ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

EFFECT OF KAIZEN ON MIDROC'S PRODUCTIVITY: THE CASE OF TEA PROCESSING AND PACKING FACTORY

BY: KETEMA KORE ARIGAW

JAN. 2025

ADDIS ABABA,

ETHIOPIA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES FOR THE PARTIAL FULFILLMENT OF MASTERS OF BUSINESS ADMINISTRATION

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Declaration

This is to declare that the thesis entitled "**The Effect of Kaizen on MIDROC's Productivity: The Case of Tea Processing and Packing Factory**," submitted in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Business Administration at St. Mary's University, is an original work carried out by me and has not been previously submitted to any other institution for any degree or certificate. All assistance and help received during the course of this research have been duly acknowledged.

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Acknowledgments

First and foremost, I would like to express my profound gratitude to God and his holy mother, Dingel Mariam, for giving upon me the strength and perseverance to undertake this study.

I am deeply indebted to my advisor, Dr. Tesfaye Tilahun, for his unwavering support, invaluable guidance, and continuous encouragement throughout the entire research process.

My sincere thanks go to Mr. Andualem Ayele, Management Consultant, Researcher, and former staff of the Kaizen Excellence Center, currently with MIDROC Investment Group plc, for his invaluable assistance in data collection, insightful guidance, and unwavering support throughout this endeavor.

I would also like to extend my heartfelt appreciation to the management, consultants, supervisors, and staff of the Tea Processing and Packing Factory for their generous cooperation in data collection and their overall support in the successful completion of this study.

Finally, I wish to express my deepest gratitude to my family for their unwavering encouragement and unwavering support throughout my academic journey.

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List Abbreviations and Acronyms

JICA	Japan International Cooperation Agency
EKI	Ethiopian Kaizen Institute
KEC	Kaizen Excellence Center
PDCA	Plan-Do-Check-Act cycle
5S	Sort, set in order, Shine, Sustain, Standardize
TPS	Toyota Production System
TQC	Total Quality Control
JIT	Just-In-Time (production)
CI	Continuous Improvement
Muda	Waste (in Japanese)
RA	Rainforest Alliance
TPPF	Tea Processing and Packing Factory
KPIs	Key Performance Indicators
SPSS	Statistical Package for the Social Sciences
VIF	Variance Inflation Factor
WW II	World War Two

Abstract

This study investigated the effect of Kaizen principles on productivity at MIDROC's Tea Processing and Packing Factory in Addis Ababa, Ethiopia. Amidst growing global competition in the tea industry, the research aimed to assess the effectiveness of key Kaizen elements—continuous improvement practices, employee involvement, standardized procedures, and the Plan-Do-Check-Act (PDCA) cycle—within the specific context of Ethiopian tea production. A mixed-methods approach was employed, combining quantitative data from surveys and key performance indicators with qualitative insights gleaned from document analysis. This approach allowed for a more nuanced understanding of the complexities of Kaizen implementation. The study revealed significant correlations between certain Kaizen principles and improved productivity. A strong positive correlation was observed between continuous improvement practices and overall productivity, validating existing literature on Kaizen's impact. Furthermore, active employee participation in decision-making and problem-solving demonstrated a significant positive impact, highlighting the importance of empowering workers in process improvement. While standardization showed a positive correlation, the PDCA cycle unexpectedly exhibited a negative correlation with productivity, suggesting the need for further investigation and potential adjustments in its implementation. This counterintuitive finding underscores the importance of context-specific research in Kaizen implementation. The study recommends that MIDROC and other organizations in the Ethiopian tea industry prioritize fostering a culture of continuous improvement, actively engage employees in decision-making and problem-solving, and implement robust and appropriate standardized processes. Crucially, further research is needed to understand the specific challenges related to PDCA cycle utilization within the factory, including potential cultural or contextual factors influencing its effectiveness, and to develop tailored strategies for its more effective implementation. These strategies can enhance operational efficiency, reduce waste, improve product quality, and contribute to a stronger competitive advantage for Ethiopian tea producers in the international market.

Key Words: *Factory, Kaizen, Productivity, Tea processing, Packaging,*

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Kaizen is a problem-solving and people-oriented process. It has been defined as any process of continuous improvement in any area of life: personal, social, home or work, and when applied to the workplace kaizen means continuing improvement involving everyone – managers and workers (Imai, 1991). In terms of the time consumption, this activity is above the duration of the internal process improvement (Aoki, 2008).

Kaizen transcends the pursuit of immediate perfection, advocating for ongoing, incremental advancements across all aspects of work and life. This philosophy fosters a systematic and ongoing process where all employees contribute to small changes. These changes aim to eliminate waste, enhance quality, productivity, and safety within the organization (Chen et al., 2005).

Kaizen is the overriding concepts behind good management and problem-solving tool developed in Japan. In Japanese, Kaizen means "continuous improvement" The word implies improvement that involves everyone both managers and workers and entails relatively little expense (Masaaki Imai, 2000). Kaizen is a continuous improvement involving employees in all level of the organization; it is one of the strategies for excellence in production and considered necessary in today's competitive environment. Kaizen institute to carry out broad based activities of ongoing quality and productivity improvement expansion of competitive industries and also to show how management and workers can change their mindset together to improve their productivity.

Kaizen is based on making little changes on a regular basis: always improving productivity, safety and effectiveness while reducing waste. Thus, simplicity and cost effectiveness are the major reasons why kaizen is well appreciated globally. There are large numbers of related and often overlapping components that belong to the kaizen toolkit such as 5S, 7 wastage /Muda/ reduction principle, safety rules, Total Quality Control (TQC), Just-In-Time (JIT). Among these, 5s (Sort, set in order, Shine, Standardize, and Sustain) and 7 wastage /Muda/ reduction principle is generally considered to be the most basic step for improving quality and productivity. So, in order to improve the productivity of the manufacturing sector, industries must use manufacturing philosophies such as kaizen.

Furthermore, studies of kaizen activities in the countries outside Japan, such as US, China, Australia, Sweden and the UK suggest that the concept, approaches, and practices of Kaizen have become routinely accepted throughout the world. If these practices are well sustained, it will have an impact on the operational performance. For instance, the application of Kaizen as a tool of efficiency in production at Coca Cola Bottling Company in Indonesia has been practiced (Utari, 2011). In Canada, there is an application of Continuous Improvement (CI) of Kaizen philosophy which consists of improvement initiatives that increase successes and reduce failures (Bhuiyan and Baghel, 2005). United States of America has used the Deming Management Method of the Kaizen Techniques.

In African manufacturers are not only disadvantaged by the technological gap but also by the lack of knowledge in key managerial methodologies like kaizen (Izumi Ohno, et al., 2009). While engineering capacity may take time to catch up, managerial capacity may be improved more quickly since kaizen tools are developed in a way to be appreciated by all the workers, and its fundamental methodology is not very complicated. Kaizen is more to do with a philosophy and daily practices rather than techniques. The beauty of kaizen is that it can realize productivity improvements with little additional investments. Simplicity and cost effectiveness are the major reasons why kaizen is well appreciated globally (Ishiwata, A., 2009)

In Ethiopia, the concept of kaizen was introduced in 2011. It was applied by many government and non-government organizations. Manufacturing companies are the major beneficiaries of Kaizen management philosophy. During the two-year period of Japan International Cooperation Agency (JICA) support (on the study Quality and Productivity Improvement in Ethiopia, from October 2009 to May 2011), pilot company projects were implemented in 30 companies engaged in most manufacturing industries and their results have been disseminated and a national plan has been formulated to disseminate kaizen activities for manufacturing companies. As a result, kaizen has come to be known among policy makers and business managers in Ethiopia.

Based on these achievements, the Ethiopian government has decided to establish a core organization responsible for quality and productivity improvement, Ethiopian Kaizen Institute (EKI). The Institute provides consultancy and training service for organization that intends to apply the kaizen concept. Besides, it also provides assistance for organization in

the practice kaizen. It conducts researches on the practices and to identify the bottlenecks in the application of kaizen. Even if the dissemination of Kaizen management philosophy has been increasing widespread, it has faced a limitation in the implementation and sustainability of the philosophy because of the companies' management attitude towards the application of the philosophy. In Ethiopia, according to the reports of Kaizen Excellence Center, there are 1500 industries that implement kaizen with in the between 2012-2023 under the supervision of KEC. Based on the report of the Accreditations, Approval and Reward Directorate, in 2021among these, 1500 of the companies or 56% of them are at present showed less result to implement Kaizen. Taking these in to consideration, this research is conducted to assess the effect of Kaizen on productivity.

Kaizen utilizes various tools to achieve its goals of continuous improvement. One prominent tool is 5S, an acronym derived from five Japanese terms: Sort, Set in Order, Shine, Standardize, and Sustain (Imai, 1986). By implementing 5S, organizations create a foundation for a well-organized and efficient work environment. This structured approach offers several benefits:

Reduced waste, improved workflow, enhanced safety, and boosted morale are key benefits of implementing 5S in the workplace. By eliminating unnecessary items, clutter is minimized, and valuable time is saved searching for essential tools and materials. An orderly workspace facilitates smooth workflows, reducing production delays and bottlenecks. A clean and organized environment minimizes hazards, promoting safe working practices. Furthermore, a well-maintained workspace fosters a sense of pride and ownership among employees, potentially leading to increased motivation and job satisfaction (Ishiwata, A., 2009).

This study specifically investigates the effect of Kaizen practice, particularly the implementation of 5S, Muda and PDCA on productivity. Previous research suggests a positive correlation between successful Kaizen implementation and productivity gains (Imai, 1986). These gains are attributed to factors like reduced waste, improved workflow, and a more engaged workforce. However, some companies may face challenges in achieving desired outcomes.

1.2 Background of the organization

Nestled within the vibrant city of Addis Ababa, Ethiopia, lies the heart of MIDROC Investment Group's tea production journey: the Tea Processing and Packing Factory. This critical facility serves as the bridge between the meticulously cultivated tea leaves from MIDROC's esteemed Wushwush and Gumaro estates and the finished tea products enjoyed by consumers around the globe. Here, the tea undergoes a meticulous transformation. The leaves carefully progress through withering, oxidation, drying, sorting, and grading each stage is meticulously monitored to ensure consistent quality and flavor. Following this transformation, the processed tea is then expertly packaged, ensuring the freshness and quality are preserved throughout its journey to consumers.

However, the significance of the factory extends beyond its role in processing and packaging. It embodies MIDROC's unwavering commitment to delivering exceptional Ethiopian tea experiences. This dedication is further reflected in the company's wider operations. MIDROC's Wushwush and Gumaro estates, operated under Ethio Agri-CEFT PLC, have garnered recognition for their exceptional teas and their commitment to sustainable practices through Rainforest Alliance (RA) certification. Furthermore, MIDROC's dedication to quality extends beyond the leaves themselves. Their inspirational packaging designs further distinguish their products within the Ethiopian and international tea landscapes. In essence, the MIDROC Tea Processing and Packing Factory serves as a culmination point, bringing together meticulous cultivation practices, rigorous processing techniques, and a dedication to sustainability to create a truly exceptional Ethiopian tea experience.

This thesis focuses specifically on the MIDROC Investment Group's tea processing and packing factory. This crucial facility plays a central role in transforming tea leaves from the estates into the finished products enjoyed by consumers worldwide. Here, the tea undergoes various processing stages, including withering, oxidation, drying, sorting, and grading. Subsequently, the processed tea is packaged for distribution through a streamlined operation. Optimizing efficiency and productivity within this factory directly translates to increased output, reduced waste, and ultimately, enhanced competitiveness for MIDROC's tea products.

The concept of Kaizen holds immense potential for enhancing the productivity of the MIDROC Tea Processing and Packing Factory (TPPF). This thesis examines the effect of

kaizen practice on productivity, a core element of Kaizen, within the factory environment. The 5S methodology emphasizes five key steps – Sort (Seiri), Set in Order (Seiton), Shine (Seiso), Standardize (Seiketsu), and Sustain (Shitsuke) aimed at creating a well-organized, clean, and efficient workspace. By analyzing the application of 5S principles within the MIDROC tea factory, this thesis examines its effectiveness in improving productivity and contributing to the overall success of MIDROC's tea production.

1.3 Statement of the Problem

In Ethiopia, many institutions are embracing Kaizen, a Japanese philosophy of continuous improvement, to enhance productivity and competitiveness in local and international markets. The Kaizen Excellence Center (KEC) plays a crucial role by providing support ranging from needs assessment and training to consultancy services and long-term sustainability guidance. This support has enabled some organizations to successfully integrate Kaizen into their systems and reap significant benefits. However, the specific effect `of implementing the 5S methodology, a core element of Kaizen, on productivity within these organizations remains largely unexplored.

African manufacturers are not only disadvantaged by the technological gap but also by the lack of knowledge in key managerial methodologies like kaizen (Izumi Ohno, et al., 2009). The successful implementation of Kaizen can be hindered by several challenges. One major obstacle is employee resistance to change. Workers accustomed to existing workflows might view Kaizen as disruptive and unnecessary. This can lead to a lack of buy-in and a reluctance to adopt new procedures, ultimately hindering the program's effectiveness. Insufficient training further compounds this issue. Without a clear understanding of 5S principles and their benefits, employees might struggle to implement them effectively, leading to inconsistencies and reduced impact on productivity. Additionally, unforeseen obstacles can arise during implementation. Space limitations within the factory or complexities in standardizing processes across departments can slow progress and delay the realization of productivity gains.

Maintaining the initial momentum and commitment to Kaizen practices over time is essential for its long-term success. Without a clear system for ongoing monitoring and reinforcement, the initial improvements might regress. Additionally, cultural considerations are important. Kaizen is rooted in Japanese work culture with specific values and expectations.

Implementing it in an Ethiopian context might require adjustments to ensure cultural fit and long-term sustainability. Finally, successful integration with existing quality management or performance improvement systems within the factory is crucial. Disparate systems can create confusion and hinder the overall effectiveness of the Kaizen program.

Many companies struggle with issues like high product rejection rates, excessive inventory, long lead times, high production costs, and missed delivery deadlines. Implementing and practicing 5S methodologies can address these challenges without requiring high-tech or expensive solutions. This approach emphasizes workforce engagement in daily Kaizen activities, promoting continuous improvement in performance, cost, and quality. However, sustaining the positive outcomes of Kaizen initiatives remains a concern for Ethiopian industries.

