correlate with increased customer satisfaction through continuous improvement. By implementing continuous improvement principles, businesses can improve product reliability and strengthen customer loyalty by reacting to customer feedback faster.

Challenges in specific contexts: The application of continuous improvement systems is particularly challenging in rural areas, such as the food production industry in South Africa. These difficulties include inadequate resources, inadequate infrastructure, and cultural resistance. However, with the right tactics, such as streamlined process management, suitable technology utilisation, and localised leadership participation, continuous improvement may be effectively applied to these situations, leading to increased organisational sustainability and efficiency.

In the above literature review, the following **critical success factors** for implementing a continuous improvement system were identified:

1. Leadership commitment
2. Employee involvement and empowerment
3. Training and education
4. Process management and standardisation

5. Measurement of the implementation progress
6. Technology utilisation

This literature study addresses the first Secondary Objective: To investigate the enablers and barriers to successfully implementing continuous improvement systems through a literature study.

To summarise, continuous improvement systems are critical in promoting small, continual changes that result in increased productivity, worker empowerment, and strategic competitiveness. Even in contexts with limited resources, continuous improvement may substantially contribute to long-term performance and organisational culture change when appropriately implemented.

Chapter 2, therefore, forms the theoretical background and foundation for the empirical study described in Chapters 3 and 4 to determine the critical success factors for implementing a continuous improvement system.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Research Design and Methods

This chapter aims to analyse the method followed in researching this topic through data collection and analysis with Atlas.ti is employed as the analytical tool for insights. Chapter 4 will focus on results and findings, leading to Chapter 5, which will focus on recommendations.

3.1.1 Review of the literature

The first section of the research methodology is the review of the literature. This research aims to familiarise the reader with continuous improvement, the different systems that can be used for operational improvement, the factors that increase the success rate of such a system, and the barriers that will prevent the sustainability of a continuous improvement culture.

The sources that were used include:

- Journals.
- Publications.
- Dissertations and papers on the subject.
- Books.
- News and Internet articles.

3.1.2 Empirical Study

An empirical study is a research investigation that gathers and analyses data from the real world to find answers to research questions or test hypotheses. Researchers obtain data for empirical studies through observations, experiments, surveys, interviews, or other techniques that involve close contact with the persons or phenomena being studied. The focus that empirical studies place on employing quantifiable, measurable data to reach conclusions and create well-informed opinions on the phenomena under study is its defining feature.

The research design of the empirical investigation for this study involved determining the research paradigm, methodological approach, methodological choice, methodological strategy, time horizon, and data collection and analysis techniques.

Considering the research onion, this study followed an interpretivism philosophy with an inductive approach to theory development using a qualitative monomethod through surveys and a cross-sectional time horizon.

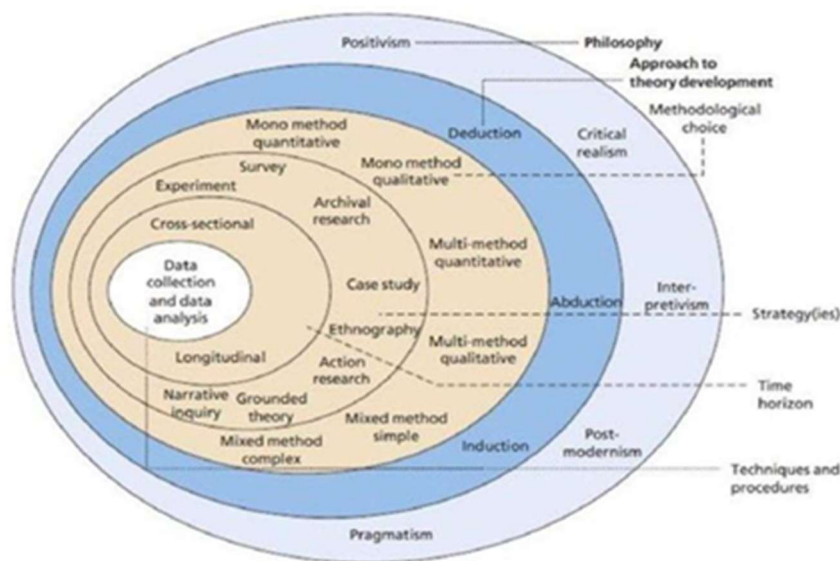


Figure 4: The Research Onion

(Source: Bell *et al.*, 2022:127).

3.1.2.1 Research paradigm

A research paradigm is a set of fundamental, unquestioned presumptions that guide a group's frame of reference, style of theory development, and methods of operation.

Quantitative and qualitative phrases are frequently used in business and management research to distinguish between distinct data collection methods and data processing processes. The emphasis on numerical (numbers) or non-numeric (words) data is one technique to differentiate between the two. Any data-gathering method (like a questionnaire) or data analysis process (such as graphs or statistics) that produces or uses numerical data is typically referred to as quantitative. On the contrary, the term qualitative is typically used as a synonym for any method of data collection (such as an interview) or method of data analysis (such as categorising data) that produces or uses non-numerical data (Saunders *et al.*, 2019:118).

The assumptions relevant to selecting the correct research philosophy can be divided into the following.

Ontology: Concerned with the nature of reality (Saunders *et al.*, 2019:110).

Epistemology: Relates to what is considered appropriate knowledge in a specific field of study (Saunders *et al.*, 2019:113).

Axiology: This subfield of philosophy examines value judgments (Saunders *et al.*, 2019:116).

Considering the research onion, this study follows an interpretivism philosophy with an inductive approach to theory development using a qualitative monomethod through surveys and a cross-sectional time horizon.

3.1.2.2 Research approach

The research process and the logic applied during this process are examples of the methodological approach (Collis & Hussey, 2014:297). Deductive or inductive methodologies can be used in management research (Zalaghi & Khazaei, 2016:24). Deductive research is a branch of the positivistic research paradigm that involves formulating research hypotheses using the body of literature as a foundation and then testing them through an empirical study (Saunders *et al.*, 2019:74). Instead, inductive research is conducted under the interpretivist research paradigm. It entails creating a new theory by observing reality and gathering primary data without considering pre-existing theories (Saunders *et al.*, 2019:74).

The inductive methodological technique was used in this study because it has embraced an interpretivism research paradigm.

This study used a qualitative research approach, as it is based on subjective data collected to understand human behaviour. The data was obtained through structured interviews based on a set of standardised questions.

3.1.2.3 Methodological Choice

Researchers must decide whether their study will be quantitative or qualitative (Antwi & Hamza, 2015:220). The primary goal of quantitative research, which is related to the positivistic research paradigm, is to examine the hypothesised correlations between two or more variables using numerical data gathered from large samples and statistical analysis (Wiid & Diggines, 2013:860). The interpretivist research paradigm is connected to qualitative research, which emphasises a small sample's irrational opinions and beliefs (Wiid & Diggines, 2013:87). To develop a theory and gain a deeper grasp of the subject being studied, specific information is acquired (Wiid & Diggines, 2013:87).

The most appropriate methodological choice for this research was determined to be a monomethod qualitative study, taking into account the nature and objectives of the investigation.

This study used a monomethod as it only used a qualitative data collection method. It was not sequential, as the data was collected over a short period in only one phase.

3.1.2.4 Research Strategy

The methodological strategy, also known as data collection methodology, must be chosen once the study paradigm, approach, and choice have been made (Bryman *et al.*, 2014:100). By examining a sample of that group, a survey design can quantify or numerically describe the trends, attitudes, or opinions of that population (Creswell & Creswell, 2017:137).

Due to the nature of this study, an online, one-on-one interview strategy was adopted, using an open-ended, structured, recorded, and transcribed interview to gather primary data for this study.

3.1.2.5 Time Horizon

The duration of a study is referred to as a time horizon (Melnikovas, 2018:38). In longitudinal studies, which last for a long time and involve repeated interviews with research participants, in contrast, short-term cross-sectional studies assess the data collected from study participants at a specific point in time (Collis & Hussey, 2014:329).

The study described has taken the form of a cross-sectional study, as the research was carried out over a single short period. Please see the table below that summarises the research methodology used:

Table 2: Summary of the Research Methodology Used (Researcher's own compilation)

Layer	Selection
Research paradigm	Interpretivism.
Research approach	Inductive
Research strategy	Open-ended interviews
Choice of research	Mono method
The time horizon of research	Cross-sectional

3.1.2.6 Study Population and Sample

A sample can be described as a sample drawn from the population to act as a study's representative of the overall population (Salkind, 2010:15). In the process of selecting a sample, a nonprobability sampling method refers to sampling that relies on random selection, and this

does not guarantee equal opportunities for the complete population; on the other hand, probability sampling techniques refer to sampling done by giving all members of the population and equal chance to be selected (Struwig & Stead, 2001:54).

For this specific study, the researcher used the non-probability sampling method. The non-probability sample included middle management and supervisors from the different production facilities described earlier in the study.

Unfortunately, due to limited access and resources, many research projects typically cannot obtain data from the studied population (Saunders *et al.*, 2019:115). The researcher selected middle managers and supervisors at each production facility for this study.

This researcher is a Continuous Improvement Manager at VKB Agri Processors with access to the industries mentioned above and individuals. The researcher used open-ended interviewing methods. Additionally, the researcher accessed and handled participants' personal information under the new POPI Act rules. According to POPIA (2019), the act requires that the person collecting a person's personal information is held responsible (Section 8) and that processing be limited (Sections 9-12). That consent, justification, and objection must be obtained directly from the subject. Additionally, the POPIA Act's sections 13 and 14 mandate purpose definition, which calls for collecting personal data for a specific reason and keeping and restricting records (POPIA, 2019). The act imposes more processing restrictions, information quality requirements, openness requirements, security requirements, and data subject participation (POPIA, 2019).

The characteristics are specified by the inclusion criteria (Connelly, 2020:29). The inclusion criteria for this study were as follows:

- Production facilities that have implemented a formal continuous improvement system.
- Production facilities that make up the VKB Agri Processors Group.