While previous studies have explored Kaizen implementation in Ethiopia ("Kaizen Implementation in Ethiopia: Evidence in Literature" (Sep. 2015), "Factors Affecting the Successful Implementation of Kaizen in Ethiopia" (Jan.2020), "Kaizen Implementation in Industries of Southern Ethiopia: Challenges and Feasibility" (Sep 2020), "Kaizen Practice in Ethiopia: Challenges and Opportunities of kaizen implementation" (Apr.2019)), there is a lack of empirical research on the effect Kaizen practices on the productivity. This research addresses these challenges by investigating the MIDROC Tea Processing and Packing Factory. By identifying bottlenecks in 5S Kaizen implementation, establishing clear productivity baselines, and developing strategies to maintain long-term commitment, this study aims to illuminate the Effect of Kaizen on the factory's productivity. Ultimately, the research seeks to provide practical recommendations for optimizing productivity within the factory through effective practice of Kaizen.

1.4 Objective of the Study

1.4.2 General Objective:

The general objective of this study is to identify the effect of Kaizen on MIDROC's Productivity with special focus to Tea Processing and Packing Factory.

1.4.3 Specific Objectives:

1. To determine the current Kaizen implementation of TPPF on its tea processing and packing factory.
2. To investigate the effect of continuous improvement on TPPF Productivity.
3. To determine the effect of employee involvement on TPPF's Productivity.
4. To pinpoint the effect of standardization on TPPF's Productivity.
5. To analyze the effect of PDCA cycle on TPPF's Productivity.\

1.5 Research Questions

1. What is the current level of Kaizen implementation in TPPF's tea processing and packing factory?
2. How does continuous improvement affect productivity in TPPF's tea processing and packing factory?
3. What is the impact of employee involvement on productivity in TPPF's tea processing and packing factory?
4. How does standardization affect productivity in TPPF's tea processing and packing factory?
5. What is the impact of the PDCA cycle on productivity in TPPF's tea processing and packing factory?

1.6 Significance of the Study

This research addresses common industry challenges. Many companies, including those in tea processing, struggle with issues like high rejection rates, excessive inventory, and missed deadlines. Kaizen provides a low-cost and adaptable approach to address these problems. It promotes improved organization and efficiency through streamlined workflows and a clean work environment, leading to reduced waste and production delays. Additionally, it fosters employee engagement by encouraging active participation, which can improve performance and ownership. Standardized processes, another key element of Kaizen, ensure quality and production predictability. By studying the effect of Kaizen in the MIDROC factory, this research can contribute valuable knowledge about its effectiveness for Ethiopian tea processing companies.

This study contributes to evaluating Kaizen adoption in Ethiopia. While Kaizen principles are gaining traction, a clear understanding of their specific benefits within different industries

is lacking. This research will provide empirical evidence regarding the effect of Kaizen on productivity within the Ethiopian tea processing context. This information can be valuable for informing future Kaizen practice strategies in other Ethiopian industries by identifying successful approaches and potential challenges. Additionally, it can demonstrate the value of Kaizen to Ethiopian companies by providing concrete evidence of productivity improvements, thereby encouraging wider adoption of these practices.

Finally, this research can help enhance the long-term sustainability of Kaizen initiatives, which is a concern for Ethiopian industries. The study will explore strategies to overcome implementation bottlenecks and ensure long-term commitment to kaizen practices within the MIDROC factory. These findings can be applied to develop best practices for ongoing monitoring and reinforcement, such as regularly assessing productivity and employee engagement. Additionally, the research can help identify cultural considerations for successful implementation, allowing for adaptations of Kaizen that better suit the Ethiopian work culture and enhance its long-term success.

1.7 Scope of the Study

Delimiting a research project using specific parameters like location, population, timeframe, or the issue under investigation helps the researcher focus their attention and address the research problem efficiently (Creswell, 2009).

The MIDROC Investment Group engages in a diverse range of processing and packing services, including tea processing, warehousing, tea exporting, and packing services. To ensure a focused investigation, this study will specifically examine the tea processing and packing unit.

Thematically, the scope of this research is to identify the effect of Kaizen on the productivity of the MIDROC Investment Group Tea Processing and Packing unit. Geographically, this study is delimited to the Addis Ababa location.

1.8 Limitation of the Study

While the research on the effect of Kaizen on productivity at the MIDROC Investment Group Tea Processing and Packing Factory offers valuable insights, some potential limitations deserve consideration.

Firstly, the study's focus on a single factory in Addis Ababa, Ethiopia, limits its generalizability. The findings might not be directly applicable to other tea processing facilities with different layouts, equipment, or company cultures.

Secondly, the research may only capture the short-term effect of Kaizen. Sustaining long-term effectiveness requires ongoing monitoring and adaptation, which this study might not fully explore.

Thirdly, isolating the specific effects of Kaizen from other factors influencing productivity can be challenging. The factory might have implemented other changes concurrently that could also affect productivity. Additionally, data availability and accuracy can be limitations. Production records, employee surveys, or equipment logs might have limitations or inconsistencies, impacting the reliability of findings.

Finally, defining and measuring productivity can involve subjective interpretations. Chosen metrics might not fully capture the effect of Kaizen on other aspects of factory operations, such as quality control or employee morale.

1.9 Organization of the Study

This study was organized in a way it comprises five chapters. The first chapter is an introduction which consists of background of the study, statement of the problem, objectives of the study, research equation, significance of the study, scope of the study and limitation of. The second chapter discusses about the review of related literature. The third chapter deals with the research design and methodology. The fourth chapter presents about presentation, analysis and interpretation of the data. The fifth chapter deals with the summary conclusions and recommendations of the study. Finally, references and a set of appendices are included with the assumption that contains the questionnaires that used to collect primary data for this work and other supplementary document of the study.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 Theoretical Review

2.1.1 Kaizen Definition

Kaizen was created in Japan in the post-Second World War (WW II). The word kaizen means "continuous improvement ". It comes from the Japanese words "kai" meaning "change" and "Zen" which means "better" which means continuous improvement. Kaizen focuses on the social, individual, and practical parts of the manufacturing and service industries of the organization and concepts the idea of quality with improvement (Imai, 2000). Kaizen is a management system that forces higher standards at all levels of companies by encouraging continuous improvement in all processes. Kaizen is a never-ending trip towards the waste elimination process, quality improvement, and efficient and effective utilization (Desta et al., 2014).

Kaizen is a process of continual understanding by an organization to improve its business as well as to always improve the quality of products and services so that the companies can meet full customer satisfaction (Ethiopia Kaizen manual, 2011). According to Imai (2000), kaizen has three pillars, these are as follow: 1. housekeeping, 2. waste elimination, and 3. standardization.

The first steps of housekeeping as identified by Imai (2000) are as follows: sort (focus on removing all unnecessary items from the workplace), set in order (putting the right things in the right place), shine (when the workplace is clean and bright where everyone enjoys working environment), standardize (the first three steps are maintained) and sustain.

The second step of muda (waste elimination) is a Japanese word that indicates any non-value-adding activities (Berk et al., 1993).In kaizen management philosophy, the main purpose is to eliminate the seven types of muda (7 deadly wastes) caused by overproduction, waiting, transportation, over-processing, unnecessary stock, motion, and a defective component. Muda is any non-value-added task. Wastes are one means of productivity loss mechanism.

Therefore, to boost production quality and quantity, a waste reduction approaches in the real working environment (Ethiopia Kaizen Institute Book, 2006). The third steps of standardization are set by the management body; however, it changes when the situation

changes. Most business organizations can achieve significant improvement by reviewing the standards periodically, collecting, and analyzing data on defects, and motivating teams to conduct problem-solving activities (Dysco, 2010).

2.1.2 Kaizen Principles

The relentless pursuit of progress is a defining human characteristic. In the realm of business and industry, this drive for optimization has manifested in various philosophies and methodologies, with Kaizen rising as a beacon of continuous improvement. Originating in post-war Japan, Kaizen, which translates to "change for the better," has transcended its manufacturing roots to become a versatile approach applicable to any endeavor seeking refinement and excellence. At its core, Kaizen rests on several fundamental principles that guide its transformative nature.

One cornerstone of Kaizen is the emphasis on small, incremental changes. Unlike revolutionary leaps that can be disruptive and challenging to sustain, Kaizen advocates for a multitude of gradual modifications. This "baby steps" approach fosters a culture of experimentation and iterative learning, reducing the risk associated with radical overhauls while allowing for continuous adaptation and refinement (Liker, 2004). As Deming famously advised, "Continuous improvement consists of many small acts, accumulating to major change over time" (Deming, 1986, p. 146). By embracing this philosophy, organizations can avoid the pitfalls of stagnation and capitalize on the cumulative power of countless minor advancement.

Another key principle is employee empowerment and participation. Kaizen recognizes that the individuals closest to the work possess invaluable insights and perspectives. Consequently, it actively engages all employees, regardless of their hierarchical position, in identifying and implementing improvements (Sohal & Roberts, 2004). This fosters a sense of ownership and responsibility, transforming employees from passive observers into active agents of change. As Hackman & Oldham (1976) emphasized, "The job should have high meaningfulness, high skill variety, high task identity, high autonomy, and high feedback," emphasizing the importance of empowering workers to contribute meaningfully to organizational development. By unleashing the collective wisdom and creativity of the workforce, Kaizen unlocks previously untapped potential for optimization.

Furthermore, Kaizen emphasizes a focus on process improvement. Its scope extends beyond individual tasks and delves into the intricate web of interconnected activities that constitute a workflow. By analyzing and optimizing processes, Kaizen eliminates waste, streamlines operations, and creates a more efficient and seamless system (Womack & Jones, 1996). This holistic approach ensures that individual improvements contribute to a broader synergy, creating a ripple effect of enhanced performance throughout the organization. As Schonberger (1986) aptly stated, "Waste of time is the worst form of product waste," highlighting the importance of streamlining processes to eliminate unnecessary time expenditures.

A crucial aspect of Kaizen is its problem-solving and data-driven approach. Continuous improvement necessitates the ability to identify and address inefficiencies and bottlenecks. Kaizen employs data collection and analysis as potent tools for pinpointing problem areas and evaluating the effectiveness of implemented solutions (Sohal & Roberts, 2004). This rigorous approach ensures that improvements are not merely intuitive guesses but informed decisions backed by concrete evidence. As Deming (1986) advocated, "In God we trust; all others must bring data," underscoring the critical role of data in driving effective problem-solving within Kaizen.

Finally, Kaizen underscores the importance of respect for people. At its heart, continuous improvement requires a work environment that values and empowers individuals. Kaizen fosters collaboration, open communication, and a sense of community, recognizing that people are not merely workers but valuable contributors to the collective pursuit of excellence (Liker, 2004). As Senge (1990) observed, "Organizations learn only through individuals who learn," highlighting the significance of creating an environment conducive to individual growth and learning, which ultimately fuels organizational development. By prioritizing respect and inclusivity, Kaizen cultivates a workforce that is engaged, motivated, and capable of achieving remarkable results.

In conclusion, the principles of Kaizen paint a vivid picture of continuous improvement as a collaborative journey, fueled by small steps, empowered employees, optimized processes, data-driven decisions, and a foundation of respect. By embracing these principles, organizations can unlock the transformative potential of Kaizen, propelling themselves toward a future of ever-evolving excellence.

2.1.3 5S Overview

The 5S methodology arose following the Second World War as part of the quality movement in Japan (J. Michalska & D. Szewieczek, 2007). However, the term was formalized by Takashi Osada in 1980 . The 5S methodology comes from five Japanese words: Seiri, Seiton, Seiso, Seiketsu and Shitsuke.

Seiri (Sort) Refers to selecting and sorting the elements of the workplace into two main categories, essential and nonessential, in an effort to remove unused or rarely used elements that accumulate and create disorder (Cura, H. M. 2012 , J. Michalska and D. Szewieczek, 2007). Hirano proposed sorting tools and materials into specific categories according to relevance or usage because removing things, which are not needed, makes the workplace larger (C. HungLing,2011). This, in turn, generates money and space savings rather than having to invest in an expanding workplace (J. Becker,2001).

Seiton (Straighten). Straighten refers to making room for each item previously classified as "essential" so that it can be easily accessible. To bring order to the workplace, the items that are classified as "essential" are labeled, sorted and placed according to their frequency of use so that operators can quickly locate them, use them and return them to their proper place (H. Cura., 2012)

Seiso (Sweep). The third "S" seeks to define the optimal conditions of the working environment (including machines, tools, floors and walls) in order to maintain the workspace under ideal conditions (A. Riera y F. Roman, 2012). Regularly cleaning the workspace allows operators to identify and eliminate sources of dirt or clutter (E. Giralt.2012). One aspect of "Seiso" is to design and implement effective methods which must be integrated into the operators´ daily maintenance tasks (S. Ho,1999). However, it is important to clarify that the third "S" also seeks mechanisms to prevent a dirty and disorderly workstation. Some authors explained that cleaning should not only be done at the end of the day, but also have a regular schedule for removing dirt and dust (C. HungLing ,2011 & J. Becker,2001).

Seiketsu (Standardize). Standardization involves easily distinguishing a normal situation from an abnormal one by applying simple rules visible to all operators. For standardization each member of the organization must continuously practice the first three S's (H. Cura.,2012). To achieve this it is necessary to design obvious and easy to understand visual

controls (signs) that allow operators to differentiate between correct and incorrect behaviors (A. Riera y F. Roman,2012). The purpose of this step is to keep the three previous S's as a standard that allows operators to perform their daily activities in a consistent manner. Accordingly, everything should be clearly identified and labeled. (E. Giralt.2012).

Shitsuke (Sustain). Discipline consists of making each of the five S's habitual (S. Ho., 1999) working permanently in accordance with the rules, agreements and commitments that were established to implement the methodology. To ensure the success of the methodology a commitment is required from the director to encourage the behaviors that each S demands (J. Becker., 2001). One of the key factors to achieve and maintain a successful implementation of the methodology is the execution of regular audits to reveal the status of each S. The audits should be focused on ensuring that specified routines and schedules are being fulfilled. The audit also provides an excellent opportunity to ask questions and provide feedback to stimulate further improvements. organizations interact. These perceptions can be objective, such as related to organizational structures, policies or rules of the organization, or subjective, such as related to cordiality and support, which affect the results of each individual (L. Castillo, C. Lengua y P. Pérez,2011).

2.1.4 Benefits of 5s Kaizen on productivity

Kaizen's 5S Methodology Transforms Workplaces

The relentless pursuit of improvement lies at the heart of Kaizen, a prominent Japanese management philosophy. Kaizen transcends cultural boundaries, offering a practical framework for organizations to continuously optimize processes and elevate productivity. One of its most impactful tools is the 5S methodology, a structured approach that creates a foundation for operational excellence. By delving deeper into the 5S principles and their influence on productivity, we can unlock the true potential of this transformative approach.

From Reactive to Proactive: Fostering a Culture of Continuous Improvement

Traditional Western management styles often focus solely on results, overlooking the value of the underlying processes. This reactive approach can lead to inefficiencies and missed opportunities for optimization. Kaizen, in contrast, promotes a proactive culture where continuous improvement is embedded within the organizational DNA. The 5S methodology serves as a cornerstone of this philosophy. Through the five stages – Sort, Straighten, Shine, Standardize, and Sustain – workspaces are transformed into streamlined environments that

empower employees to identify and eliminate waste. This shift in mindset, from simply completing tasks to actively seeking improvement, fosters a culture of innovation and problem-solving, ultimately leading to significant productivity gains.

Streamlining Workflows for Enhanced Efficiency

The 5S methodology goes beyond simply cleaning and organizing. It is a systematic approach designed to eliminate wasted time, effort, and resources. By implementing Sort, unnecessary items are removed from the workspace, freeing up valuable physical and mental space. Straighten ensures tools and materials are readily accessible in designated locations, minimizing wasted time spent searching. Shine emphasizes the importance of maintaining a clean and organized environment, promoting a sense of ownership and pride among employees. These initial steps pave the way for the crucial stages of Standardize and Sustain. Standardize establishes best practices for maintaining the organized environment, ensuring consistency and efficiency across the organization. Finally, Sustain emphasizes the ongoing commitment to continuous improvement. Regular audits and employee involvement ensure the 5S principles are not simply a one-time initiative, but rather a deeply ingrained part of the operational culture. This comprehensive approach to streamlining workflows empowers organizations to achieve new levels of efficiency, ultimately leading to increased productivity.

Real-World Examples of 5S Success

The positive impact of 5S on productivity is not merely theoretical. Studies across diverse industries provide compelling evidence of its effectiveness. In the agricultural sector, Sidhu et al. (2013) documented a significant reduction in cycle time within the Indian agricultural industry after implementing 5S. Assembly line cycle time dropped from 50 minutes to 41.5 minutes per machine, highlighting the ability of 5S to optimize processes and accelerate production. Similarly, Jadhav et al. (2014) explored Kaizen's implementation in Indian electronics manufacturing. Their study revealed a remarkable increase in production per shift, rising from 3900 to 5100 pieces. These improvements stemmed from optimized feeding bowl operations and increased productivity of the CDI flattening machine, underscoring how 5S fosters efficiency across entire production chains. Beyond manufacturing, Jalu (2015) documented the multifaceted benefits of 5S implementation at an Ethiopian sugar factory. The results included not only cost reduction and increased production, but also improved

employee morale, teamwork, and a cleaner working environment. These real-world examples showcase the transformative power of 5S in boosting productivity across various sectors.

In conclusion, Kaizen's 5S methodology is a powerful tool for unlocking an organization's full productivity potential. By fostering a culture of continuous improvement, streamlining workflows, and eliminating waste, 5S empowers organizations to achieve significant gains in efficiency, output, and overall performance. The documented success stories across diverse industries serve as a testament to the transformative power of this practical and adaptable approach. As organizations strive to thrive in an increasingly competitive landscape, embracing the principles of Kaizen and the 5S methodology can provide a distinct advantage in the relentless pursuit of excellence.

2.1.5 Productivity Measurement

Several definitions of productivity highlight its core concept: the relationship between what is produced (output) and what is used to produce it (input). As Vilasini et al. (2012) explain, productivity is essentially a measurement that quantifies output against the amount of input. This input can encompass various resources, including labor, capital, land, energy, and others, ultimately influencing the quantity of goods and services produced (Heizer, Render, & Munson, 2016). Essentially, by measuring productivity, we gain insights into how efficiently resources are being utilized. (FIJI National University, 2020) refers to this efficiency as a key aspect of productivity measurement.

Understanding the factors that influence productivity is crucial. Islam and Islam (2017) categorize these factors into two main groups: external factors, which are beyond an organization's control, and internal factors, which can be managed.

When it comes to measuring productivity itself, Heizer, Render, and Munson (2016) identify two primary approaches: single-factor productivity and multi-factor productivity (also known as total factor productivity). As explained by the US Government (2015), multi-factor productivity considers the ratio of goods and services produced (outputs) to two or more resources used (inputs). In contrast, single-factor productivity focuses on the output in relation to just one specific input resource (Heizer, Render, & Munson, 2016). This research, for instance, employs single-factor productivity as its dependent variable.

By understanding these different perspectives on productivity and its measurement, we gain valuable tools to assess how efficiently organizations are transforming resources into desired outputs. This knowledge empowers us to identify areas for improvement and ultimately enhance overall performance.

2.1.6 Dimensions of Kaizen implementation

Kaizen implementation encompasses several key dimensions, including housekeeping, waste elimination, standardization, and socio-economic and environmental considerations (Ministry of Industry, 2011). Housekeeping, often initiated through the 5S methodology (Sort, Set in Order, Shine, Standardize, Sustain), emphasizes creating a clean and organized work environment, fostering increased quality and productivity (Imai, 1997 as cited in Juhari et al., 2011). Successful 5S implementation requires strong employee motivation, which is influenced by factors such as communication, training, rewards, and top management support (Juhari et al., 2011). Waste elimination focuses on identifying and eliminating seven types of Muda (waste) as defined by the Toyota Production System (TPS), including overproduction, waiting, transportation, inventory, over-processing, motion, and defects (Lean in Government Series, 2007). Minimizing these wastes through techniques like just-in-time production and streamlined processes is crucial for improving efficiency and reducing costs (Thessaloniki, 2006; Thawani, 2003). Standardization of the workplace environment ensures consistency in procedures and practices, leading to improved quality, reduced errors, and enhanced safety. Finally, considering the socio-economic and environmental impacts of operations is essential for sustainable business practices.

2.1.6.1. Continues Improvement

Continuous improvement, a core principle of Kaizen, is a dynamic process that focuses on making incremental yet consistent changes to processes, products, or services to enhance efficiency, quality, and productivity. It involves a systematic approach to identifying areas for improvement, implementing changes, and evaluating the results to ensure that the desired outcomes are achieved. This cyclical process of planning, doing, checking, and acting (PDCA) allows organizations to continuously refine their operations and stay ahead of the competition.

Kaizen's emphasis on continuous improvement fosters a culture of problem-solving and innovation within organizations. By encouraging employees at all levels to identify and address inefficiencies, Kaizen empowers them to take ownership of their work and contribute

to the organization's overall success. This bottom-up approach to improvement not only generates valuable ideas but also increases employee engagement and motivation. As employees see their suggestions being implemented and making a positive impact, they become more invested in the organization's goals and more likely to seek out further opportunities for improvement.

The cumulative effect of small, incremental improvements can be substantial over time. By consistently making small changes, organizations can achieve significant gains in productivity, quality, and customer satisfaction. Kaizen's focus on continuous improvement also helps organizations to adapt to changing market conditions and customer needs. By constantly seeking ways to improve their processes, organizations can become more agile and responsive, allowing them to stay competitive in today's dynamic business environment (Rother, M. (2010)).

2.1.6.2. Employee Involvement

Employee involvement is a critical component of Kaizen methodology, fostering a sense of ownership and responsibility among workers. It goes beyond simply soliciting suggestions; it's about actively engaging employees in the entire improvement process, from identifying problems and brainstorming solutions to implementing changes and evaluating results. This participatory approach recognizes that employees possess valuable insights into their daily work processes, and their direct involvement is essential for driving meaningful and sustainable improvements (Liker, J. K. (2004)).

Kaizen emphasizes that employee involvement is not just a top-down directive but a collaborative effort where everyone, regardless of their position, is encouraged to contribute. This inclusive environment empowers employees to share their ideas, challenge existing practices, and take initiative to improve their work areas. By actively participating in the Kaizen process, employees develop a deeper understanding of their work, identify areas for waste reduction, and become more invested in the organization's overall success (Rother, M. (2010)).

According to Rother, M. (2010), the benefits of employee involvement in Kaizen are multifaceted. It not only leads to improved processes and increased efficiency but also fosters a culture of continuous learning and development. Employees gain valuable problem-solving skills, enhance their teamwork abilities, and develop a stronger sense of ownership over their

work. This, in turn, leads to increased job satisfaction, improved morale, and higher employee retention rates. Moreover, when employees are involved in the improvement process, they are more likely to embrace and support the changes, ensuring smoother implementation and long-term sustainability of Kaizen initiatives.

2.1.6.3. PDCA Cycle

The Plan-Do-Check-Act (PDCA) cycle, also known as the Deming Wheel, is a fundamental iterative framework within Kaizen methodology for implementing and managing continuous improvement. It provides a structured approach to problem-solving and process optimization, ensuring that changes are implemented systematically and their effects are carefully evaluated. The cycle begins with the **Plan** phase, where the problem or opportunity for improvement is clearly defined, objectives are set, and a detailed plan for implementing the change is developed. This stage involves data collection, analysis, and brainstorming potential solutions (Liker, J. K. (2004)).

The **Do** phase involves implementing the planned change on a small scale, often as a pilot project. This allows for testing the effectiveness of the solution in a controlled environment before widespread implementation. During the **Check** phase, the results of the pilot project are carefully monitored and analyzed. Data is collected and compared against the initial objectives to determine whether the change has achieved the desired outcomes. This stage may involve using various quality control tools and techniques to assess the impact of the change (Osada, T. (1991)).

Finally, the **Act** phase involves standardizing the successful changes and integrating them into the regular work processes. If the results of the pilot project are positive, the changes are implemented across the organization. If the desired results were not achieved, the cycle returns to the Plan phase to analyze the reasons for the failure and develop a revised plan. The PDCA cycle is a continuous loop, emphasizing that improvement is an ongoing process. By repeatedly going through the cycle, organizations can continuously refine their processes and achieve higher levels of performance (Liker, J. K. (2004)).

2.1.6.4. Standardization

Standardization plays a crucial role in Kaizen methodology, providing a foundation for continuous improvement and ensuring consistency in processes and outcomes. It involves establishing clear, documented procedures and guidelines for performing tasks, manufacturing products, or delivering services. These standards serve as the best-known and most efficient way to execute a process at a given point in time, ensuring that everyone

follows the same method and minimizing variations in quality, efficiency, and safety (Rother, M. (2010)).

Standardization is not about creating rigid, inflexible rules; rather, it's about capturing the current best practices and making them accessible to everyone. This ensures that knowledge is shared, and everyone performs tasks in the most effective way possible. By standardizing processes, organizations can reduce waste, improve quality, and increase efficiency. It also makes it easier to identify areas for improvement and implement changes, as there is a clear baseline to compare against (Liker, J. K. (2004)).

In Kaizen, standardization is seen as a dynamic process. Standards are not set in stone but are continuously reviewed and updated as improvements are made. The process of standardization itself becomes a target for continuous improvement. This means that organizations are constantly seeking ways to refine their standards, making them even more efficient and effective. This iterative approach to standardization ensures that organizations are always striving for excellence and adapting to changing circumstances (Osada, T. (1991)).

2.2 Empirical Review

Kaizen, a Japanese philosophy advocating for continuous improvement, has emerged as a powerful tool for organizations seeking to elevate their productivity. However, translating this philosophy into tangible results requires navigating a landscape of potential challenges. By delving into the insights gleaned from various research studies, we can illuminate these roadblocks and identify strategies to pave the way for a successful Kaizen journey, particularly through the lens of the 5S methodology, a core Kaizen practice.

One of the most frequently cited hurdles in the literature is the struggle to cultivate employee engagement in Kaizen events. Studies by Robinson and Schroeder (2004), Lidia (2011), and Solomon (2021) pinpoint the demotivating effects of factors like inadequate rewards or recognition for employee contributions, insufficient training on Kaizen principles, and delayed processing of employee suggestions. Here, the 5S methodology provides a framework for addressing these concerns. The **Sort (Seiri)** stage eliminates unnecessary items from the workspace, freeing up physical and mental space for employees to focus on improvement initiatives. **Straighten (Seiton)** ensures tools and materials are readily accessible in designated locations, minimizing wasted time spent searching and allowing employees to readily participate in Kaizen events. **Shine (Seiso)** fosters a clean and organized

environment, promoting a sense of ownership and pride among employees, increasing their sense of value within the organization and boosting their engagement in improvement efforts.

Furthermore, successful Kaizen implementation hinges on strong leadership commitment and fostering a culture that embraces change. Research by García et al. (2013) and Abraham (2019) emphasizes the critical role of top management buy-in. Without a strong champion at the helm, a sense of apathy can permeate the organization, hindering employee engagement and ultimately derailing the initiative. Additionally, García et al. (2013) highlight the potential for employee resistance towards changes in established workflows. The 5S methodology directly addresses this by creating a standardized and organized work environment. The **Standardize (Seiketsu)** stage establishes best practices for maintaining the organized environment, ensuring consistency and reducing confusion that might lead to resistance.

Resource constraints and a lack of awareness can also impede progress. Studies by Getu (2016), Tadesse (2014), and Hailu (2019) point towards limitations in resources such as budget deficits and inadequate training opportunities as significant barriers. Limited financial resources can restrict the ability to invest in necessary training programs or acquire tools that might streamline processes. Similarly, a lack of awareness among employees and stakeholders regarding the core principles and benefits of Kaizen can lead to a sense of disengagement and hinder buy-in. The **Sustain (Shitsuke)** stage of 5S combats these issues. It emphasizes the ongoing commitment to continuous improvement. Regular audits and employee involvement ensure the 5S principles are not simply a one-time initiative, but rather a deeply ingrained part of the operational culture. This fosters a sense of ownership and responsibility for maintaining the improvements, reducing the need for additional resources for ongoing maintenance.