Exclusion criteria refer to characteristics that disqualify a person from participating in the study. The exclusion criteria for this study were:

- Production facilities that have not implemented a formal continuous improvement system.
- Production facilities that do not form part of the VKB Agri Processors Group.

As described in the literature study, a specific implementation process was followed to introduce and implement 20 Keys at all the VKB Agri Processors production facilities. It should be noted that progress was quicker at some of the production facilities than at others. Due to this, the sample was selected as described below.

The sample size depended on different factors, including the level of certainty that the collected characteristics of the data will accurately reflect the characteristics of the entire population, the margin of error that can be tolerated, the level of accuracy you demand for any estimates derived from your sample; the types of analysis you are going to conduct, including the number of categories into which you wish to subdivide your data, as many statistical techniques as you can; and finally, the data you need to have and in a lesser degree how big the overall population is that your sample is taken from (Saunders *et al.*, 2019:120). Considering this, the researcher interviewed nine (9) middle management and supervisor team members. The researcher decided to use the production facility that excelled with the 20 Keys system and the production facility that struggled to progress. Taking this into consideration, in the case of this study, the sample included employees from Grain Field Chickens and VKB Milling Mokopane that form part of the study. This comprised three (3) middle management from the VKB Milling team and six (6) middle management and supervisors from the Grain Field Chickens team.

3.1.2.7 Designing the measuring instrument

Individual interviews, focus groups, and direct observations are the data collection methods most frequently employed in qualitative research (Bryman *et al.*, 2014:209).

The study was based on unprocessed data received from participant-reported narratives. The willingness of participants to contribute their knowledge about the research topic is entirely contingent upon the researcher. The researcher used semi-structured interviews as the study's measurement method. This strategy enabled the researcher to remain focused on the investigation while obtaining useful information about the participant's interactions, ideas, and feelings around the issue.

As the methodology section indicates, this research study adopted a qualitative method through one-on-one interviews with operational team members at the different facilities in the VKB Agri Processors group. The interviews were held and recorded on Microsoft Teams for ease of transcription. In addition, the researcher used a semi-structured interview guide as an instrument to manage the interviews. Further insights were gained through prompting.

Interview guides vary. Some are brief reminders of essential topics that must be covered in an unstructured interview for the interviewer. Others consist of a structured list of topics to be covered in an informal interview (Bell *et al.*, 2022:228).

The interviewer constructed a set of questions and prompts for this research study's interviews based on the literature evaluation on continuous improvement. To help address the primary study issue, the researcher crafted interview questions in the interview guide.

The open-ended questions that formed part of the interview consisted of the following interview questions:

- Please tell me more about your position in the company structure.
- Do you think a continuous improvement system is valuable for the company? Explain why you say so.
- Except for the current company, have you ever been part of a continuous improvement process?
- Do you think that the current continuous improvement process is successful? Why?
- What are the reasons that the implementation of continuous improvement systems is sometimes not successful?
- What are the reasons that the implementation of continuous improvement systems is sometimes not successful?
- What do you think is the impact of the company culture on continuous improvement?
- What do you think is the impact of employee participation on continuous improvement?
- What do you think is the impact of training on continuous improvement?
- What do you think is the impact of leadership on continuous improvement?
- Do you have suggestions on how to improve the success of the implementation of Twenty Keys?

3.1.2.8 Collection of data

The process of acquiring information to address research issues is known as data collection (Creswell & Creswell, 2017:15). Useful information may be obtained through interviews, which can be adjusted to the researchers' needs (Bryman *et al.*, 2014:223).

Conducting a qualitative analysis through semi-structured interviews provided valuable information on the critical success factors for implementing a continuous improvement system.

The researcher interviewed selected operational staff members one-on-one online using the Microsoft Teams application to gather information. The table below contains the interview questions. By following the minimum standards, which include accepting responsibility and making sure that the contact details are used for only legitimate and legal purposes of the research, the researcher adhered to the POPI Act in terms of the contact details of the potential

participant (De Bruyn, 2014:57). Following the POPI Act, the researcher will protect the integrity and confidentiality of the potential participant's contact information.

Table 3: Questions that form part of the structured survey (Researcher's own compilation)

Number	Question
1	Please tell me more about your position in the company structure.
2	Do you think a continuous improvement system is valuable for the company? Explain why you say so.
3	Except for the current company, have you ever been part of a continuous improvement process?
4	Do you think that the current continuous improvement process is successful? Why?
5	What are the reasons that the implementation of continuous improvement systems is sometimes not successful?
6	What factors play a vital role in the successful implementation of continuous improvement?
7	What do you think is the impact of the company culture on continuous improvement?
8	What do you think is the impact of employee participation on continuous improvement?
9	What do you think is the impact of training on continuous improvement?
10	What do you think is the impact of leadership (style and involvement) on continuous improvement?
11	Do you have suggestions on how to improve the success of the implementation of Twenty Keys?
12	Is there anything else you would like to add about the topic?

The data collection tool used for this qualitative study was online interviews with the sample population as described above. The interviews were semi-structured, with a standard set of questions sent out before the interview so the participants could study the questions and give data-rich answers. Participants were briefed about the purpose of the study and signed a consent form.

Before interviews were held with operational team members, the Managing Director of each entity was contacted via email to ask for permission to involve team members. A summary of the study and the questions to be discussed was presented. After permission was obtained, interviews were scheduled. Permission was granted to use the name of the specific production facilities in this study.

Personal emails were sent to the participants to schedule an appropriate interview time. The interviews took place on Microsoft Teams. Before beginning the interview, the researcher introduced herself, thanked the participants for participating in the discussion, described the study's purpose, and requested permission to record the conversation and take notes. Using the Microsoft Teams application, the interview was recorded and automatically transcribed. The researcher reminded the participants that participation in the study is voluntary and that they can withdraw anytime. Each participant was informed that their identities would be protected and that the information collected during the interview would be utilised only for this study (Bell *et al.*, 2022:127).

Each interview was recorded and transcribed using Microsoft Teams. After each interview, the researcher wrote a short reflection on the interview to ensure that the nuances of the interview process were captured. Observations such as body language and reaction to questions were noted and formed part of the reflection process. These results will be further discussed in Chapter 4.

The researcher conducted a pilot interview with two colleagues who did not form part of the sample group to determine the effectiveness of the questions and the time needed per interview.

3.1.2.9 Data analysis

Thematic analysis was used to transcribe and encode the material after the researcher had conducted the interviews. Thematic analysis involves classifying qualitative data to identify themes that can be further examined for the research issue (Saunders *et al.*, 2019:651). It gives the researcher a methodical yet adaptable way to analyse data (Saunders *et al.*, 2019:651).

After the participants' responses had been gathered through semi-structured interviews, the data was transcribed by Microsoft Teams. The researcher then cleaned up the data and grouped all the relevant questions to ease the data analysis.

The researcher compiled the transcripts of the interviews, encrypted each paragraph to capture key codes and have a complete collection of interviews (Bryman *et al.*, 2014:337). The data could then be examined after transcription. Coding was used as a method of data analysis during the data analysis process. It's crucial to plan the coding of the data (Marshall & Rossman, 2014:398). The researcher must record and maintain track of numerous details, including dates, names, job titles, the responses provided by each participant, and any potential overlaps in terms of the goods offered, operating procedures, or even identical acts conducted at the time.

Written words are then created by extracting qualitative information from spoken words. To comprehend these words, the researcher must switch from the standard interview mode to the research mode (Saunders *et al.*, 2018:638). Several computer-aided qualitative data analysis applications can be used to analyse qualitative data (Saunders *et al.*, 2018:692). Thematic analysis is used in this work.

According to Saunders *et al.* (2019:652), the four components of this approach include familiarising oneself with the acquired data, coding, detecting themes and correlations, and refining themes and testing propositions.

The interview replies were transcribed using the qualitative data analysis tool Atlas.ti to analyse the acquired data. Atlas.ti is seen as an extension of the researcher and can offer a variety of complex capabilities (Babbie, 2020:509).

The researcher must code the data to make sense of the information gathered during the qualitative investigation. The researcher can find patterns and themes by coding and categorising the data. The information provided by Creswell and Poth on the coding and classification of data is beneficial because classifying takes the coded data and goes beyond coding by looking at the qualitative information and comparing categories, themes, and dimensions of information (Creswell & Poth, 2016:338). When doing the data analyses for this study, the researcher adhered to their advice since data analysis tools yielded superior findings to manual analysis.

The first level of the analysis that the researcher did was the key takeaway points noted after each interview. The second analysis level was utilising a visual word cloud using Atlas.ti. The word cloud and further discussion will follow in Chapter 4. After the first word cloud was generated, the researcher found it beneficial to drill down into the different production facilities as well as

different management levels by constructing a word cloud for each. This process aimed to determine if there are any differences or similarities between the specific word cloud and the overall general word cloud generated. The third level of analysis is based on the traditional thematic analysis described by Creswell (2014:247-249). The interviews were conducted through the Microsoft Teams platform and transcribed using the built-in function.

Further clean-up was needed, and this was done directly after the interview, cross-referencing the transcriptions with the original recorded interviews to ensure accuracy. The transcriptions were then imported into the Atlas.ti software for the coding phase. Before the coding phase, the researcher used the word frequency feature of the software to create a visual representation of the participant's responses. This assisted the researcher to highlight the common themes across the interviews.

The researcher then moved on to the coding phase of the data analysis process. One transcribed interview was thoroughly read, with codes systematically applied to capture the nuanced and insightful data. After this, the other interviews were coded using the Atlas.ti AI coding function. This codebook was compared to the manually generated one, and the similarities were so striking that the researcher decided to continue using the AI-generated codebook for further analysis. These codes were then organised into meaningful groups. These groups were further categorised into overarching themes, ensuring a comprehensive understanding of the data. At the start of the process, 241 codes were generated, which were reduced to 20.