Effective communication across all levels of the organization is another crucial element for successful Kaizen implementation. Gelila (2017) emphasizes the importance of fostering clear communication channels between management and employees, as well as across different departments. This ensures everyone involved understands the goals of Kaizen initiatives, their roles in the process, and how their contributions impact the overall success. Furthermore, Eden (2017) highlights the importance of ongoing communication and awareness campaigns to maintain long-term commitment to Kaizen principles.

In light of these identified challenges, a multi-pronged approach is essential to maximize the productivity benefits of Kaizen. Here are some key strategies that organizations can incorporate, all interwoven with the principles of 5S:

- **Leadership Commitment:** Top management must champion Kaizen, fostering a culture of continuous improvement and actively recognizing employee contributions (**Shine**). This can involve setting clear goals, allocating necessary resources (**reducing need for additional resources through Sustain**), and leading by example (**demonstrating commitment through 5S practices**).
- **Motivation and Training:** Develop a robust reward system that incentivizes participation and recognizes employee contributions (**enhancing employee value through Shine**). Provide ongoing training on Kaizen principles, empowering employees with the knowledge and skills necessary to actively participate in improvement initiatives (**reducing need for additional training through Sustain**). Ensure timely feedback on employee suggestions to demonstrate the value placed on their ideas.
- **Resource Allocation:** Allocate necessary resources, including budget and training opportunities, to support successful Kaizen implementation (**reduced need for ongoing resource allocation through Sustain**). This might involve investing in tools and equipment that facilitate process optimization

2.3 Literature Gap

While the transformative potential of 5S Kaizen, a core Kaizen practice, has been well-documented across various industries, its application within tea processing and packing remains largely unexplored. Existing research primarily falls into two categories:

- **Challenges in Specific Companies:** A significant portion of research investigates the unique challenges faced by individual companies during their 5S Kaizen implementation. This focus on company-specific circumstances limits the generalizability of findings and makes it difficult to extract broader insights applicable to entire industries.
- **Ethiopian Manufacturing Overview:** Other studies offer an overview of the challenges associated with Kaizen implementation within the broader Ethiopian manufacturing sector. However, this broad approach fails to capture the specific

opportunities and nuances present within distinct sub-sectors like tea processing and packing.

The Need for Research on Tea Processing and Packing

To the best of our knowledge, a comprehensive examination of the effect of Kaizen on productivity specifically within tea processing and packing facilities is absent from the existing research. This presents a significant opportunity to explore the unique challenges and potential benefits of applying kaizen in this essential sector of the tea industry.

The Rationale for Focusing on Tea Processing and Packing

Tea processing and packing play a critical role in ensuring the quality and marketability of tea products. By investigating the effect of Kaizen within this sector, we can unlock a wealth of potential benefits, potentially leading to:

- **Enhanced Efficiency and Throughput:** Streamlining processes through kaizen can optimize workflows, minimize waste, and ultimately increase production output within tea processing and packing facilities.
- **Improved Tea Quality:** A clean and organized environment fostered by kaizen can minimize contamination risks and ensure proper handling of tea leaves, leading to a higher quality final product.
- **Increased Worker Engagement and Morale:** The emphasis on employee participation and continuous improvement within Kaizen can create a more empowered and motivated workforce within tea processing and packing plants.
- **Reduced Operational Costs:** By eliminating waste and optimizing processes, Kaizen can translate to significant cost savings for tea processing and packing companies.

By addressing this gap in the existing research, this study aims to contribute valuable insights to the field of Kaizen and empower tea processing and packing operations to achieve new levels of efficiency, quality, and overall success.

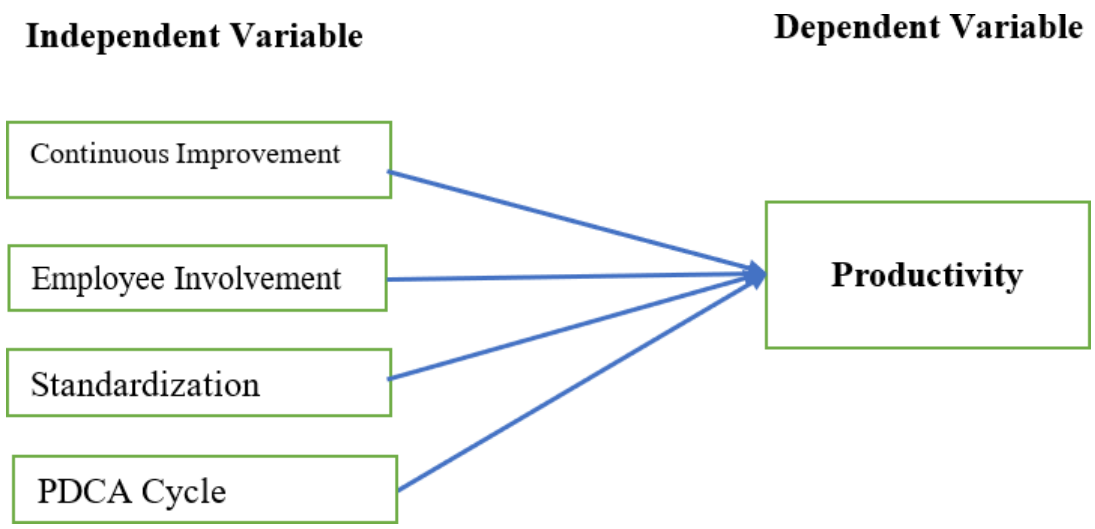
2.4 Conceptual Framework

This research investigates the effect of Kaizen principles on productivity within the tea processing and packing factory of MIDROC Investment Group. Kaizen, a Japanese philosophy emphasizing continuous improvement, encompasses key elements:

- **Continuous Improvement:** A fundamental tenet of Kaizen, driving constant refinement of processes and practices to eliminate waste and enhance efficiency.
- **Employee Involvement:** Actively engaging employees at all levels in the improvement process, leveraging their valuable insights and expertise.
- **Standardization:** Establishing and maintaining consistent processes and procedures to minimize variability and ensure predictable outcomes.
- **PDCA Cycle (Plan-Do-Check-Act):** A structured approach to implementing and evaluating improvements, involving planning changes, executing them, monitoring results, and taking corrective actions.

This research posits that the successful implementation of these Kaizen principles will have a positive and significant effect on various dimensions of productivity within the factory, including:

- **Increased output:** Higher production volume per unit of input (e.g., labor, raw materials).
- **Improved efficiency:** Reduced waste, streamlined processes, and optimized resource utilization.
- **Enhanced quality:** Minimized defects, improved product consistency, and enhanced customer satisfaction.
- **Reduced costs:** Lower operating expenses, minimized downtime, and improved resource allocation.



Sources: own constructed and adapted from literature

Figure 1:Conceptual Framework.

CHAPTER THREE

3 Research Design and Methodology

This chapter outlines the methodology employed in this study, encompassing the research design, target population, sampling strategy, data collection instruments, and data analysis techniques.

3.1 Research design and approach

3.1.1 Research design

There are many definitions for research design according to C.R Kothari ‘’research design is the arrangement of situations for collection and analysis of the data in the stated objective and research questions by its procedure.” In fact, the research design is the conceptual structure within the Conducted research and also it is a blueprint for the collection, measuring, and analysis of data. According to Kerlinger (1986), research design is the plan and structure of investigation so conceived as to obtain answers to the objectives of the research. The plan represented the overall strategy used in collecting and analyzing data in order to answer the objectives of the research. Cooper and Schindler (2003) summarized the essentials of research design as an activity and time-based plan; always based on the research question; guided the selection of sources and types of information; a framework for specifying the relationship among the study variables and outlines the procedures for every research activity.

In this study, both descriptive and explanatory research design were used. The descriptive design is particularly important for the study because it helps to describe and interpret the actual events that exist now and existed in the past and that have influences on the organization. Explanatory research is more in-depth because it explains phenomena and makes an effort to justify why a behavior is a way it is. It enables us to comprehend the very nature of what we are looking at, in other words. For example, this kind of research aims to explain social relationships or events, advance understanding of the structure, progression, and nature of social events, connect factors and elements of problems into generalizations, and develop, test, or revise a theory Jhon, (2007). As result, this study represented by descriptive and causal research as the correlation as well as the effects of kaizen on productivity using correlation and regression.

3.1.2 Research Approach

According to Creswell (2009), research methodologies can be broadly categorized into three primary approaches: quantitative, qualitative, and mixed methods. Quantitative research is employed to investigate relationships between variables and generate testable predictions and explanations of phenomena. This approach aims to establish, validate, or confirm relationships and develop generalizable findings that contribute to existing theory (Leedy & Ormrod, 2001). Conversely, qualitative research delves into the complexities of a phenomenon by exploring subjective experiences, attitudes, opinions, and behaviors. For this study, a quantitative research approach was adopted due to the utilization of a research questionnaire designed to collect numerical data**.**

3.2 Data sources

This research employed both primary and secondary data sources.

3.2.1 Primary Data

Survey Questionnaires:

This research investigates the effect of Kaizen on organizational productivity. The study was employ a mixed-methods approach, utilizing surveys and qualitative data analysis to examine key factors such as: (1) the effectiveness of Kaizen implementation strategies, (2) the relationship between continuous improvement initiatives and productivity gains, (3) the influence of employee involvement on Kaizen success, (4) the role of standardization in maintaining improvements, and (5) the effectiveness of the Plan-Do-Check-Act (PDCA) cycle in driving continuous improvement.

3.2.2 Secondary Data

The secondary data sources that were gathered to conduct the research are assessment and implementation reports of TPPF, end-result assessment reports, and literature review on kaizen implementation assessment and its success reports and proceedings.

3.3 Population, sample size, and sampling procedure

3.3.1 Population of the study

In this study, the unit of analysis was the Tea processing and packing industry, and the target population comprised the TPPFs located in Addis Ababa.

3.3.2 Sample size

The researcher used Simple random sampling to determine the sample size of the research. The rationale behind preferring this method was to include all processing and packing unit managers and employees. The researcher assumed that those individuals had better information, knowledge, and skills regarding the implementation the Kaizen and its effect on productivity in TPPF.

To determine the sample size, we took the number of TPPF total permanent employees in the tea processing and packing unit as per their list in the current human resource department profile. Accordingly, the required sample size of respondents was determined based on a formula developed by Yamane (1967, cited in GfK, 2013), at 95 percent level of confidence as follows:

$$n = \frac{N}{1 + \mathrm{N(e)}^2}$$

Where,

n = Sample size

N= Target Population, which is known (i.e., 155); and

e = the acceptable sampling error at 0.05

Hence, $n = \frac{155}{1+155(0.05)^2}$

n = 112

3.3.3 Sampling techniques

The samples were drawn in probability sampling. Therefore, the respondents from the TPPF were selected using simple random sampling techniques among the management and employees of the processing units

3.4 Method of Data Collection

The primary data was gathered particularly using a survey questionnaire. The researcher distributed the questionnaire to the sampled respondents. For the purpose of this study, a quantitative methodology involving a close-ended questionnaire was used as the measuring instrument. The close-ended questionnaires could be administered to groups of people simultaneously since they were less costly and less time consuming than other measuring

instruments. In the questionnaire, general questions included gender, age, employment status, and education level, Likert scale, open-ended, etc.

3.3 Data Analysis

The collected data was analyzed by using descriptive statistics and inferential analysis methods using software called SPSS version 27. Data analysis in descriptive methods research relates to the type of research strategy chosen for the procedures. For the analysis process, version Excel 2019 was used to maintain the large database and be used for the descriptive data analysis. As indicated in the sampling strategy section, the data collected from different sources were summarized, categorized, and coded to suit for analysis. The equation of regressions in this study is generally built around two sets of variables, namely the dependent variable (productivity) and independent variables (kaizen implementation, standardization, continuous improvement, employee involvement and PDCA cycle). The basic objective of using regression equation in this study is to make the study more effective in cost management at describing, understanding, and predicting the stated variables. The qualitative or open-ended questions have been summarized and presented as they are, while the closed-ended questions have been coded and analyzed using both Descriptive and inferential statistics by using ratios, percentages, and frequencies. The end result has been presented in written form and in the form of a table. The reliability of the Likert scale questionnaire was analyzed by calculating Cronbach's coefficient alpha Ethical Considerations .

Above all the researcher was conducted the study based on professional as well as the basic principles of research. The researcher was identified or presents the respondents personal details and response without their consent and agreement. Ethical issues grouped into informed consent procedures, dishonesty, confidentiality towards participants or sponsors and protecting the anonymity and privacy of research participants (Sarantakos, 2005). Based on the basic principles, the researcher was proposed a set of ethical and moral procedure and informed the participants just before filling out the questionnaire. The participants informed that information obtained from them remain confidential. Besides the respondents were further informed that their names will not be written or exposed on report and will ever be used in connection with any of the information they revealed.

The researcher was also conveying the purpose of the study to the proposed respondents as per standard research requirements. The researcher was avoid deceptive practices, and respect

indigenous cultures as well as discloses sensitive information. The researcher was never practice any kind of practices that affect professional research undertakings. In sum, the researcher was tried to be honest, genuine and free from unnecessary bias as long as problem solving and relevant research is concerned.

CHAPTER FOUR

4. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Response Rate

The response rate is a crucial metric in research, indicating the proportion of the target population that participated in the study. It is calculated by dividing the number of respondents by the total target population and then multiplying by 100 to express it as a percentage. In this particular research, where 106 individuals responded out of a total target population of 112, the response rate is calculated as follows: (106 respondents / 112 total population) * 100 = 94.64%. This remarkably high response rate signifies a substantial level of engagement from the target group, suggesting that the research findings are likely to be highly representative of the population under study. A high response rate enhances the generalizability and external validity of the research findings, as it minimizes the potential for non-response bias, which can occur when certain segments of the population are underrepresented in the sample.

4.2 Demographic Data Analysis

Table 1: Gender of the Respondents

Gender of the Respondents		
	N	%
Male	61	57.5%
Female	45	42.5%
Age of the Respondents		
From 17-30	21	19.8%
From 31-40	57	53.8%
From 41-50	15	14.2%
Above 50	13	12.3%
Position of the Respondents		
Managerial	21	19.8%
None managerial	85	80.2%
Educational Background		
Master's Degree	8	7.5%
Bachelor Degree	38	35.8%
Diploma	28	26.4%
TVET	12	11.3%
High school Complete	15	14.2%

Elementary completed	5	4.7%
Service Year of the Respondents		
<1	13	12.3%
2-5	16	15.1%
6-10	40	37.7%
11-15	18	17.0%
>15	19	17.9%

Source: Researchers' Own Survey, 2024.

The demographic data indicated above (Table 4.1) insights into the characteristics of the study participants, influencing the interpretation and generalizability of the research findings.

The sample exhibits a slight male dominance, with males comprising 57.5% and females 42.5%. This gender distribution is crucial for understanding potential gender-based differences in responses and ensuring the findings are not unduly influenced by a disproportionate representation of either gender.

Gender can significantly impact perspectives, experiences, and behaviors. For instance, research has shown that men and women may hold different attitudes towards risk, leadership styles, and work-life balance. If one gender is overrepresented in the sample, the findings may not accurately reflect the experiences and perspectives of the underrepresented gender.

Furthermore, a skewed gender distribution can introduce bias into the analysis. If one gender dominates the sample, the results may be skewed towards that gender's experiences and perspectives, potentially leading to misleading conclusions.

Therefore, it is essential to consider the gender distribution of the sample and to analyze the data with an awareness of potential gender-based differences. This may involve conducting separate analyses for male and female respondents or using statistical methods to control for the effects of gender. By carefully considering the gender composition of the sample and its potential impact on the findings, researchers can ensure that the research results are more accurate, representative, and unbiased.

The age distribution reveals a concentration of respondents in the 31-40 age group (53.8%), followed by those aged 17-30 (19.8%), 41-50 (14.2%), and above 50 (12.3%). This information is vital for understanding the perspectives and experiences of different age

groups within the target population and for assessing the applicability of the findings to specific age cohorts.

Age is a significant factor that can shape individuals' experiences, perspectives, and attitudes. Different age groups may have distinct values, priorities, and life experiences that can influence their responses and behaviors. For example, younger respondents may be more tech-savvy and open to new technologies, while older respondents may have different preferences and priorities.

By analyzing the age distribution of the sample, researchers can gain insights into the potential influence of age on the findings. For example, if the sample is heavily skewed towards a particular age group, the findings may not be representative of the broader population. Additionally, researchers can use age as a variable in their analysis to explore potential age-related differences in responses and experiences.

Furthermore, understanding the age distribution of the sample can help researchers assess the generalizability of the findings to different age cohorts. For example, if the sample primarily consists of younger individuals, the findings may not be applicable to older populations. By considering the age distribution of the sample and its potential implications, researchers can draw more accurate and nuanced conclusions about the target population.

The age distribution reveals a concentration of respondents in the 31-40 age group (53.8%), followed by those aged 17-30 (19.8%), 41-50 (14.2%), and above 50 (12.3%). This information is vital for understanding the perspectives and experiences of different age groups within the target population and for assessing the applicability of the findings to specific age cohorts.

Age is a significant socio-demographic factor that can profoundly influence individuals' perspectives, experiences, and attitudes. Different age groups may have distinct values, priorities, life experiences, and social and cultural contexts, all of which can shape their responses and behaviors. For example, younger respondents may be more technologically adept and open to new technologies, while older respondents may have different preferences and priorities regarding technology adoption and usage.

Furthermore, age can impact individuals' career trajectories, financial situations, family responsibilities, and overall life stage. These factors can significantly influence their views on

a wide range of issues, including work-life balance, job satisfaction, and organizational culture.

By analyzing the age distribution of the sample, researchers can gain valuable insights into the potential influence of age on the research findings. For example, if the sample is heavily skewed towards a particular age group, the findings may not be representative of the broader population. Additionally, researchers can use age as a variable in their analysis to explore potential age-related differences in responses and experiences. This may involve conducting separate analyses for different age groups or using statistical methods to control for the effects of age.

The majority of respondents possess a Bachelor's degree (35.8%), followed by Diploma (26.4%), TVET (11.3%), High School Complete (14.2%), Master's Degree (7.5%), and Elementary Completed (4.7%). This data provides valuable insights into the educational attainment of the respondents, which can significantly influence their knowledge, skills, and attitudes.

Educational background plays a crucial role in shaping individuals' cognitive abilities, knowledge base, and critical thinking skills. Higher levels of education are often associated with increased cognitive complexity, enhanced problem-solving abilities, and improved communication skills. These factors can significantly influence how individuals perceive and interpret information, make decisions, and interact with others.

For example, respondents with higher levels of education may be more likely to critically evaluate information, engage in complex reasoning processes, and express their opinions more articulately. Conversely, respondents with lower levels of education may have different cognitive frameworks and may rely more on personal experiences and social norms in their decision-making.

By analyzing the educational background of the respondents, researchers can gain a better understanding of the cognitive and intellectual resources that the sample brings to the research. This information can be used to interpret findings in the context of the respondents' educational attainment and to assess the potential impact of education on their perspectives, attitudes, and behaviors.

The majority of respondents have 6-10 years of service (37.7%), followed by those with 2-5 years (15.1%), >15 years (17.9%), 11-15 years (17.0%), and <1 year (12.3%). This information provides valuable insights into the respondents' experience within their respective organizations, which can significantly influence their perspectives, attitudes, and responses. Service year, or length of employment within an organization, is a crucial factor that shapes individuals' experiences, perspectives, and relationships within the workplace.

The demographic data provides a crucial foundation for understanding the sample and interpreting the research findings. By examining the distribution of gender, age, position, education, and service year, researchers can gain a deeper understanding of the respondent characteristics. This understanding is essential for several key aspects of the research process.

One crucial application of the demographic data lies in assessing the representativeness of the sample. By comparing the demographic characteristics of the sample to those of the target population, researchers can determine whether the sample accurately reflects the diversity and composition of the population under study. If the sample significantly deviates from the target population in terms of key demographic variables, it may not be representative, potentially leading to biased or skewed findings. For example, if the sample over-represents individuals with higher levels of education while the target population has a more diverse educational background, the findings may not be generalizable to the broader population.

Understanding the demographic characteristics of the respondents is critical for interpreting the research findings accurately. Demographic variables can significantly influence individuals' perspectives, experiences, and responses. For instance, gender may influence attitudes towards risk-taking, age may impact views on technological adoption, and educational background may shape cognitive abilities and critical thinking skills. By considering these potential influences, researchers can interpret the findings more critically and avoid drawing overly simplistic or misleading conclusions.

Finally, the demographic data plays a crucial role in drawing meaningful conclusions about the target population. By understanding the characteristics of the sample, researchers can draw more accurate and nuanced inferences about the broader population. For example, if the sample primarily consists of younger employees, the findings may not be directly applicable to older employees. By acknowledging these limitations and considering the demographic

context of the findings, researchers can draw more cautious and qualified conclusions that accurately reflect the potential limitations of the research.

4.3 Descriptive Analysis

4.3.1 Current Status

Table 2: Descriptive Statistics to determine the current status

Descriptive Statistics for the Current Status				
	N	Mean	Std. Deviation	Variance
Effectively implements Kaizen principles in its tea processing and packing operations.	106	3.78	.840	.705
Employees are aware of Kaizen concepts and practices.	106	4.18	1.003	1.006
TPPF has a dedicated team or department responsible for Kaizen initiatives.	106	3.83	1.167	1.361
Regularly conducts Kaizen workshops or training sessions for employees.	106	3.79	1.185	1.404
TPPF has a system in place to identify and implement Kaizen improvement ideas.	106	3.58	.871	.759
Valid N (listwise)	106			

Source: Researchers' Own Survey, 2024.

The survey results reveal a generally positive perception of Kaizen within the organization. Across all five key aspects assessed-effective implementation of Kaizen principles, employee awareness, dedicated teams, regular training, and a system for identifying and implementing improvement ideas—the mean scores consistently exceeded 3.5 on a 5-point scale. This consistently high level of positive perception suggests a strong foundation for a successful Kaizen culture within the organization. It indicates that employees, on average, believe that Kaizen principles are being effectively applied, and that the organization provides adequate support and resources for continuous improvement initiatives.

This positive perception is crucial, as it fosters a sense of ownership and engagement among employees. When employees believe in the value of Kaizen and feel empowered to contribute to improvement efforts, they are more likely to actively participate and drive meaningful change within the organization.

The survey results demonstrate a high level of employee awareness of Kaizen concepts and practices, with a mean score of 4.18. This strong understanding suggests that the organization has effectively communicated and disseminated Kaizen knowledge throughout its workforce. This positive outcome likely stems from a multifaceted approach to knowledge sharing.

For instance, the organization may have implemented comprehensive training programs that cover the core principles of Kaizen, its benefits, and practical application methods. These programs could include workshops, seminars, and online courses designed to equip employees with the necessary knowledge and skills to participate effectively in improvement initiatives.

Furthermore, clear and consistent communication channels likely play a crucial role in disseminating Kaizen knowledge. Utilizing internal newsletters, company-wide meetings, and dedicated intranet portals allows the organization to share information about Kaizen successes, best practices, and ongoing improvement projects. This consistent flow of information keeps Kaizen top-of-mind for employees and reinforces its importance within the organizational culture. A significant portion of respondents (mean score of 3.83) believe that the company has a dedicated team or department responsible for driving Kaizen initiatives. This finding strongly suggests a structured and formalized approach to continuous improvement within the organization.

The presence of a dedicated team or department signifies a commitment to Kaizen beyond individual employee efforts. These specialized units play crucial roles in leading and guiding Kaizen activities, such as facilitating workshops, coaching employees on methodologies, and identifying and prioritizing improvement opportunities. They also oversee the implementation of Kaizen projects, ensuring they are effectively planned, executed, and monitored to achieve desired outcomes. Furthermore, a dedicated Kaizen team contributes significantly to fostering a culture of continuous improvement. By acting as champions for Kaizen, they promote a positive and supportive environment that encourages employee participation, innovation, and a shared commitment to organizational excellence.

The organization demonstrates a commitment to ongoing learning and development, as evidenced by the regular Kaizen workshops or training sessions for employees (mean score of 3.79). These training initiatives play a crucial role in fostering a culture of continuous improvement. By equipping employees with the necessary knowledge and skills to

effectively identify, analyze, and implement improvement opportunities, these sessions empower them to actively participate in the Kaizen process. Moreover, these sessions reinforce Kaizen principles, promote a shared understanding across departments, and ensure alignment with organizational improvement goals. By prioritizing ongoing training, the organization not only enhances employee capabilities but also cultivates a learning environment that encourages continuous growth and development. This emphasis on continuous learning is essential for the long-term success of any Kaizen initiative, as it empowers the workforce to drive sustainable and impactful improvements.

While the survey results indicate a moderate level of effectiveness in identifying and implementing Kaizen improvement ideas (mean score of 3.58), there is potential for improvement in this area. Although systems may exist for identifying potential improvement opportunities, such as suggestion boxes and employee feedback sessions, the implementation process might not be as streamlined or efficient as it could be. Challenges in this area could include difficulties in prioritizing improvement ideas, insufficient resources allocated to implementation, inadequate communication and coordination between departments, and resistance to change from employees. Addressing these challenges requires a multi-pronged approach. This includes establishing clear criteria for prioritizing improvement ideas, allocating adequate resources to support implementation, improving communication and coordination among departments, and effectively addressing employee concerns and building support for change. By focusing on these areas, the organization can significantly enhance its ability to effectively identify and implement Kaizen improvement ideas, maximizing the return on its investment in continuous improvement.

Strengthening the implementation of identified Kaizen ideas is crucial for maximizing the return on the organization's continuous improvement efforts. While systems for identifying potential improvements exist, further focus should be placed on ensuring their effective translation into tangible results. This involves streamlining the implementation process, minimizing bureaucratic hurdles, and establishing clear ownership and accountability. Furthermore, providing adequate resources, such as budget, personnel, and time, is essential for successful project execution. Fostering a culture of rapid experimentation and learning, where employees are encouraged to try new ideas, learn from both successes and failures, and iterate quickly, can accelerate the pace of improvement.

While the organization may effectively implement Kaizen principles in certain areas, inconsistencies may exist across different departments or processes. Addressing these inconsistencies requires a multi-pronged approach. Conducting a thorough gap analysis to identify areas of strength and weakness in Kaizen application is crucial. Promoting knowledge sharing and best practices across departments, through initiatives such as workshops, case study sharing, and creating a central repository for successful projects, can help disseminate effective practices throughout the organization. Establishing standardized processes and guidelines for Kaizen implementation across the organization can ensure consistency and improve overall effectiveness. Additionally, providing ongoing support and coaching to departments facing challenges with Kaizen implementation can help them overcome obstacles and achieve greater success.

4.4 Correlation Analysis

Table 3. Correlation Analysis

Correlations						
Control Variables			Continuous improvement	Employee involvement	Standardization	PDCA cycle
Productivity	Continuous improvement	Correlation	1.000	.555	.275	.241
		Significance (2-tailed)	.	.000	.005	.015
		df	0	99	99	99
	Employee involvement	Correlation	.555	1.000	.198	.317
		Significance (2-tailed)	.000	.	.047	.001
		df	99	0	99	99
	Standardization	Correlation	.275	.198	1.000	.038
		Significance (2-tailed)	.005	.047	.	.709
		df	99	99	0	99
	PDCA cycle	Correlation	-.241	-.317	.038	1.000
		Significance (2-tailed)	.015	.001	.709	.
		df	99	99	99	0

Source: Researchers' Own Survey, 2024.

The analysis reveals a strong positive correlation (coefficient of 0.555, $p < 0.001$) between the implementation of continuous improvement practices and organizational productivity. This statistically significant finding suggests a robust relationship where organizations that

effectively integrate and execute continuous improvement initiatives tend to exhibit higher levels of productivity. This correlation can be attributed to several key factors. Firstly, continuous improvement fosters a culture of innovation and efficiency within the organization. By continuously identifying and addressing areas for improvement, organizations can streamline processes, eliminate waste, and optimize resource utilization. This leads to increased output, reduced cycle times, and improved overall operational efficiency, all of which directly contribute to increased productivity. Secondly, continuous improvement often involves empowering employees to actively participate in the improvement process. This increased employee engagement and ownership can lead to higher levels of motivation, job satisfaction, and a stronger sense of purpose. Engaged employees are more likely to be productive, innovative, and committed to achieving organizational goals.