Beyond only coding, Atlas.ti was beneficial when creating networks that visually represented data linkages. By including these visuals in the findings and discussion section, the complex relationships within the data are better understood. The comprehensive data analysis procedure, which integrates both qualitative and visual components, enhances the comprehensiveness and richness of the research outcomes.

3.1.2.10 Trustworthiness

In qualitative research, credibility enhances comprehension and interpretation of study findings and enables people to have faith in the calibre of an investigation (Daniel, 2018:265). Credibility, transferability, dependability, and confirmability are the four components of trustworthiness (Bryman *et al.*, 2014:62)

The consistency, dependability, and credibility of study findings are all reliability aspects in qualitative research. As contexts and participant experiences can differ, dependability in the qualitative paradigm is not about reproducing exact results but ensuring that the research method

is clear and understandable to others. This transparency is attained through thorough documentation of the research procedure, which covers data-gathering techniques, analytical decisions, and the justifications for those decisions (Smith & McGannon, 2018:105). Utilising various techniques or data sources, or triangulation, is a common strategy to increase dependability since it enables researchers to cross-verify data and interpretations. The dependability of qualitative findings can also be increased via member checking, in which participants verify and confirm the researcher's views. The overall goal is to produce results that accurately reflect participants' experiences within the specific research context (Tracy, 2019:102)

In qualitative research, trustworthiness refers to the accuracy and dependability of the conclusions and inferences made from the data. Ensuring the study accurately captures the phenomenon it claims to represent is essential. Researchers frequently use methods like extended fieldwork to increase trustworthiness since they help them better grasp the participants and the situation (Morse, 2015:1317). Triangulation, which involves using several data sources or methodologies, can also increase trustworthiness by thoroughly understanding the studied topic. Another method to ensure the results accurately reflect participants' experiences is member checking, allowing participants to examine and validate the researcher's interpretations (Creswell & Poth, 2016:120).

It was able to carry out this study, as the population that was interviewed is part of the researcher's organisation. The population was comprised of management and employees who participated in implementing and maintaining an operational improvement system. The survey and interviews were done in a one-on-one session and were kept anonymous. The study focused on employees at different levels of the organisations. The study was not expensive as little travel was involved, and all interviews were done over Microsoft Teams. As the survey and interview were anonymous, the data were gathered ethically. The Protection of Personal Information Act was kept in mind throughout the investigation. The study was not sensitive to race, gender, or vulnerable groups. The Managing Director of the VKB Agri Processors department was permitted to conduct the research.

3.2 Ethical Considerations

Ethical considerations are crucial in qualitative research to protect participants, maintain the study's validity, and ensure the reliability of the results. Before starting a study, choose a deserving and non-intrusive subject that adds value to information without endangering or upsetting participants (Creswell & Poth, 2016:24). Researchers should avoid using coercion while accessing locations and recruiting volunteers. Participants chosen for the study will be treated with respect and understanding (Orb *et al.*, 2001:96).

Getting informed consent is essential when collecting data. The goal, methods, hazards, and advantages of the study should all be adequately disclosed to the participants. Additionally, they must be made aware of their unhindered freedom to withdraw at any time (Mertens & Ginsberg, 2009:50). Researchers must ensure competency when the study moves into the data analysis phase, which calls for correct representation of the data without the introduction of bias or misinterpretation (Eide & Kahn, 2008:206).

Maintaining participant confidentiality is essential when reporting, sharing, and retaining data, particularly if organisations have access. Any identifiable information should be eliminated or anonymised before data is retained. Peer review can be an extra safeguard to ensure moral principles are respected (Pietkiewicz & Smith, 2014:9). The Protection of Personal Information Act (POPIA) must be followed in South Africa. This entails, among other things, ensuring that personal data is processed correctly and securely kept, only keeping data for as long as necessary, and respecting data subjects' rights (De Bruyn, 2014:1334).

The relevant Research Ethics Committee approved the study, with ethics number NWU-00593-24-A4.

It should be noted that none of the participants reports to the researcher, which removes any bias.

3.3 Chapter Summary

In conclusion, Chapter 3 outlined the research methodology for investigating continuous improvement systems within selected production facilities. The study adopted an interpretivist philosophy with an inductive approach, using qualitative methods such as structured interviews to gather data. The chapter detailed the research design, sampling methods, and ethical considerations, ensuring the credibility and trustworthiness of the findings. The study systematically analysed the data by employing thematic analysis through Atlas.ti to provide insights into the success factors and barriers to continuous improvement, laying a solid foundation for presenting findings in the following chapter.

CHAPTER 4 RESULTS AND FINDINGS

4.1 Introduction

Chapter 3 discusses the research methodology to be followed for the study. This chapter will focus on the results of the different data analysis levels, leading to Chapter 5, which focuses on conclusions and recommendations.

As discussed, the data analysis steps followed and to be discussed in detail below are summarised in the figure below:

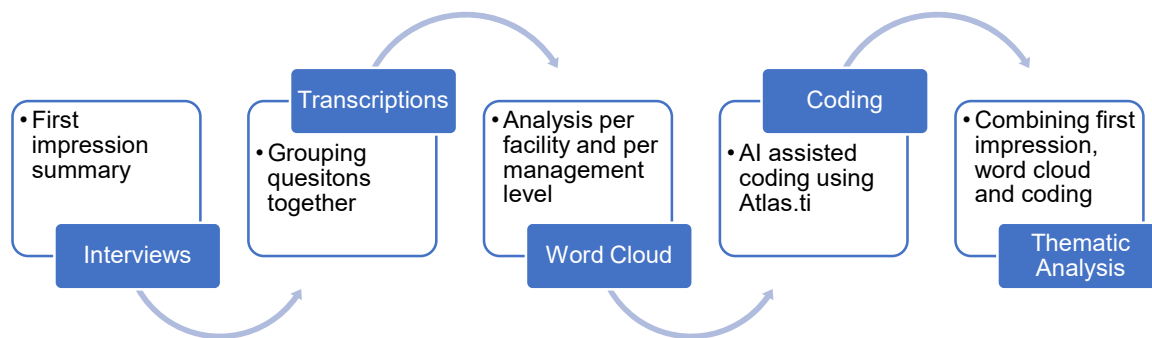


Figure 5: Data analysis process (Researcher's own compilation)

4.2 Results

4.2.1 First level – First Impression Summary

After each interview, the researcher wrote down a summarised impression of the interview conducted. After all interviews were held, the researcher combined these first impressions into the following summary:

- The higher the post grade, the more focus was placed on employee buy-in. The lower the post grade, the more focus is placed on training.

- The consistent undercurrent was that in rural areas, people are used to a certain level of discipline, which differs from the discipline needed in food production facilities.
- First-line supervisors are examples of those who must follow the set rules so that employees can see the discipline needed in practice.
- All employees, on each level, must understand the “why” behind the system.
- All employees, on each level, must be aware of their role in the system.
- Consistent measurement is needed to track progress and, if there are deviations, to indicate the corrective action. This measurement includes the progress of the implementation and the company's overall progress towards the objectives.
- Emphasis was placed on the need for examples and standardisation.
- The company's overall strategy must be set with challenging, measurable goals, which must be connected to the different sections of the continuous improvement system.

By using the transcribed interviews the Word Cloud function in Atlas.ti software was used to generate the following word clouds.

Understand, people, system, implemented, work, will, can, need, know, think, culture, training, team.

Figure 6: All Interviews Word Cloud

The next word cloud generated was for management only, illustrated in Figure 7.

Words that stood out include People, system, company, manager, will, need, culture, training, buy-in, understand, think, and important.

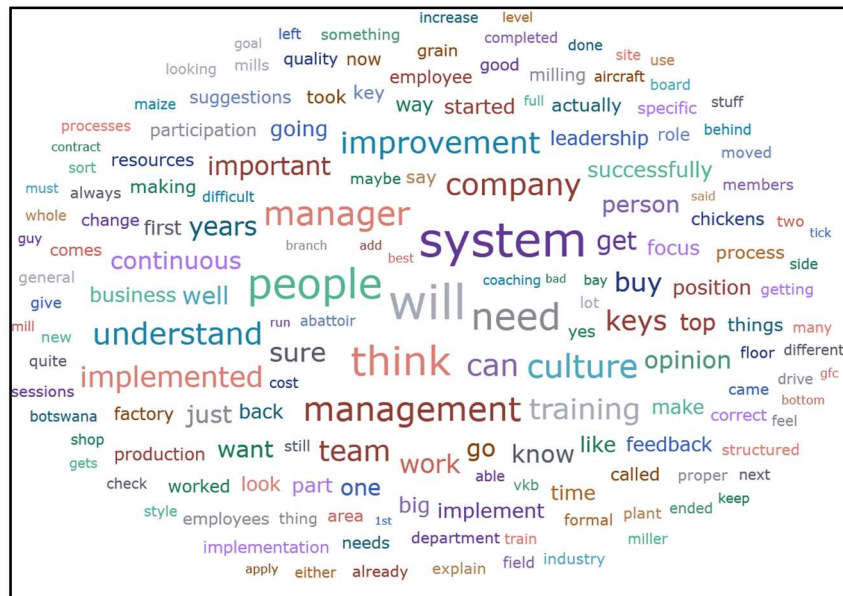


Figure 7: Management Level Participants

(Source: Extracted from Atlas.ti)

The next word cloud generated was for the supervisor level, illustrated in Figure 8.

Words that stood out include People, system, need, training, want, everybody, understand, employees, know.