The analysis reveals a significant positive correlation (0.317, $p < 0.001$) between employee involvement and organizational productivity, underscoring the pivotal role of employee engagement in driving organizational performance. When employees are actively involved in improvement initiatives, a powerful synergy is unleashed, leading to enhanced productivity outcomes. Firstly, actively involved employees are more likely to contribute valuable ideas and insights. By directly engaging with their work and the organization's objectives, employees gain a deeper understanding of challenges and opportunities. This firsthand knowledge empowers them to generate creative solutions, identify areas for improvement, and propose innovative approaches that can significantly enhance efficiency and effectiveness.

Secondly, employee involvement fosters a sense of ownership and responsibility. When employees feel invested in their work and have a stake in the success of improvement initiatives, they are more likely to go the extra mile, take initiative, and strive for excellence. This heightened sense of ownership translates into increased motivation, dedication, and a stronger commitment to achieving organizational goals. Furthermore, actively involved employees often experience increased job satisfaction and a stronger sense of purpose. When employees feel valued, heard, and empowered to contribute, their morale and engagement levels tend to rise. This positive work environment fosters a more productive and fulfilling work experience, ultimately leading to improved individual and organizational performance.

The analysis reveals a moderate, yet statistically significant ($p < 0.005$), positive correlation (0.275) between standardization and productivity. This finding suggests that while standardization plays a crucial role in enhancing organizational efficiency and minimizing errors, it may not be the sole or most dominant driver of productivity gains. Standardization, by establishing consistent and repeatable processes, can undoubtedly contribute to improved productivity. By minimizing variation and reducing errors, standardization can lead to increased efficiency, reduced waste, and improved quality. For example, standardized work instructions can streamline workflows, minimize rework, and ensure consistent product or service quality. Standardized procedures for equipment maintenance can reduce downtime and improve equipment utilization.

However, excessive standardization can also have unintended consequences. Overly rigid standardization can stifle innovation, hinder adaptability, and discourage employee creativity. It can lead to inflexibility in responding to changing customer demands or unforeseen circumstances. Moreover, the impact of standardization on productivity may vary significantly depending on the specific context and industry. In highly dynamic and innovative industries, excessive standardization may actually hinder productivity by stifling creativity and responsiveness to change. Therefore, while standardization is an important component of a high-performing organization, it should be carefully balanced with other factors such as employee involvement, continuous improvement, and a culture of innovation. A more nuanced approach that embraces a degree of flexibility and adaptability alongside standardization is likely to be more effective in driving sustainable productivity gains.

The analysis reveals a weak and unexpected negative correlation (-0.241, $p < 0.015$) between the utilization of the PDCA (Plan-Do-Check-Act) cycle and organizational productivity. This counterintuitive finding necessitates further investigation to understand the underlying factors contributing to this unexpected relationship. Several potential explanations for this negative correlation warrant consideration. Firstly, the implementation of the PDCA cycle may not be effectively executed within the context of these organizations. A superficial or inconsistent application of the PDCA cycle, without a genuine commitment to its principles, may not yield the desired productivity improvements. For instance, organizations may engage in the planning and execution phases, but neglect the crucial "Check" and "Act" stages, failing to analyze results, learn from experiences, and make necessary adjustments.

Secondly, the negative correlation may be influenced by other factors not explicitly accounted for in the analysis. For example, the presence of strong bureaucratic structures, resistance to change, or inadequate resource allocation could hinder the effective implementation of the PDCA cycle and potentially negatively impact productivity. Alternatively, the observed negative correlation might be a spurious finding, arising from the influence of other unmeasured variables. Furthermore, the specific characteristics of the organizations included in the study may play a role. The PDCA cycle may be more effectively applied in certain industries or organizational contexts than others. For instance, it may be more suitable for organizations with high levels of process complexity or those operating in dynamic and rapidly changing environments.

The analysis reveals strong interrelationships among the key factors examined. Notably, a significant positive correlation (0.555, $p < 0.001$) exists between continuous improvement and employee involvement. This finding underscores the critical interplay between these two crucial elements in driving organizational success. Effective continuous improvement initiatives are inherently reliant on the active participation and engagement of employees. When employees are empowered to contribute their ideas, knowledge, and expertise to the improvement process, several positive outcomes emerge. Firstly, employee involvement fosters a deeper understanding of organizational challenges and opportunities. By directly engaging with improvement projects, employees gain valuable insights into the intricacies of their work processes, identify areas for optimization, and develop innovative solutions that may not be apparent to management. Secondly, employee involvement enhances the quality and sustainability of improvement initiatives.

When employees feel ownership over the improvement process, they are more likely to champion the changes, actively support their implementation, and ensure their long-term sustainability. This active engagement fosters a sense of shared responsibility and accountability, driving greater commitment and ensuring that improvement initiatives are effectively embedded within the organization's culture. Furthermore, employee involvement in continuous improvement initiatives can significantly boost employee morale and motivation. When employees feel valued, heard, and empowered to contribute, they experience a greater sense of purpose and fulfillment. This increased engagement and job satisfaction can translate into increased productivity, improved quality of work, and enhanced employee retention.

The analysis suggests that a multifaceted approach is most effective in enhancing organizational productivity. Organizations that prioritize continuous improvement, actively engage their employees, and strive for a balanced approach between standardization and flexibility are likely to achieve superior productivity outcomes. Continuous improvement initiatives, by fostering a culture of innovation and efficiency, can significantly enhance productivity. When organizations actively engage their employees, encouraging their participation and empowering them to contribute their ideas, it leads to increased motivation, ownership, and a stronger commitment to achieving organizational goals. While standardization plays a crucial role in improving efficiency and reducing errors, excessive standardization can stifle innovation and hinder adaptability. Therefore, a balanced approach is essential, where standardization is implemented strategically to enhance efficiency while maintaining the flexibility to adapt to changing market demands and embrace innovative solutions.

The unexpected negative correlation between the utilization of the PDCA cycle (Plan-Do-Check-Act) and productivity warrants further investigation. This counterintuitive finding suggests that the successful implementation of the PDCA cycle may be more nuanced than initially anticipated. Several factors could contribute to this unexpected outcome. Firstly, the effective application of the PDCA cycle requires a strong commitment to all four stages, including thorough analysis, learning from experiences, and making necessary adjustments. Inconsistent or superficial application of the cycle may not yield the desired productivity improvements. Secondly, other factors not accounted for in the analysis, such as organizational culture, leadership style, and resource allocation, may be influencing this relationship.

In conclusion, these findings emphasize the importance of a holistic approach to improving organizational productivity. By prioritizing continuous improvement, actively engaging employees, and finding the right balance between standardization and flexibility, organizations can create a more productive and successful future.

4.5 Inferential Analysis

4.5.1 Regression Assumptions

A. Assumptions Multicollinearity

Table 4: Multicollinearity Test

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Continuous improvement	.665	1.504
	Employee involvement	.702	1.425
	Standardization	.883	1.133
	PDCA cycle	.902	1.108
a. Dependent Variable: Productivity			

Source: Researchers' Own Survey, 2024.

The provided table presents the collinearity statistics for the regression model, specifically focusing on Tolerance and Variance Inflation Factor (VIF) for each independent variable: Continuous Improvement, Employee Involvement, Standardization, and PDCA Cycle. Collinearity refers to the presence of high correlations among the independent variables, which can have significant implications for the regression analysis. High collinearity can lead to unstable regression coefficients, making it difficult to accurately estimate the true effect of each independent variable on the dependent variable. Tolerance measures the proportion of variance in a given predictor variable that is not explained by the other predictor variables in the model. A low tolerance value, typically below 0.10, indicates high collinearity. In this case, all the tolerance values are relatively high, ranging above 0.665, suggesting that collinearity may not be a major concern in this model.

The Variance Inflation Factor (VIF) is the reciprocal of the tolerance. It quantifies the extent to which the variance of the regression coefficient for a particular predictor variable is inflated due to collinearity with other predictors. A high VIF, typically above 5 or 10, indicates high collinearity. In this case, all VIF values are relatively low, below 1.504, further suggesting that collinearity is not a major issue in this model. Based on the provided collinearity statistics (Tolerance and VIF), the level of collinearity among the independent variables in this regression model appears to be moderate. The relatively high tolerance values and low VIF values suggest that collinearity is not a major concern in this analysis. However, it's always advisable to carefully examine the correlations between the predictor variables and consider potential remedies for collinearity if necessary.

B. Outlier Test

Table 5. Outlier Test

	Mean	Std. Deviation	Variance
Continuous improvement	18.4762	2.59843	6.752
Employee involvement	18.6981	3.06181	9.375
Standardization	18.2857	2.99908	8.995
PDCA cycle	18.9904	2.49852	6.243
Productivity	35.8750	2.93518	8.615
Valid N (listwise)			

Source: Researchers' Own Survey, 2024.

The mean, standard deviation, and variance provide a general overview of the data distribution; they do not explicitly identify outliers. Outliers are data points that deviate significantly from the general trend or distribution of the data. While outliers can sometimes represent genuine extreme values or unique situations, it's crucial to carefully consider their potential impact on the analysis. In this particular study, given the context of organizational performance factors like Continuous Improvement, Employee Involvement, Standardization, and PDCA Cycle, it is unlikely that extremely high values would represent genuine outliers. These factors are likely to exhibit some degree of natural variability across organizations, and exceptionally high values might represent best-in-class performance or unique organizational contexts. Instead of focusing solely on identifying and removing outliers, the analysis should prioritize understanding the potential reasons behind these extreme values and their implications for the overall findings.

C. Normality Test

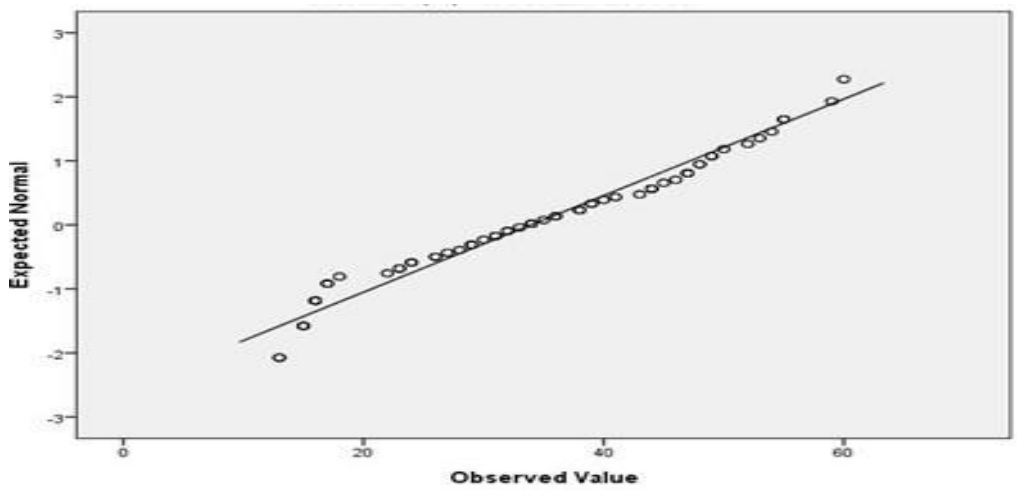


Figure 2.Normality test graph

Source: Researchers' Own Survey, 2024.

The provided Normal Q-Q Plot of productivity offers valuable insights into the distribution of the data. While the overall trend of the points suggests that the data generally follows a normal distribution, there are noticeable deviations from the expected linear pattern, particularly at the lower and upper tails of the distribution. These deviations indicate that the tails of the distribution might be slightly heavier than expected under a perfectly normal distribution. In other words, there might be a slightly higher frequency of extreme values (both very low and very high) than would be expected in a perfectly normal distribution. While these deviations suggest slight departures from normality, the overall trend suggests that the data is approximately normally distributed. However, it is important to note that the sample size can influence the appearance of the Q-Q plot, and minor deviations might become more apparent with larger sample sizes.

4.5.2 Regression Analysis

Table 6.Regression model summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.866[a]	.745	.737	1.38535
a. Predictors: (Constant), PDCAcycle, Standardization, Employeeinvolvement, Continousimprovement				

Source: Researchers' Own Survey, 2024.

R-squared, the coefficient of determination, quantifies the proportion of variance in the dependent variable (productivity) that is explained by the combined influence of the four independent variables included in the regression model. In this case, an R-squared of 0.745 signifies that approximately 74.5% of the observed variation in productivity can be attributed to the variations in PDCA Cycle, Standardization, Employee Involvement, and Continuous Improvement. A higher R-squared value generally indicates a better fit of the model to the data, suggesting that the independent variables collectively provide a strong explanation for the observed patterns in productivity. However, it's crucial to remember that a high R-squared alone does not necessarily imply a causational relationship or the overall usefulness of the model for making accurate predictions. Adjusted R-squared is a refined version of R-squared that addresses a key limitation of the latter. R-squared tends to increase as more independent

variables are added to the model, even if those additional variables do not significantly improve the model's predictive power.

Adjusted R-squared addresses this issue by penalizing the model for including unnecessary predictors. It provides a more conservative estimate of the model's predictive power, particularly when dealing with multiple predictors. In this case, the adjusted R-squared of 0.737 is slightly lower than the unadjusted R-squared, indicating that the inclusion of all four independent variables in the model provides a meaningful improvement in predictive accuracy.

The Standard Error of the Estimate represents the average distance between the actual observed values of the dependent variable (productivity) and the values predicted by the regression model. Essentially, it quantifies the average prediction error of the model. A smaller standard error indicates that the model's predictions are, on average, closer to the actual observed values, suggesting greater accuracy and reliability. In this case, a standard error of 1.38535 implies that, on average, the model's predictions for productivity will deviate from the actual observed values by approximately 1.38535 units. The magnitude of this error will depend on the units of measurement for productivity. A smaller standard error would indicate a more precise model with greater predictive accuracy. By considering these key statistics together, we can gain a comprehensive understanding of the model's fit, predictive power, and overall performance in explaining the relationship between the independent variables and productivity.