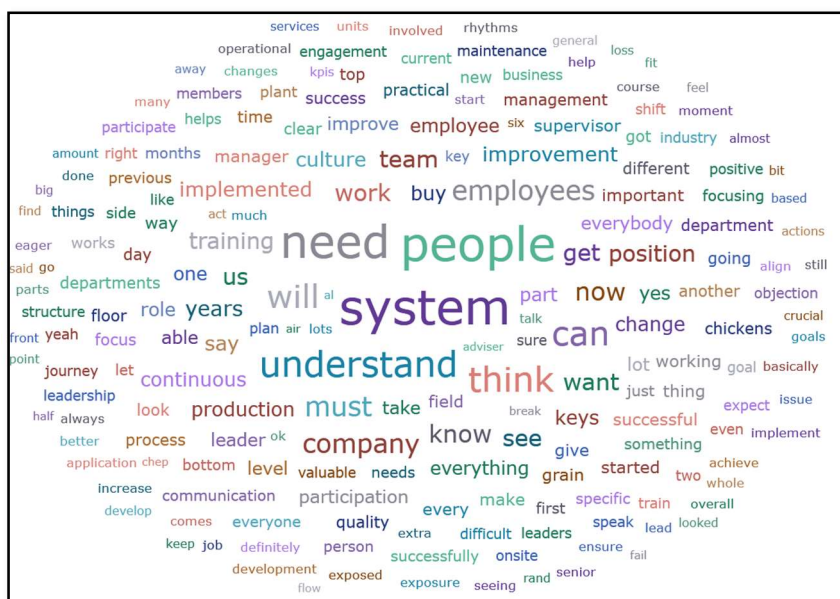


Figure 8: Supervisor Level Word Cloud

(Source: Extracted from Atlas.ti)

The next word cloud generated was for the participant from Grain Field Chickens, illustrated in Figure 9.

Words that stood out include need, people, culture, understanding, thinking, training, buy-in, and employee focus.

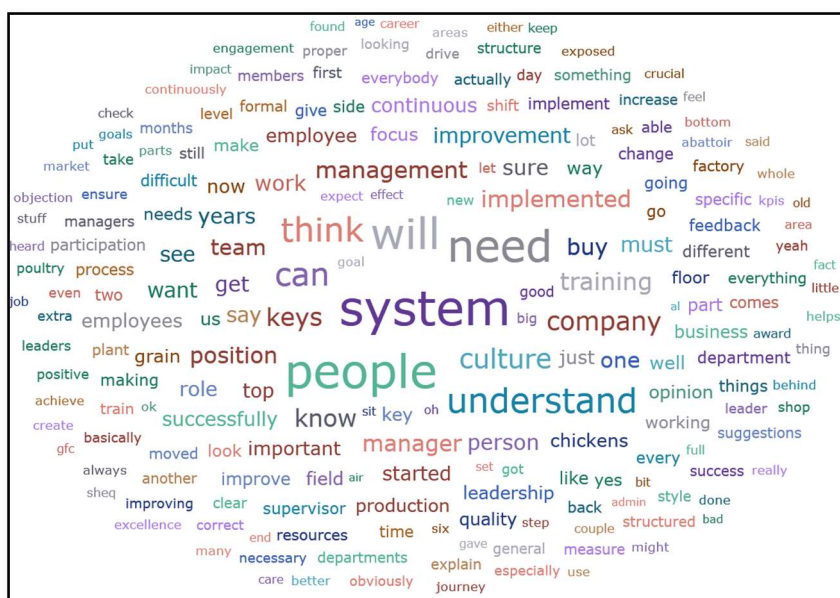


Figure 9: Grain Field Chickens Word Cloud

(Source: Extracted from Atlas.ti)

The next word cloud generated was for the VKB Milling participants, illustrated in Figure 10.

Words that stood out include System, think, work, team, change, training, need, manager, participation, and know.



Figure 10: VKB Milling Word Cloud

(Source: Extracted from Atlas.ti)

The following table is used to detect the frequency of the repetitive words.

Table 4: Word frequency (Researcher's own compilation)

	All Participants	Manager Level Participants	Supervisor Level Participants	GFC Participants	VKB Milling Participants	Frequency	First Impression summary
System	X	X	X	X	X	5/5	X
Need	X	X	X	X	X	5/5	X
Training	X	X	X	X	X	5/5	X
Understood	X	X	X	X		4/5	X
People	X	X	X	X		4/5	X
Will	X	X		X	X	4/5	
Think	X	X		X	X	4/5	
Team	X		X	X	X	4/5	X
Manager		X		X	X	3/5	X
Implemented	X				X	2/5	X
Work	X				X	2/5	
Can	X				X	2/5	
Know	X		X			2/5	X
Culture	X	X				2/5	X
Company		X			X	2/5	
Buy-In		X		X		2/5	X
Want			X		X	2/5	
Employees			X		X	2/5	X
Change				X	X	2/5	X
Participation				X	X	2/5	X
Improvement					X	1/5	
Important		X				1/5	

Based on the above table, the words used across the majority revolve around System, Need and Training, then in second place: Understood, People, Will, Think, Team. Thirdly, Manager, Implemented, Work, Can, Know, Culture, Company, Buy-In, Want, Employees, Change, and Participation.

Based on this, the following conclusions were made:

Across the board, all participants highlighted the need for people to understand the overall system through training and their specific role in the system. If both of these are in place, then the critical buy-in needed from employees will be more likely to follow.

People on the floor need to see the facility managers as leaders and as an example to follow.

To adapt to change, people across all levels need to understand whether this change will affect their daily working lives.

To adapt to a new system, people at all levels must understand how this will fit into the current work environment. This also includes the overall goals of the company. People across all levels need to understand clearly the company's goals and how the system will assist the team in reaching the specific goals.

As seen in Table 3, most words that came to light during the word cloud also form part of the first level of analysis, the first impression. In conclusion, these findings support the findings from the first level of analysis.

4.2.3 Third Level – Thematic Analysis

During this phase of analysis, the researcher used the automatically transcribed interviews. After the transcription, the researcher established a rudimentary list of themes and the relationship between the themes. Figure 11 below shows these relationships.

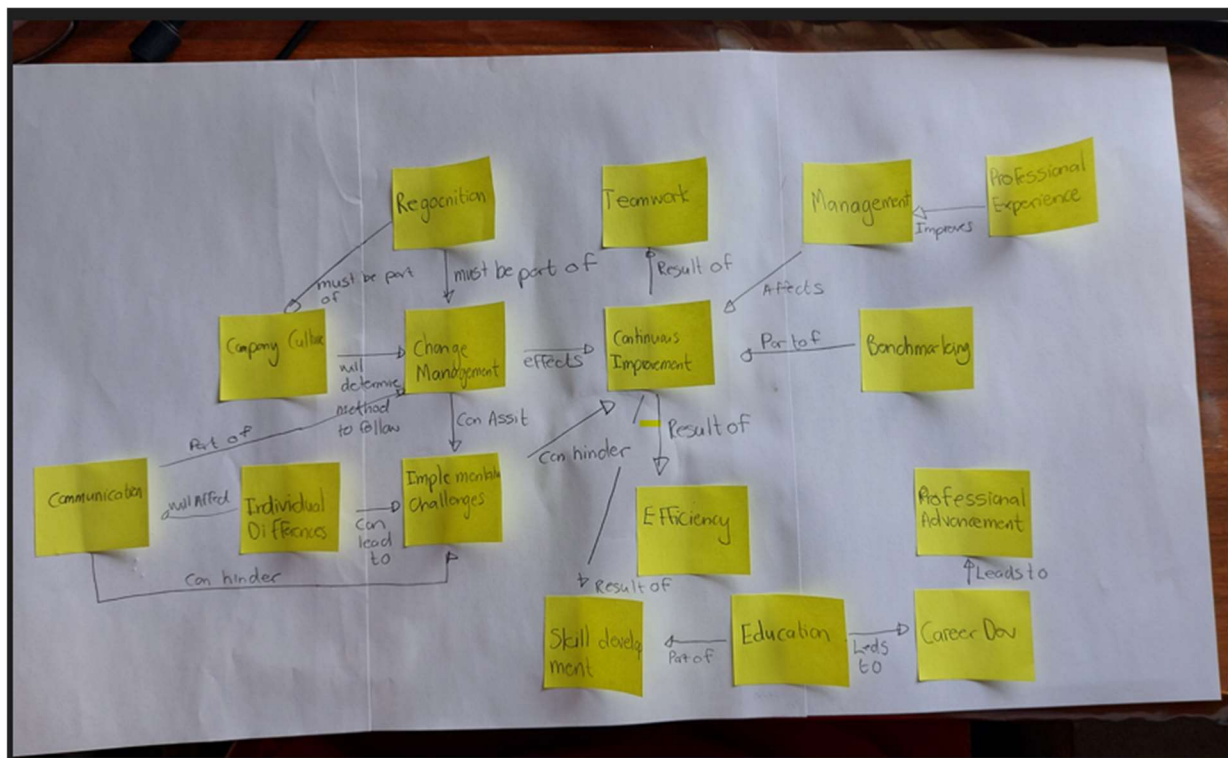


Figure 11: Manual relationship network

Source: (Researcher's own compilation)

From the interviews, the researcher established the following Themes:

- Theme 1: Strategic Clarity
- Theme 2: The need for training
- Theme 3: Impact of rural environment
- Theme 4: The Role of Leadership
- Theme 5: The need for measurement

The following section will be dedicated to discussing each of these Themes.

Theme 1: Strategic Clarity

In both the first impression summary and the word cloud analysis, it becomes clear that employees and leaders must understand why they need to participate in the system. This can only be accomplished if the system can be tied to the company's clear goals; for this to be possible, the company must have clear, set, measurable goals.

Participant 6: *"We've spoken about explaining the why. We need to have visual feedback sessions with set measurements, so people need to track the progress that the team and*

company are making. You also need to focus on step by step instructions. Focusing of where we are and where we are going. Then you need to constantly benchmark and give feedback on that benchmarking and to ensure that people understand where we are and also maybe where we are going."