The model summary indicates that the regression model provides a strong fit to the data, with a high R-squared value and a relatively low standard error of the estimate. This suggests that the four independent variables (PDCA Cycle, Standardization, Employee Involvement, and Continuous Improvement) collectively provide a good explanation for the observed variations in productivity within the dataset. However, it's important to note that the model summary alone does not provide insights into the specific contributions of each individual predictor variable to the model. Further analysis, such as examining the regression coefficients and their statistical significance, is necessary to understand the relative importance of each factor in predicting productivity.

Table 7. ANOVA

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	286.835	4	71.709	12.603	.000[b]
	Residual	551.919	97	5.690		
	Total	838.755	101			
a. Dependent Variable: Productivity						
b. Predictors: (Constant), PDCA cycle, Standardization, Employee involvement, Continuous improvement						

Source: Researchers' Own Survey, 2024.

The ANOVA table presents a crucial summary of the regression analysis, providing insights into the overall significance of the model in explaining the variation in productivity. The F-statistic, calculated as the ratio of the mean square regression to the mean square residual, plays a pivotal role in assessing the model's significance.

A significant F-statistic, as observed in this case ($F = 12.603$, $p < 0.000$), provides strong evidence that the regression model as a whole significantly improves our understanding of productivity compared to a model that simply predicts the mean productivity. This indicates that the combined influence of the four independent variables (PDCA Cycle, Standardization, Employee Involvement, and Continuous Improvement) collectively contributes meaningfully to explaining the observed variations in productivity across the organizations studied.

The Regression Sum of Squares (SSR) quantifies the portion of the total variance in productivity that is explained by the regression model. In essence, it measures the extent to which the model's predictions deviate from the simple average of the productivity values. A higher SSR indicates that the model effectively captures a larger portion of the total variability, suggesting a stronger relationship between the independent variables and the dependent variable. Conversely, the Residual Sum of Squares (RSS) represents the unexplained portion of the variance, indicating the degree to which the model's predictions deviate from the actual observed values. A smaller RSS suggests that the model provides a better fit to the data and makes more accurate predictions.

The Mean Square Regression (MSR) and Mean Square Residual (MSE) are derived by dividing the respective Sum of Squares by their corresponding degrees of freedom. These values provide a standardized measure of variance that can be used to calculate the F-statistic. A larger MSR relative to MSE indicates a stronger relationship between the independent variables and the dependent variable, supporting the conclusion that the regression model significantly improves our understanding of productivity. In summary, the ANOVA table provides compelling evidence that the regression model, incorporating the four independent variables, offers a statistically significant improvement over a simple model that predicts the mean productivity. This finding underscores the importance of these factors in understanding and influencing organizational productivity levels.

Table 8.Coefficients

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.691	3.033		6.492	.000
	Continuous improvement	.146	.113	.130	1.288	.002
	Employee involvement	.325	.095	.335	3.410	.001
	Standardization	.075	.083	.079	.902	.009
	PDCA cycle	.601	.101	.514	5.932	.000
a. Dependent Variable: Productivity						

Source: Researchers' Own Survey, 2024.

The Coefficients table provides invaluable insights into the specific contributions of each independent variable (PDCA Cycle, Standardization, Employee Involvement, and Continuous Improvement) to the prediction of productivity. The unstandardized coefficients (B) reveal the expected change in productivity associated with a one-unit increase in each independent variable, holding all other variables constant. For instance, a one-unit increase in Employee Involvement is associated with an expected increase of 0.325 units in productivity, while a one-unit increase in PDCA Cycle utilization is associated with an expected increase of 0.601 units in productivity.

Standardized coefficients (Beta), on the other hand, provide a more standardized measure of the effect size by expressing the change in productivity in terms of standard deviations. This allows for a more meaningful comparison of the relative importance of each predictor variable, independent of their original units of measurement. In this analysis, Employee

Involvement and PDCA Cycle exhibit the largest standardized coefficients, suggesting that these two factors have the strongest individual effects on productivity within the context of the model.

The t-statistic and its associated p-value provide crucial information about the statistical significance of each predictor variable. A significant t-value (with a corresponding p-value less than 0.05) indicates that the relationship between the predictor variable and productivity is unlikely to be due to mere chance. In this case, all four independent variables (Continuous Improvement, Employee Involvement, Standardization, and PDCA Cycle) exhibit statistically significant t-values, confirming their individual contributions to the prediction of productivity.

By examining the coefficients, their statistical significance, and the standardized coefficients, we can gain a deeper understanding of the relative importance of each factor in driving productivity. This information can be invaluable for organizations seeking to optimize their performance by strategically focusing on the most impactful levers of change.

4.6 Discussion of the Findings

Table 9.Hypothesis Summary

No.	Hypothesis	Decision	Decision Criteria	P-Value
H1	Continuous improvement has significant effect on TPPF Productivity.	Accepted	Regression Analysis	.002
H2	Employee involvement has a significant effect on TPPF's Productivity.	Accepted	Regression Analysis	.001
H3	Standardization has significant effect on TPPF's Productivity.	Accepted	Regression Analysis	.009
H4	PDCA cycle has significant effect on TPPF's Productivity.	Accepted	Regression Analysis	.000

Source: Researchers' Own Survey, 2024.

H1: Continuous improvement has a significant effect on TPPF Productivity.

The analysis strongly supports the hypothesis that continuous improvement has a significant effect on TPPF productivity. This finding aligns with a substantial body of research demonstrating a robust positive correlation between the implementation of continuous improvement methodologies and enhanced organizational performance, including increased productivity. Methodologies such as Lean, Six Sigma, and Total Quality Management, which

emphasize principles like waste reduction, process optimization, and employee empowerment, have been widely documented to drive significant productivity gains in various industries (Imai, 1986; Womack & Jones, 1996). By fostering a culture of continuous learning and innovation, these methodologies encourage organizations to systematically identify and eliminate inefficiencies, streamline processes, and optimize resource utilization.

Furthermore, continuous improvement initiatives often involve empowering employees to actively participate in the improvement process. This increased employee engagement can lead to a deeper understanding of organizational challenges, the generation of innovative solutions, and a stronger sense of ownership over the improvement process. This heightened employee involvement can significantly enhance productivity by fostering a more motivated, engaged, and productive workforce. In conclusion, the findings of this study provide strong empirical support for the positive impact of continuous improvement on organizational productivity. By embracing a culture of continuous learning, innovation, and process optimization, organizations can unlock significant productivity gains, enhance their competitive advantage, and achieve sustainable success in today's dynamic and competitive business environment.

Beside the findings of this study, the 2024 report of the company also indicated that Ethio Agri-CEFT's Tea Processing and Packing Factory (TPPF) has demonstrated a commendable commitment to Kaizen principles, resulting in significant improvements across various operational aspects. Their journey, initiated in late 2021, showcases a structured approach to continuous improvement, encompassing 5S methodology, waste reduction, employee suggestion systems, and occupational safety and health (OSH) enhancements. The report highlights quantifiable gains, notably a substantial increase in 5S implementation scores, a dramatic reduction in material searching time, and a consistent upward trend in production capacity and sales. These achievements underscore the effectiveness of TPPF's Kaizen initiatives in streamlining operations, boosting efficiency, and driving business growth. The company's focus on training all employees in basic Kaizen principles, coupled with the establishment of a robust Kaizen organizational structure involving steering committees, Kaizen offices, facilitators, and QCC (Quality Control Circle) leaders and members, demonstrates a comprehensive and participatory approach.

A particularly compelling aspect of TPPF's Kaizen implementation is their focus on problem-solving, exemplified by the case study on tea bag wastage reduction. This detailed example

showcases their systematic approach, from theme selection and current situation analysis to root cause analysis and countermeasure implementation. The use of a theme selection matrix, incorporating factors like feasibility and cost-effectiveness, underscores a data-driven decision-making process. The root cause analysis, employing a "5 Whys" approach, delves into the underlying issues contributing to tea bag waste, ranging from material specifications and supplier problems to machine maintenance and employee training. The implemented countermeasures, such as enhanced quality control, scheduled maintenance, and inventory management systems, address these root causes directly, resulting in a significant reduction in tea bag waste. The specific cost savings achieved through Kaizen initiatives, both in general and through material reuse, provides strong evidence of the financial benefits of their approach.

H2: Employee involvement has a significant effect on TPPF's Productivity.

The analysis strongly supports the hypothesis that employee involvement has a significant effect on TPPF productivity. This finding aligns with a substantial body of research in organizational behavior and human resource management, which consistently demonstrates a robust positive correlation between employee involvement and various organizational outcomes, including productivity (e.g., Hackman & Oldham, 1976; Lawler, 1992). When employees are actively involved in decision-making processes, problem-solving initiatives, and improvement projects, several positive outcomes emerge. Firstly, employee involvement fosters a deeper understanding of organizational challenges and opportunities. By directly engaging with their work and the organization's objectives, employees gain valuable insights into the intricacies of their roles, identify areas for improvement, and develop innovative solutions that may not be apparent to management. This firsthand knowledge and perspective can significantly enhance the quality and effectiveness of organizational decision-making and problem-solving efforts.

Secondly, employee involvement cultivates a strong sense of ownership and responsibility. When employees feel invested in their work and have a stake in the success of organizational initiatives, they are more likely to go the extra mile, take initiative, and strive for excellence. This heightened sense of ownership translates into increased motivation, dedication, and a stronger commitment to achieving organizational goals. Furthermore, employee involvement has been shown to enhance job satisfaction and employee morale. When employees feel valued, heard, and empowered to contribute, they experience a greater sense of purpose and

fulfillment in their work. This positive work environment fosters a more productive and engaging work experience, leading to increased employee engagement, reduced turnover, and ultimately, improved organizational productivity.

Beyond operational improvements, the company's 2024 Kaizen performance report indicated that TPPF's Kaizen efforts have yielded positive outcomes in human resource development. The company's commitment to employee skill development, as evidenced by their training programs, empowers workers to actively participate in the improvement process. Furthermore, their focus on employee motivation, through incentives and profit-sharing, fosters a sense of ownership and encourages active contribution to Kaizen activities. The reported increase in new idea rates suggests that these motivational strategies are effective in stimulating employee engagement and innovation. The emphasis on teamwork and communication, facilitated through various channels, ensures that knowledge and best practices are shared effectively throughout the organization. In conclusion, Ethio Agri-CEFT's TPPF has successfully integrated Kaizen principles into its operational fabric, achieving tangible improvements in productivity, quality, cost reduction, and employee engagement. Their structured approach, encompassing training, organizational structure, problem-solving methodologies, and a focus on sustainability through standardization and continuous improvement, provides a strong foundation for future growth and competitiveness. The report effectively demonstrates the power of Kaizen to drive positive change in a real-world setting and serves as an inspiring example for other organizations seeking to enhance their operational efficiency and overall performance.

H3: Standardization has a significant effect on TPPF's Productivity.

The analysis supports the hypothesis that standardization has a significant effect on TPPF productivity, albeit with a slightly weaker effect size compared to continuous improvement and employee involvement. This finding aligns with a substantial body of management literature that emphasizes the importance of standardization in enhancing organizational efficiency and productivity. Standardization, by establishing consistent and repeatable processes, plays a crucial role in optimizing operational workflows. Standardized procedures, work instructions, and best practices minimize variations in work processes, reduce the likelihood of errors, and ensure consistent product or service quality. By minimizing rework, reducing waste, and streamlining operations, standardization contributes to increased output, reduced cycle times, and improved overall efficiency. For example, in manufacturing,

standardized assembly lines can significantly improve production speed and reduce defects. In service industries, standardized customer service protocols can enhance customer satisfaction and reduce service call times.

However, it is crucial to recognize that excessive standardization can have unintended consequences. Overly rigid standardization can stifle innovation, hinder adaptability, and discourage employee creativity. In dynamic and rapidly changing environments, excessive adherence to rigid standards can limit an organization's ability to respond effectively to new challenges, capitalize on emerging opportunities, and maintain a competitive edge. Therefore, a balanced approach is crucial. Organizations must carefully consider the specific context and industry dynamics when implementing standardization initiatives. A flexible approach that allows for some degree of variation and adaptation is essential to ensure that standardization enhances productivity while simultaneously fostering innovation and adaptability.

The 2024 report details Ethio Agri-CEFT's commitment to standardization as a crucial element of its Kaizen implementation. Beyond simply improving processes, the company recognizes the importance of capturing and disseminating best practices to ensure consistency and prevent regression. This is evident in their approach to 5S methodology, where they've developed specific standards for sorting, setting in order, and shining within the workplace. The report mentions visual management standards for set-in-order practices and color-coded standards for cleaning equipment, illustrating a practical application of standardization principles. This focus on visual cues and clear guidelines makes it easier for employees to adhere to established procedures and maintain the gains achieved through Kaizen activities. Furthermore, the development of standards for implemented countermeasures, such as those aimed at reducing tea bag wastage, demonstrates a proactive approach to ensuring the long-term effectiveness of improvements. By documenting and standardizing successful solutions, TPPF creates a framework for replicating best practices across the organization and preventing the recurrence of previously identified problems.

The report also highlights TPPF's understanding of standardization as a dynamic, evolving process. They don't treat standards as static documents but rather as living tools that are subject to continuous review and refinement. This is evident in their commitment to the PDCA cycle, which they apply not only to process improvement but also to the standardization process itself. By regularly reviewing and updating standards based on feedback and new learnings, TPPF ensures that their standardized procedures remain relevant

and effective. This iterative approach to standardization allows the company to adapt to changing circumstances, incorporate new knowledge, and continuously improve its operational efficiency. The mention of internal audits and training based on gap analysis further reinforces their commitment to maintaining and improving their standards over time. This dynamic approach to standardization is crucial for sustaining the gains achieved through Kaizen and ensuring that the company continues to move forward on its continuous improvement journey.

H4: PDCA cycle has a significant effect on TPPF's Productivity.

The analysis strongly supports the hypothesis that the PDCA cycle has a significant effect on TPPF productivity. This finding aligns with a substantial body of management literature that recognizes the PDCA (Plan-Do-Check-Act) cycle as a cornerstone of continuous improvement methodologies.