Participant 7: *"I found that if they understand what they do and why we do something, will increase chances that they employee will participate."*

Participant 7: *"But if they understand why they do it once again, then they apply their mind. I do think that both training methods play a crucial role."*

Participant 7: *"I think it's all to do, in my opinion with company culture and why the company culture is formed and created, in my opinion by top management."*

Participant 9: *"Need to have a proper vision and a proper vision and a proper strategy to make sure that the guys understand. So I think the right people on board is obviously massively important to make sure that they do have the same values and the same look out and the same principles. Employee participation; Once they understand it, then they have to buy"*

Participant 3: *"Highlighting the objective of the system. Knowing exactly what, what is it that you need to do? Why we here? What is the business of Grain Field Chickens is the poultry industry. What is it that we need to do here? I think everyone must understand the objective, the goals".*

The quotations from the participants highlight the critical importance of *strategic clarity* in continuous improvement. Several themes emerge, including the need for *clear communication* of objectives and vision, employee understanding of their roles, and measurable feedback systems. Participants emphasise that explaining the *"why" behind actions* and decisions is key to fostering employee participation and engagement. This clarity allows employees to apply their minds more effectively and align their efforts with *company goals*. Additionally, having a well-defined strategy and culture driven by top management is crucial for aligning values and principles across the organisation. *Benchmarking progress* and providing visual feedback loops with measurable Key Performance Indicators (KPIs) are necessary tools for tracking progress and ensuring everyone understands the company's current status and future direction. Ultimately, strategic clarity ensures that employees are *aligned with the company's vision, objectives, and culture*, enhancing the overall success of continuous improvement initiatives.

Some of these issues appear in subsequent themes and quotations.

Theme 2: The need for training

It is clear that people need to be trained in different methods to understand how they affect the system and what the system entails.

Participant 2: *“Training is one of the top priorities. You can't expect the staff members to participate if they do not understand.”*

Participant 5: *“When I talk about training I see it in two separate parts. The one part is formal in the boardroom where we get together, have lunch and follow a structured approach. The other side of training I see as the supervisor being the trainer on the floor. Communicating the necessary skills and coaching to their team members who might not be able to read and write and will benefit from a walking example.”*

Training is such a big part of any business, especially in our processing plant or manufacturing business because our employees need to understand what to focus on and step by step all they need to implement certain aspects. And basically, it comes down to understanding why they need to do it like this, because if they do not do it like that, what the impact is a down the line, either for the next department or for the end consumer. OK, so the training I see in my mind in two parts, number one a structured and formal method, taking people out of the plant and putting them in a type of boardroom and giving them training on the system and explaining the effect and the why, the what and the how. This can be seen as a time-consuming method but needs to be applied from the shopfloor to management. Your main focus needs to be the general workers so that they know what to do and do not depend on the supervisor for the complete system.”

Participant 7: *“You cannot successfully have one without the other. Training on the system is crucial. Explaining to people more in-depth, but not just like key one is for this aspect and key two is for that.”*

Participant 9: *“Timing, buying from management and then training and also understanding why focusing on why”.*

The quotations highlight the *critical role of training* in achieving success in continuous improvement initiatives. Participants emphasise that *training is essential for staff engagement*, as employees cannot be expected to participate effectively if they lack understanding of the processes and goals. There is a clear distinction between *two types of training*: formal, structured sessions in boardroom settings and practical, on-the-floor coaching where supervisors guide workers in real-time, especially those who may face *literacy challenges*. Both forms of training are seen as complementary and necessary. *Formal training* provides in-depth knowledge of

systems, processes, and the rationale behind tasks, while *on-the-job* coaching ensures that employees can apply this knowledge practically. Additionally, participants stress the importance of *management's support and alignment with training efforts and the need to consistently communicate the "why" behind tasks* to ensure that employees understand their importance and the downstream impacts on the overall process. In summary, a combination of structured training and hands-on coaching, supported by management buy-in, is critical to fostering a culture of continuous improvement.

Theme 3: The Impact of the Rural Environment

The impact of socio-cultural differences in the workforce is often underestimated. This is also evident in the diversity of literacy levels between different production facilities' job levels. The impact of this was highlighted in the different interviews. Both of these elements significantly impact the understanding and acceptance of the continuous improvement system.

Participant 1: *"Getting everyone on board. And building a team through the process. And the big thing that I saw was this culture. Literacy levels. They just work. They just want to work. They don't understand what it is about. New stuff is about. Because that's the way they were brought up Overall Buy-In. I would think your personal inner being. We are not all the same."*

Participant 1: *"I know 20 Keys is a Japanese program. Now if you go look at the Japanese people and the culture. A highly skilled, highly motivated, very professional, disciplined. Look at the African world. We are not the first-class world. We need to stimulate this in our team members through coaching. The next factor is effective communication. The morning meeting is 10 minutes in and out so we can fast."*

Participant 7: *"So consistent continual measurement of what you want to achieve and giving feedback to the team, in my opinion, is crucial because then they know when they deviate and they can adjust their plans accordingly to make sure it is still on track. Do ensure that employees do not feel that measurement and feedback are seen in a negative way, with so many things in the working environment, I think the how is almost more important than what you communicate. But if in my opinion if you use it correctly and your how is more correct, you can actually use it as a motivational tool more than a punishment tool. It once again comes back to the type of culture in the company, ask yourself: Do we have a learning culture and a culture of building people and systems and our company? Even though we live in a world where the outside requirements of employees' worlds look different from the workplace, for example, locations or rural areas, we as management need to train and educate the members on what behaviour is acceptable and non-acceptable."*

For any system to work, people need to buy into it. You see the poultry industry is very difficult, on the processing side you can do everything right. Improve your output over input but still make a loss due to market conditions. Because we're not, we're not physically seeing the payoff of the system in rand and sent way, and unfortunately in the last couple years we have had financial difficulties."

Participant 9: "And obviously the boundaries in which they are allowed to operate freely within and making their own decisions. You build the culture like that."

Participant 2: "It depends on your immediate culture. Some teams want the leader to give constant direction. Other teams want the leader to oversee the process but not participate in it. Starting from the bottom, going upwards and out from the top downwards."

Each person has their own leadership style. What works for me will not work for another person. Whatever the leadership style, we must measure it against the engaging with employees, employee engagement, engaging with them."

Participant 7: "But it brings a lot of logistical problems as well because to evaluate that fairly to all becomes quite difficult because you don't want to. You also need a driver who's really driving it. At Grain Field Chickens we have implemented the system for 8 years and in this time built a solid foundation of Key leaders and a full-time Industrial Engineer onsite."

The biggest obstacle we have is the difference between the culture that our employees have outside of the business and the one that we expect of them inside of the business."

The quotations reveal that the rural environment *presents unique challenges* to continuous improvement, primarily due to *cultural and literacy factors*. Participants highlight that employees in rural areas often come from backgrounds that are used to *simply working* without fully *understanding the "why"* behind new processes or improvements. This lack of understanding makes it *difficult to foster buy-in* for CI initiatives. Cultural differences, such as those between the highly disciplined and professional Japanese culture where 20 Keys originated and the more relaxed and less formalised culture in rural African contexts, present barriers that need to be *addressed through coaching* and effective communication.

Participants also point to the importance of *adapting leadership styles* to local environments. In rural settings, leadership must be flexible, with some teams requiring more direct guidance while others prefer autonomy. *Continuous feedback and clear communication* are essential, but they must be delivered in a way that motivates rather than demotivates, especially when employees may not immediately see tangible benefits in terms of financial rewards. Additionally, *logistical*

challenges and the contrast between employees' personal lives and the professional expectations within the company further complicate the implementation of CI systems.

Ultimately, the success of continuous improvement in rural environments depends on building a culture of learning and engagement, adapting leadership to meet local needs, and ensuring that employees understand the value of their work within the broader organisational strategy.

Theme 4: The Role of Leadership

The vital role of leadership that stood out from the literature study also emerged as a dominant theme in the empirical study. The points mentioned below revolve around the importance of adaptive and participative leadership styles. This also links up with the findings described in the themes mentioned above.

Participant 5: *"The key role or the key leaders of it is to be positive about the system. If management is not supportive and does not live out the system then it will never be sustainable on floor level. When departments function in silos and not seeing how they combine with each other.*

If you don't explain and if they don't understand the reasoning why they are doing it, why is it important? People will not buy-in and will not participate. Also, if you only use the system to punish your team members, the system will fail."

Participant 2: *"It depends on your immediate culture. Some teams want the leader to give constant direction. Other teams want the leader to oversee the process but not participate in it. Starting from the bottom, going upwards and out from the top downwards.*

Each person has their own leadership style. What works for me will not work for another person. Whatever the leadership style, we must measure it against the engaging with employees, employee engagement, engaging with them."

Participant 4: *"So yes, of course, leaders are at the front. They're supposed to be on the front, so they have a very big impact on this because if the leader doesn't motivate the participation of the employees, then it's another issue. So the leader, yes, the leader must be able to understand. If the leader does not participate then the chances of the employees participating decreases."*

Participant 5: *"Definitely a positive leadership for a positive relationship between departments and team members. Leadership must receive ideas and queries from the floor with an open mindset. People will give more ideas if they see that their voices are listened to.*

Very, very important if the implementation gets rolled down to the shopfloor leadership needs to focus on creating a sense of belonging. As a leader, you need to understand that there might be general workers who know the process better than you. You must be open to suggestions that can increase the quality, cost and delivery of the product.”

Participant 6: *“If you as a leader think that you know best and are not open to any suggestions, it will be detrimental to the company culture and the system. Then if you have bad leadership, it’s going to be very difficult to implement the successful because ultimately you need to buy in from, you know, from your workforce.”*

Participant 5: *“We need to understand that we as leaders must be positive about the system and the company. This will create buy-in from the rest of the team and help gain momentum. People need to know that they are heard.”*

The quotations emphasise leadership's critical role in the success of continuous improvement (CI) initiatives. Leaders are seen as the *driving force* behind the system, with their attitudes and actions *directly influencing* employee participation and the overall success of CI. Participants highlight that leaders must embody a positive attitude toward the CI system, as their support and enthusiasm *set the tone for the rest of the organisation*. When leaders actively engage with the system and communicate the “why” behind processes, it *fosters employee buy-in and participation*.

Leadership styles vary, and participants stress the importance of *adapting leadership approaches* to the team and organisational culture. While some teams require more direct guidance, others thrive with more autonomy. Regardless of the style, leaders must *engage with employees*, listen to their input, and create a *sense of belonging* and collaboration. This *openness to ideas*, particularly from frontline workers who may have in-depth knowledge of the processes, is crucial for improving quality and efficiency. Additionally, leaders who are resistant to feedback or operate in silos can hinder the success of CI systems.

Overall, the quotations suggest that effective leadership in continuous improvement requires a *balance of positive engagement*, clear communication, adaptability, and openness to employee input. Leaders who foster collaboration and demonstrate commitment to the system are likelier to create an environment where continuous improvement can thrive.

Theme 5: The need for measurement

The need to consistently measure the progress of the continuous improvement system and provide feedback to the relevant stakeholders emerged as a theme. The need for measurement

includes the progress of the implementation and the overall company objectives. This resonates with the above themes, including strategic clarity, leadership, the need for training, and the crucial role that effective communication plays in all these themes.

Participant 7: *“So consistent continual measurement of what you want to achieve and giving feedback to the team, in my opinion, is crucial because then they know when they deviate and they can adjust their plans accordingly to make sure it is still on track. Do ensure that employees do not feel that measurement and feedback is seen in a negative way, with so many things in the working environment, I think the how is almost more important than what you communicate. But if in my opinion if you use it correctly and your how is more correct, you can actually use it as a motivational tool more than a punishment tool. It once again comes back to the type of culture in the company, ask yourself: Do we have a learning culture and a culture of building people and systems and our company? Even though we live in a world where the outside requirements of employees worlds look different than the workplace, for example, locations or rural areas, we as management need to train and educate the members of what behaviour is acceptable and non-acceptable.”*

Participant 2: *“Lots of those programs are based on control measures that will influence your efficiencies.*

Yes, I can say from my own looking at things and seeing how we have gone through this continuous improvement in our company, it is valuable because if you have got a clear objection of what you want to do, what you want to achieve, clear goals, give it to everyone, this is where we want to go. This is where what we want to reach. I think it can help us, it helps us a lot in continuously improving in everything that we do. If this is not working, what can we do better? This is what we need to do. So clear objection of what you need to do. It's a valuable thing for us to have continuous improvement.”

Participant 7: *“If you measure yourself to your competitors because everybody in the workplace is continually improving, so if you just stay at the status quo, you actually moving backwards. So for sure, it is important, yes.”*

Participant 1: *“To go look at examples getting people's maybe a new perspective on how things can be done and also to hear them out whether they think that it is possible to implement it to get their buying, but also to hear their opinion on it and not just force it.”*

The quotations underscore the essential role of measurement of the progress of the implementation of a continuous improvement system as well as the measurement of the effects

and benefits of the system. Participants emphasise that consistent and continual measurement, *coupled with feedback*, is crucial for keeping teams on track and allowing them to adjust their actions when deviations occur. Measurement must *not be used as a punitive tool* but rather as a way to motivate and guide employees toward shared goals. Creating a *positive culture around measurement*, where employees see it as part of learning and development, *fosters engagement* and helps build a more robust CI system.

The quotes also highlight the *importance of having clear objectives and goals*, which provide a *roadmap for improvement*. When employees understand what they *are working toward*, they are more likely to *stay aligned with the company's vision* and contribute meaningfully to CI efforts. Additionally, participants stress the importance of internal and external benchmarking against competitors, as stagnation in a competitive environment can lead to falling behind. The use of external perspectives and employee input in refining CI processes is also regarded as valuable, as it ensures buy-in and offers new ways of thinking about improvements.

In summary, measurement in CI is vital for ensuring that progress is tracked, adjustments are made, and teams remain aligned with the company's goals. When implemented correctly, measurement tracks performance, serves as a motivational tool, and fosters a culture of continuous learning and improvement.

4.2.4 Summary of Findings

After this analysis, the researcher used the network functionality of Atlas.ti to depict the findings visually, as seen in Figure 12.

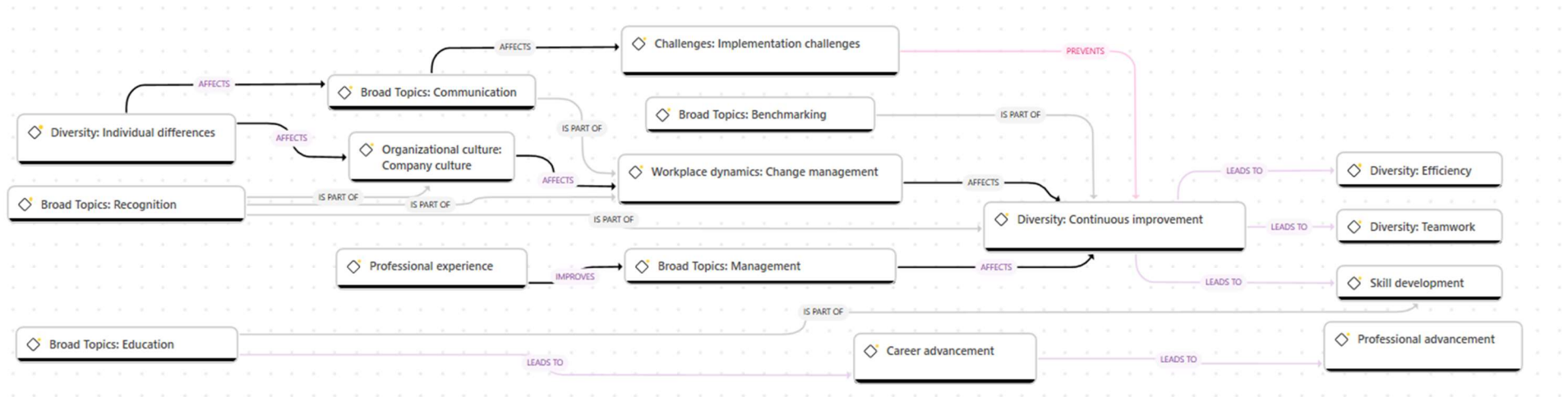


Figure 12: Atlas.ti Network

(Source: Extracted from Atlas.ti)

Figure 12 shows a causal relationship between the factors that emerged from the interviews. Factors such as individual differences, communication, education, and company culture must be addressed to prevent future challenges. Factors such as Efficiency, Teamwork, Skill Development and Professional Advancement will be a symptom of a successfully implemented continuous improvement system. This figure also illustrates that if a company needs to successfully implement a continuous improvement system, change management, addressing implementation challenges, benchmarking, and management involvement are the direct determinants of the system's success.

4.3 Chapter Conclusion

The table below illustrates that common themes appeared in all three levels of analysis, creating a golden thread.

Table 5: Golden Thread (Researcher's own compilation)

	Level 1 (Concepts mentioned)	Level 2 (Repetitive Words)	Level 3 (Themes Identified)
Theme 1	All employees, on each level, must be aware of their role in the system. All employees, on each level, must understand the why behind the system. The company's overall strategy must be set with hard, measurable KPIs connected to the CI system.	Understand, Think, Employees, System, Focus, KPIs, Participation, Change.	Strategic Clarity
Theme 2	The higher the post grade, the more focus on employee buy-in; the lower the post grade, the more focus on training. Emphasis was placed on the need for examples and standardisation.	Understand, Training, People, Role, System, Employees, Participation.	The need for training
Theme 3	The consistent undercurrent was that in rural areas, people are used to a particular discipline and that a different discipline is needed, primarily when food is produced.	Understand, Different, Culture, Attitude, Role, Example.	The Impact of the Rural Environment
Theme 4	The first-line supervisor is identified as the example that must follow set rules so that employees can see the discipline that is needed.	Manager, Culture, Company, Management, Leadership, Positions, Participation, Team.	The Role of Leadership
Theme 5	Consistent measurement is needed. What must the corrective action be to track progress, and if there are deviations?	KPIs, Improvement, Understand, Role, Know.	The need for measurement

What can be derived from the above is that the reaction to change (whether good or bad) starts with the company's leadership and management and then cascades down to the rest of the team.

This is also described in the literature review in the different sections.

In this chapter, the data clearly shows the following critical success factors for implementing a continuous improvement system:

1. Strategic clarity: Without strategic clarity, the organisation's implementation is misaligned.
2. The role of leadership: The commitment and involvement of leadership is crucial to successfully implementing a continuous improvement system.
3. The need for training: Ensure that all employees understand the role of the system and how they contribute to its success forms the foundation of the implementation of any continuous improvement system.
4. The impact of the Rural Environment: Socio-cultural factors must not be underestimated.
5. The need for measurement: Progress of the implementation must be constantly monitored, and feedback must be given to all stakeholders using a structured approach.

Recommendations of how these can be addressed are followed in Chapter 5, which focuses on conclusions and recommendations.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In line with the problem statement, the primary objective of this study was to explore the critical success factors for implementing a continuous improvement system in the food production sector in rural South Africa.

The secondary objectives included:

Secondary Objective 1: To investigate the enablers and barriers to successfully implementing continuous improvement systems through a literature study.

Secondary Objective 2: To practically investigate these enablers and barriers through an empirical study.

Secondary Objective 3: To recommend ways to improve the success of implementing continuous improvement systems.

The following conclusions can be drawn from the study.

5.2 Conclusions

5.2.1 Conclusions from the Literature Study

The literature study explored the critical success factors for implementing continuous improvement systems in the food production sector, focusing on rural South Africa. The key conclusions drawn from the literature are as follows:

1. **Strategic Clarity and Leadership:** Leadership commitment is fundamental to the success of continuous improvement systems. Leaders must communicate the company's vision, set measurable goals, and align these with continuous improvement efforts. Strategic clarity ensures that employees understand the "why" behind the system and how their roles contribute to the company's overall success.
2. **Employee Involvement and Training:** The success of any continuous improvement initiative is closely tied to the active involvement of employees at all levels. Effective training programs, both formal and informal, are critical to ensuring that employees understand the system and their role within it. Continuous improvement requires a workforce that is skilled and motivated to participate.

3. **Cultural and Environmental Context:** The rural South African food production sector faces unique challenges, including low literacy rates and differing cultural norms. These factors must be considered when implementing a continuous improvement system. Tailored approaches that account for the specific socio-cultural environment and employee engagement strategies are necessary for successful implementation.
4. **The Role of Measurement and Feedback:** Regular measurement of key performance indicators (KPIs) of the organisation and continuous feedback on the progress made in implementing the continuous improvement system are essential components of the successful implementation of a continuous improvement system. These processes enable the organisation to track progress, identify improvement areas, and promptly correct deviations. Feedback mechanisms should be designed to motivate employees rather than being punitive.
5. **Technology and Standardisation:** The use of technology, while often limited in rural areas, can enhance the effectiveness of continuous improvement systems by facilitating process monitoring, data collection, and communication. Standardisation of processes is necessary to ensure consistency and efficiency across the organisation, especially in production environments.

5.2.2 Conclusions from the Empirical Study

5.2.2.1 Conclusions from the Themes

The empirical study, which focused on interviews conducted with employees and management in the food production sector in rural South Africa, yielded the following key findings:

1. **Strategic Clarity is Essential:** Participants highlighted the importance of employees understanding the company's goals and the role of the continuous improvement system in achieving those goals. Strategic clarity was frequently mentioned as a factor that enhances employee buy-in and participation.
2. **Training is Critical at All Levels:** The empirical findings underscored the need for comprehensive training programs. Both formal, structured training and informal, on-the-floor coaching were identified as crucial to ensuring that employees understand the continuous improvement system and its impact on their daily work.
3. **Cultural and Environmental Challenges:** The rural environment presents unique obstacles, including a workforce with varying literacy levels and cultural attitudes toward work and discipline. Participants pointed out that these challenges must be addressed through tailored communication and leadership strategies to foster engagement with the continuous improvement system.

4. **The Role of Leadership in Driving Change:** Effective leadership emerged as a key theme, with participants stressing that leaders must model the desired behaviour and fully support the continuous improvement system to ensure employee participation. Leaders who actively engage with employees and provide clear direction are critical to the success of continuous improvement initiatives.
5. **Measurement and Feedback as Motivational Tools:** The need for consistent measurement and constructive feedback was frequently mentioned. Participants emphasised that any measurement should not be used for punitive purposes but instead as a tool for improvement and motivation, helping employees understand their progress and areas for development.

5.2.2.2 Other Issues

The respondents noted other issues that do not form part of the above themes but are significant in the study context. Although this did not emerge as a specific theme (maybe implied under Theme 2), the difference in progress at the two production facilities used in the study sample included the following factors.:

- **The role of the facilitator:** Grain Field Chickens appointed an industrial engineer at the start of the implementation. The implementation of the system was the primary focus point for this appointment. On the other hand, VKB Milling Mokopane did not appoint an onsite facilitator and delegated the responsibility of implementing the system to the Heads of Departments. This method proved to be ineffective.
- **The data available and use of data:** Grain Field Chickens has a dedicated operational data department responsible for capturing all operational data on time and making it available to management to monitor progress. Through this, Grain Field Chickens made it easy to highlight company goals that needed improvement and, through the system's implementation, focused on driving improvement projects to address these goals. The company culture of Grain Field Chickens is based on constant measurement and in-time feedback to all levels of staff. In the case of VKB Milling, the use of and accessibility to data is limited to each Head of Department keeping their spreadsheets and not communicating with team members. A result is that the company culture of VKB Milling does not react well to measurement, and any feedback on goals is seen as criticism.
- **The understanding of the MD regarding the process:** The Managing Director of Grain Field Chickens was a 20 Keys Facilitator and had a detailed understanding of the use of the system and the implementation method. This is not the same for VKB Milling

Mokopane. The Managing Director of the production facility has limited operational experience and no previous experience with any continuous improvement system.

- **Training Resources:** Grain Field Chickens has a dedicated Training Department and two onsite training facilities. The Training Department consists of Internal Trainers who ensure the training schedule is followed. The training schedule focuses on operational, food safety, health, and safety training and continuous improvement. The resources that Grain Field Chickens spent on training have created a positive attitude towards standard operating procedures, training and a continuous learning culture. VKB Milling does not have a dedicated training facility or department. The responsibility to train employees falls on the heads of departments, who experience this function as a time-consuming burden.

5.2.3 Critical Analysis of Empirical Conclusions Against Literature

When comparing the conclusions drawn from the literature with the empirical findings, several common themes and essential distinctions emerge:

5.2.3.1 Alignment on Strategic Clarity and Leadership

The literature and the empirical study both emphasise the importance of *strategic clarity* and *leadership commitment* as critical success factors. In both, leaders are central to ensuring employees understand the system, their roles, and the company's overall objectives.

The empirical study, however, places additional emphasis on *adaptive leadership styles* suited to the rural context, highlighting the need for leaders to be flexible in their approach based on the socio-cultural environment of the workforce. This was less prominent in the literature review but aligned with general continuous improvement system leadership principles.

The difference in prominence of the leadership factor between the literature and the empirical study could be that the majority of the studies were not based on rural South African environments and that the environments used in the different studies were in more mature organisations, where a higher level of leadership and understanding of leadership is the norm.

5.2.3.2 Training as a Cornerstone

Both studies agree that *training is critical* for successfully implementing a continuous improvement system. The literature focuses on the general need for continuous education and skill development. At the same time, the empirical findings highlight the need for a combination of formal, structured training and on-the-job coaching, particularly for employees with lower literacy levels.

The empirical study brings to light the *importance of informal training* and peer-based learning, which was not as extensively discussed in the literature but reflects the realities of rural production environments where formal training resources may be limited.

5.2.3.3 Cultural and Environmental Challenges

Both the literature and the empirical study acknowledge the *impact of cultural and environmental factors* on the success of a continuous improvement system. However, the empirical findings provide a deeper understanding of the *rural South African context*, specifically the challenge of low literacy rates and differing cultural expectations of work discipline, which were only briefly touched upon in the literature.

The empirical data also reveals how the disconnect between employees' personal and professional lives can impact adopting a continuous improvement system, which was not covered extensively in the literature.

It should be noted that none of the studies used in the literature focused on the South African socio-cultural environment.

5.2.3.4 Measurement and Feedback

The literature and empirical findings both highlight the importance of *measurement and feedback* in continuous improvement systems. The literature outlines the theoretical need for company KPIs and regular feedback loops on the implementation progress. At the same time, the empirical findings emphasise the practical application, particularly the importance of using feedback as a motivational tool rather than a punitive measure.

The empirical study adds more context by stressing the importance of how feedback is delivered and the need for it to foster a positive learning culture rather than being seen as negative or corrective.

5.2.3.5 Technology and Standardisation

The literature discusses the role of *technology and standardisation* as essential components of continuous improvement, especially in facilitating process control and monitoring. While this is acknowledged in the empirical findings, *technology* was not a significant focus of the interviews, although the focus was placed on standardisation and examples.

As mentioned in the above section, Grain Field Chickens has a more mature system for operational data, and the company's culture is positive towards measurements and feedback.

Data is available to all levels of the organisation, whereas VKB Milling Mokopane is still in its infancy, with each Head of Department using their own spreadsheets.

Grain Field Chickens has also reinvested capital to upgrade processing equipment to meet world-class standards. In contrast, VKB Milling Mokopane has not been as focused on reinvesting capital into up-to-date technology.

In conclusion, the literature and empirical findings align on the critical success factors for implementing continuous improvement systems, with strategic clarity, leadership, training, and measurement emerging as common themes. However, the empirical study provides deeper insights into the specific challenges and adaptations required for implementing these systems in rural South Africa, particularly concerning cultural and literacy-related issues. While not as prevalent in the general literature, these contextual nuances are crucial for understanding the practical application of continuous improvement systems in rural environments.

5.3 Recommendations

5.3.1 Practical recommendations

The practical recommendations are laid out per critical success factor:

Strategic Clarity is Essential

Before any system is started to improve, the organisation should first standardise. The first step towards standardisation is setting out the goals of the organisations. These goals must comply with the SMART principle (Specific, Measurable, Achievable, Realistic, Timely). The widely used Balanced Scorecard can be utilised to break down these goals into departments and main themes for the organisation.

Once these goals have been determined, management must communicate them and the company's overall strategy to all levels of the organisation. More details on this are mentioned in section 5.3.2.

When focusing on the continuous improvement system, management must create a map that indicates how the system will help the organisation to achieve these goals. This can be done per department and overall and will help employees and management understand how the system assists the organisation in achieving set goals.

Training is Critical at All Levels

As seen in the literature and empirical study, training is critical. Training can be done in different methods:

In a formal classroom setting – To enable this, the organisation must create a dedicated area for training. As seen with Grain Field Chickens, implementing the system and growing a learning culture is a tangible benefit. The training department can also create standard operating procedures to assist the improvement process further.

On-the-floor coaching – First-line supervisors are seen as an example for the floor personnel. Management must ensure that this supervisor level is coached to become an on-the-floor coach.

It will also benefit the organisation to assign a goal to measure the training level and progress of the organisation and specific departments.

Cultural and Environmental Challenges

Acknowledging that the workforce employed in rural environments proposes different challenges will enable the organisation to set actions to decrease the impact. Ensuring organisational information is communicated in different languages and focused on visual communication. Supervisors can also be trained to communicate specific information verbally.

The Role of Leadership in Driving Change

As highlighted in the literature and empirical study, the role of leadership is vital. Leadership on all levels must be trained on their role in the system. This can be done by boardroom sessions indicating where the system will assist the organisation's overall goals. It is suggested that this training is done at least once a year.

Measurement and Feedback as Motivational Tools

The organisation must dedicate resources to create and maintain a standard database to enable measurement and feedback. This database can be Excel-based as an initial system. Still, it should be noted that Excel is not a database, and a more formal structured database should be used to ensure data integrity and enable standardised reporting.

5.3.2 Recommendation for further study

Future contributions could include a scope to different organisations and geographic footprint:

1. Additional data gathering from other VKB production facilities,
2. Other manufacturing companies in Rural South Africa,
3. Other provinces and African nations.

Other than the above, further time can be spent on where and why organisational strategy's communication, translation and implementation fail from management to floor level, specifically regarding continuous improvement.

5.4 Meeting of Research Objectives

5.4.1 Secondary Objectives

Secondary Objective 1: *To investigate the enablers and barriers to successfully implementing continuous improvement systems through a literature study.* In paragraph 2.6, it was stated that the literature study has established the critical success factors, i.e. the enablers and barriers to successful implementation of continuous improvement systems. This objective has, therefore, been met.

Secondary Objective 2: *To practically investigate these enablers and barriers through an empirical study.* Chapter 3 describes the process, and Chapter 4 explains the findings of how these enablers and barriers (challenges) affect the implementation of a continuous improvement system in the organisation. These chapters have, therefore, met this objective.

Secondary Objective 3: *To recommend ways to improve the success of implementing continuous improvement systems.* Paragraph 5.3 deals with these recommendations in detail. Therefore, secondary objective three has been met.

5.4.2 Primary Objectives

These secondary objectives all roll up in the primary objective. In line with the problem statement, the primary objective of this study is to explore the critical success factors for implementing a continuous improvement system in the food production sector in rural South Africa.

As described in previous chapters, the critical success factors for the successful implementation of a continuous improvement system are:

1. Strategic clarity
2. The role of leadership
3. The need for training
4. The impact of the Rural Environment

5. The need for measurement

This emerged from the literature and empirical study. Therefore, the primary objective has been met.

5.5 Implementation plan for the future

The following implementation plan can be used to ensure that the above findings are converted into actionable steps. Please note that this action plan is based on the notion that a Continuous Improvement Facilitator has been appointed per site.

Action 1: Strategic Clarity and Goal Setting

Action: Review the current Strategy, if one is available and develop and communicate a clear, SMART-aligned (Specific, Measurable, Achievable, Realistic, Timely) structure that outlines the specific strategic goals.

Responsible Person: Managing Director and Senior Management Team.

Resources Needed: Meeting Facility, Strategic Planning Documents.

Measurement: Assess clarity and simplicity of strategic objectives through employee feedback and alignment with department goals.

Possible timeline: 30 Days

Reasoning: Clear goals provide direction for continuous improvement initiatives, ensuring all levels of the organisation understand and contribute toward achieving these goals.

Action 2: Alignment of the continuous improvement system with the organisational strategy

Action: Integrate the continuous improvement initiatives directly into the strategic goals, linking specific improvement actions to overall objectives.

Responsible Person: Managing Director, Management Team, Continuous Improvement Facilitator.

Resources Needed: Man hours, Strategy Alignment Workshops.

Measurement: Map each continuous improvement action to an objective and track the completion rate.

Possible timeline: 15 Days

Reasoning: Aligning continuous improvement with organisational goals ensures that improvement activities are purposeful and directly contribute to achieving strategic objectives.

Action 3: Comprehensive Training Program Development

Action: Create a multi-tiered training program that includes formal classroom sessions and on-the-floor coaching tailored to employee literacy levels.

Responsible Person: Training Officer and Continuous Improvement Facilitator.

Resources Needed: Training materials, training facilities, and funding for third-party trainers.

Measurement: Track the number of employees trained, evaluate training comprehension through assessments, and monitor application on the floor.

Possible timeline: 60 days to develop materials and initial training sessions, ongoing for all employees.

Reasoning: Effective training empowers employees to contribute to continuous improvement actively, aligning their roles with strategic goals.

Action 4: Implementation of Standardised Processes and Role Clarity

Action: Standardise processes with clearly documented procedures, particularly for roles with continuous improvement responsibilities.

Responsible Person: Continuous Improvement Facilitator, Department Heads.

Resources Needed: Documented SOPs, and process mapping tools.

Measurement: Evaluate the consistency of process adherence through regular audits and planned job observations.

Possible timeline: 45 days for initial standardisation.

Reasoning: Standardised processes help maintain consistency, allowing deviations to be identified and addressed promptly, thus supporting continuous improvement objectives.

Action 5: Feedback and Measurement System Implementation

Action: Develop a system for tracking continuous improvement progress, including KPI measurement and feedback loops that provide constructive insights.

Responsible Person: Data Analyst, Continuous Improvement Facilitator.

Resources Needed: Excel or a basic database system, reporting tools.

Measurement: Monitor monthly KPI reports, assess progress against benchmarks, and collect employee feedback on the feedback process.

Possible timeline: 30 days for setup; ongoing for measurement.

Reasoning: Feedback is crucial for tracking continuous improvement progress and motivating employees through recognition of improvements.

Action 6: Building a Leadership-Driven Continuous Improvement Culture

Action: Conduct leadership training to support continuous improvement initiatives, emphasising visibility and accountability.

Responsible Person: Managing Director, HR Manager.

Resources Needed: Leadership training materials and external facilitators if needed.

Measurement: Pre- and post-training assessments on leadership continuous improvement knowledge and observation of leadership involvement in continuous improvement activities.

Possible timeline: Initial training within 90 days, with periodic refreshers.

Reasoning: Leadership is instrumental in fostering a continuous improvement culture, which ensures that improvement processes are continuously supported and driven from the top.

Action 7: Fostering Employee Engagement and Empowerment for Continuous Improvement

Action: Create a program that empowers employees to identify and address inefficiencies by establishing an “Improvement Ideas” initiative. Encourage employees to contribute ideas for enhancing processes, with incentives for valuable suggestions.

Responsible Person: Continuous Improvement Facilitator, Supervisors.

Resources Needed: Suggestion system (Online or Physical), communication materials, incentives or recognition for participation.

Measurement: Track the number of suggestions submitted, the number of ideas implemented, and measure subsequent improvements in efficiency.

Possible timeline: Launch within 30 days, with ongoing facilitation and tracking.

Reasoning: Engaging employees in the continuous improvement process nurtures a culture of proactive improvement, where employees feel ownership of processes and are motivated to innovate, boosting productivity and morale.

Action 8: Establishing a Regular Review and Adaptation Cycle for Continuous Improvement Efforts

Action: Schedule quarterly reviews to assess the effectiveness of continuous improvement activities, allowing for adjustments in strategy and tackling any emerging challenges or opportunities. Gather feedback from employees to inform necessary adaptations.

Responsible Person: Continuous Improvement Facilitator, Management Team.

Resources Needed: Documentation of review findings, meeting spaces, and necessary reporting tools.

Measurement: Evaluate the effectiveness of adjustments based on performance metrics, productivity improvements, and employee feedback on implemented changes.

Possible timeline: First review within 90 days of the continuous improvement initiative launch, with ongoing quarterly reviews.

Reasoning: Regular reviews ensure that continuous improvement initiatives stay responsive to operational needs and evolving challenges, maintaining the relevance and impact of improvement efforts across the organisation.

The timelines and responsibilities mentioned above can vary between production facilities. The above-discussed actions can be implemented simultaneously. The same applies to the following checklist.

5.5.1 Action Plan Checklist:

1. Strategic Clarity and Goal Setting

- ☐ Define SMART-aligned CI goals (Specific, Measurable, Achievable, Realistic, Timely).
- ☐ Ensure goals are documented and communicated across all levels.
- ☐ Schedule a follow-up meeting to gather feedback on goal clarity from employees.
- ☐ Confirm that each department's objectives align with these goals.

2. Alignment of CI with Organisational Strategy

- ☐ Map CI initiatives directly to strategic organisational goals.
- ☐ Organise a strategy alignment workshop to ensure integration.
- ☐ Document each CI action's connection to strategic objectives.
- ☐ Create a tracking system to monitor the progress of CI goals.

3. Comprehensive Training Program Development

- ☐ Develop a multi-tiered CI training curriculum (classroom sessions and on-floor coaching).
- ☐ Tailor training content to match employee literacy and role-specific needs.
- ☐ Assess training materials for completeness and accuracy.
- ☐ Schedule initial training sessions and ongoing training refreshers.
- ☐ Implement assessments post-training to measure understanding.

4. Standardised Processes and Role Clarity

- ☐ Document all critical processes and create Standard Operating Procedures (SOPs).
- ☐ Clarify roles and responsibilities related to CI initiatives for each department.
- ☐ Conduct process audits to ensure adherence to SOPs.

- ☐ Schedule ongoing training for updates or changes to SOPs.

5. Feedback and Measurement System Implementation

- ☐ Develop a system to track CI KPIs (Key Performance Indicators).
- ☐ Set up regular feedback loops and ensure accessibility for all team members.
- ☐ Implement a monthly reporting structure to review CI metrics.
- ☐ Collect employee feedback on the feedback process itself for improvements.

6. Leadership-Driven CI Culture Building

- ☐ Organise leadership training focused on CI support and accountability.
- ☐ Evaluate leaders' commitment to CI through observations and feedback.
- ☐ Encourage leaders to participate actively in CI initiatives.
- ☐ Conduct periodic evaluations of leadership's CI engagement and effectiveness.

7. Employee Engagement and Empowerment for CI

- ☐ Set up a structured "Improvement Ideas" program for employee suggestions.
- ☐ Provide incentives or recognition for valuable employee contributions.
- ☐ Track suggestions, monitor the implementation rate, and document improvements.
- ☐ Provide feedback to employees on the impact of their suggestions.

8. Regular Review and Adaptation of CI Efforts

- ☐ Schedule quarterly CI review meetings to evaluate progress and challenges.
- ☐ Document findings and any necessary adaptations from each review.
- ☐ Solicit feedback from employees on the CI processes for continuous refinement.
- ☐ Track performance metrics post-adaptations to gauge improvement effectiveness.

5.6 Final Conclusion

The main objective to determine the critical success factors for implementing a continuous improvement system in the food production sector in Rural South Africa was achieved. Although continuous improvement is in a perpetual loop of implementation, this study provides a practical approach to enhance the success rate of future and current implementations.

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