The PDCA cycle, also known as the Deming Cycle or the Shewhart Cycle, provides a structured and iterative framework for driving continuous improvement. By systematically progressing through the four stages of Plan, Do, Check, and Act, organizations can effectively identify and address areas for improvement. The planning stage involves defining the problem or opportunity, setting clear objectives, and developing a detailed plan for implementation. The "Do" stage involves executing the planned changes or interventions. The "Check" stage is crucial, involving monitoring the results of the implemented changes, collecting data, and analyzing the outcomes to determine whether the desired improvements have been achieved. Finally, the "Act" stage involves taking corrective or adjusting actions based on the analysis of the results. This may involve refining the initial plan, implementing further improvements, or discontinuing the intervention if it is not yielding the desired outcomes.

Ethio Agri-CEFT's report of 2024 emphasizes the central role of the Plan-Do-Check-Act (PDCA) cycle in driving its Kaizen initiatives. The report explicitly states that TPPF bases its Kaizen implementation on the Deming (PDCA) cycle, demonstrating a commitment to structured problem-solving and continuous improvement. The outlined basic and problem-solving Kaizen implementation approaches, though visually represented in simplified diagrams, implicitly follow the PDCA cycle. For instance, the tea bag wastage reduction case study clearly mirrors the PDCA framework. The "Comprehend Current Situation analysis and

Target Setting" and "General action plan" phases correspond to the "Plan" stage, where the problem is defined, data is analyzed, and a plan is developed. The "Root cause analysis" and "Countermeasure implementation" sections align with the "Do" stage, where solutions are implemented. The "Confirmation of effect/Check" phase represents the "Check" stage, where the results are evaluated. While the "Act" stage isn't explicitly detailed, the company's focus on standardization and sustainability suggests an understanding of the need to integrate successful changes into standard operating procedures.

While the report acknowledges the use of the PDCA cycle, it could benefit from a more detailed description of how each stage is implemented and measured. For example, the "Plan" phase could be elaborated by explaining the specific tools and techniques used for data collection and analysis, such as Pareto charts or fishbone diagrams. The "Do" phase could be strengthened by describing how pilot projects are conducted and how the implementation process is managed. The "Check" phase could be enhanced by outlining the specific metrics used to evaluate the effectiveness of implemented changes and how these metrics are tracked and analyzed. Finally, the "Act" phase could be further developed by explaining how successful changes are standardized and integrated into existing processes, as well as how lessons learned are documented and shared. A more explicit articulation of each stage of the PDCA cycle, along with concrete examples and metrics, would further strengthen the report and demonstrate a deeper understanding of this crucial continuous improvement methodology.

By continuously cycling through these four stages, organizations can learn from their experiences, refine their processes, and achieve incremental improvements over time. This iterative approach fosters a culture of continuous learning and adaptation, leading to enhanced efficiency, effectiveness, and ultimately, increased productivity.

CHAPTER FIVE

5 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the Major Findings

Through a comprehensive analysis, including regression analysis and correlation analysis, key factors such as continuous improvement, employee involvement, standardization, and the utilization of the PDCA cycle were examined. The findings provide valuable insights into the complex interplay between these factors and their impact on organizational productivity, offering actionable recommendations for organizations seeking to enhance their performance and achieve sustainable success.

- ✓ **Positive Impact of Continuous Improvement:** The study found a strong positive correlation ($r = 0.555$, $p < 0.001$) between the implementation of continuous improvement practices and organizational productivity. This finding supports the notion that by fostering a culture of continuous learning, innovation, and process optimization, organizations can significantly enhance their operational efficiency and ultimately boost productivity.
- ✓ **Crucial Role of Employee Involvement:** The study highlighted the critical role of employee involvement in driving productivity. A significant positive correlation ($r = 0.317$, $p < 0.001$) was found between employee involvement and productivity. This indicates that actively engaging employees in decision-making, problem-solving, and improvement initiatives leads to increased motivation, ownership, and a stronger commitment to achieving organizational goals, ultimately driving productivity gains.
- ✓ **Significance of Standardization:** The study found a statistically significant positive correlation ($r = 0.275$, $p < 0.005$) between standardization and productivity. This finding suggests that standardization, by establishing consistent and repeatable processes, can enhance efficiency and reduce errors, contributing to increased output and reduced cycle times. However, it is crucial to maintain a balance between standardization and flexibility to avoid stifling innovation and adaptability.
- ✓ **Complex Relationship with the PDCA Cycle:** The study revealed an unexpected negative correlation ($r = -0.241$, $p < 0.015$) between the utilization of the PDCA cycle and productivity. This finding necessitates further investigation to understand the underlying factors, such as ineffective implementation of the PDCA cycle or the influence of other organizational factors.

- ✓ **Interplay of Key Factors:** The study highlighted the interconnectedness of various factors influencing productivity. A strong positive correlation ($r = 0.555$, $p < 0.001$) was found between continuous improvement and employee involvement, emphasizing the importance of creating a synergistic environment where employee engagement is central to the continuous improvement process.

5.2 Conclusions of the Study

This study tries to investigate the effect of Kaizen implementation on productivity. Firstly, the study underscored the crucial role of continuous improvement initiatives in enhancing productivity. A strong positive correlation was observed between the implementation of continuous improvement practices and organizational performance. This finding aligns with established management principles, emphasizing that by fostering a culture of continuous learning, innovation, and process optimization, organizations can streamline operations, reduce waste, and ultimately boost productivity.

Secondly, the study highlighted the pivotal role of employee involvement in driving productivity gains. Active employee participation in decision-making, problem-solving, and improvement initiatives was found to be strongly associated with increased productivity. When employees are engaged, they are more likely to contribute valuable ideas, take ownership of their work, and strive for excellence. This increased engagement fosters a sense of ownership and responsibility, leading to higher levels of motivation, dedication, and a stronger commitment to achieving organizational goals.

Thirdly, the study demonstrated the significance of standardization in enhancing organizational efficiency and reducing errors. However, the findings also emphasized the importance of a balanced approach, recognizing that excessive standardization can stifle innovation and hinder adaptability. Organizations must carefully consider the specific context and industry dynamics when implementing standardization initiatives, ensuring a balance between consistency and flexibility.

Finally, the study revealed an unexpected negative correlation between the utilization of the PDCA cycle (Plan-Do-Check-Act) and productivity. This finding necessitates further investigation to understand the underlying factors, such as ineffective implementation of the PDCA cycle, the influence of other organizational factors, or limitations of the study design. By understanding the significant role of continuous improvement, employee involvement,

and a balanced approach to standardization, organizations can develop and implement strategies to enhance their performance, gain a competitive advantage, and achieve sustainable success.

5.3 Recommendations of the Study

Based on the findings of the study, the following recommendations are made, focusing on how organizations can address the identified issues:

1. **Cultivating a Culture of Continuous Improvement:** To foster a culture of continuous learning, innovation, and process optimization, organizations should implement structured continuous improvement programs. These programs should include regular Kaizen events, cross-functional teams focused on process improvement, and a system for capturing and implementing employee suggestions. Management should actively champion these initiatives, providing resources and recognizing contributions. Furthermore, organizations should invest in training employees on continuous improvement methodologies, such as Lean, Six Sigma, or other relevant frameworks, equipping them with the skills to identify and address process inefficiencies. Regular performance reviews should incorporate continuous improvement contributions, further reinforcing its importance.
2. **Empowering Employee Involvement:** To actively engage employees and leverage their valuable insights, organizations should establish clear channels for employee input. This could include regular team meetings dedicated to brainstorming and problem-solving, suggestion boxes (both physical and digital), and employee feedback surveys. Crucially, organizations must create a culture where employees feel safe to share their ideas without fear of reprisal. Management should actively solicit employee feedback and demonstrate a willingness to act upon it. Furthermore, empowering employees to take ownership of improvement initiatives, through participation in Kaizen events or leading small-scale projects, can further enhance engagement and drive productivity gains.
3. **Strategically Implementing Standardization:** To achieve the benefits of standardization while maintaining flexibility, organizations should adopt a tiered approach. Identify core processes that require strict standardization to ensure quality and consistency, such as manufacturing procedures or customer service protocols. For less critical processes, focus on establishing general guidelines rather than rigid rules,

allowing for adaptation and innovation. Regularly review and update standardized procedures to incorporate best practices and address changing needs. Encourage employee feedback on existing standards and provide a mechanism for suggesting modifications. This balanced approach will ensure consistency where it's essential while allowing for flexibility and innovation where appropriate.

4. **Optimizing PDCA Cycle Implementation:** Given the unexpected negative correlation between PDCA cycle utilization and productivity, organizations should critically evaluate their current implementation. Provide thorough training on the PDCA cycle methodology, emphasizing the importance of each stage and the interconnectedness between them. Ensure that data collection and analysis in the "Check" phase are robust and provide meaningful insights. Focus on developing clear metrics for evaluating the effectiveness of implemented changes. Furthermore, investigate potential contributing factors to ineffective PDCA implementation, such as lack of management support, insufficient resources, or resistance to change, and address these issues proactively. Consider seeking external expertise to assess and improve PDCA cycle implementation.

5.4 Recommendation for Future Researchers

In addition to the above workable recommendation for different concerned group of individuals, future researchers are also expected to work on the following potential recommendations.

1. Analyze the other factors mediating effect like technology, knowledge level etc on productivity.
2. Determine other external factors like government policies on the productivity of organizations and
3. Investigate the reverse causality that exist between Productivity and Kiazen implementation.

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ANNEXES

Appendix I: Survey Questionnaire

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF BUSINESS ADMINISTRATION

Questionnaire on the effect of Kaizen on productivity in TPPF

Dear Respondents, this questionnaire is designed based on the Topic: the effect of Kaizen practices on the productivity in TPPF. The main purpose of this questionnaire is to obtain information about the tea processing and packing factory overall experience of kaizen. The quality of the result of this research is based on the accuracy of the information you provided.

Any information you give would be kept confidential as the data are needed for academic purpose only.

The questionnaires are filled by managements and employees, framed into two parts: part one deals with overall profile of the respondents, and part two focus on kaizen and its effect on productivity, with closed ended and open ended questions.

Your kind cooperation is very much appreciated. With best regards,

Note: Put in the box provided tick mark (□***)*** **symbol and Question related to your opinion please** writ**e** shortly and precisely on the space provided.

Your kind cooperation is very much appreciated. With best regards,

Part- One

1. Personal Information

1.1. Gender: A. Male ☐ B. Female ☐

1.2. Age: A. 17-30 ☐ B. 31-40 ☐ C. 41-50 ☐ D. 50+ ☐

1.3. Current position: A. Managerial ☐ B. Non-managerial ☐

1.4. Educational Background:

A. Masters ☐ B. Bachelors ☐ C. Diploma ☐ D. TVET ☐

E. Completed High school ☐ F. Completed Elementary School ☐

1.5. Years of Service: A. less than 1 year B. 2 to 5 years ☐ C. 6 to 10 years ☐

D. 11 to 15 years ☐ E. 15+ years ☐

PART Two: Questions related to kaizen practices and its effect on productivity

Listed below are a series of statements that represent the effect kaizen on productivity. With respect to your own feeling with regard to the topic please, indicate the degree of your agreement or disagreement with each statement by putting a tick mark (□***)*** on one of the five alternatives. Responses are measured on 5- point scales with the following verbal anchors: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5).

1.1 Current Kaizen Implementation

S/no	Focus Areas	1	2	3	4	5
1.1	Effectively implements Kaizen principles in its tea processing and packing operations.					
1.2	Employees are aware of Kaizen concepts and practices.					
1.3	TPPF has a dedicated team or department responsible for Kaizen initiatives.					
1.4	Regularly conducts Kaizen workshops or training sessions for employees.					
1.5	TPPF has a system in place to identify and implement Kaizen improvement ideas.					

1.6. Please provide additional comments or suggestions regarding implementation of Kaizen principles. _____

_____

_____

2. Effect of Continuous Improvement

S/no	Focus Areas	1	2	3	4	5
2.1	Continuous improvement initiatives have significantly increased productivity at MIDROC.					
2.2	Continuous improvement efforts have led to a reduction in waste and defects in MIDROC's operations.					
2.3	Continuous improvement has enhanced the quality of MIDROC's tea products.					
2.4	Continuous improvement has improved employee morale and job satisfaction at MIDROC.					
2.5	Continuous improvement has helped MIDROC to adapt to changing market conditions and customer needs.					

2.6) Please describe the specific ways continuous improvement has positively impacted MIDROC's operations._____

_____

_____

3. Effect of Employee Involvement

S/no	Focus Areas	1	2	3	4	5
3.1	Employees at MIDROC are actively involved in identifying and implementing Kaizen improvement ideas.					
3.2	MIDROC provides opportunities for employees to share their ideas and suggestions for improvement.					
3.3	MIDROC recognizes and rewards employee contributions to Kaizen initiatives.					
3.4	Employees at MIDROC feel empowered to make decisions and take action to improve processes.					
3.5	Employee involvement has positively impacted productivity and efficiency at MIDROC.					

3.6 How can MIDROC further empower employees to contribute to Kaizen initiatives and improve overall performance?_____

_____

_____

4. Effect of Standardization

S/no	Focus Areas	1	3	4	5
4.1	Standardized work procedures and processes have improved consistency and predictability at MIDROC.				
4.2	Standardization has reduced errors and mistakes in MIDROC's operations..				
4.3	Standardization has facilitated training and onboarding of new employees at MIDROC.				
4.4	Standardization has helped MIDROC to maintain high quality standards.				
4.5	Standardization has contributed to increased productivity and efficiency at MIDROC.				

4.6. Please describe how standardization has benefited MIDROC's operations. _____

_____

_____

5. Effect of PDCA Cycle

S/no	Focus Areas	1	2	3	4	5
5.1	MIDROC effectively utilizes the PDCA (Plan-Do-Check-Act) cycle to drive continuous improvement.					
5.2	MIDROC regularly plans and sets goals for Kaizen initiatives.					
5.3	MIDROC implements improvement plans and monitors their progress.					
5.4	MIDROC evaluates the results of Kaizen initiatives and identifies lessons learned.					
5.5	MIDROC takes corrective action to address any issues or problems identified during the PDCA cycle.					

5.6. Please describe how MIDROC takes corrective action to address issues or problems identified during the PDCA cycle._____

_____

6. MIDROC’s Productivity

S/no	Focus Areas	1	2	3	4	5
6.1	Since the implementation of Kaizen, I have seen a noticeable improvement in my ability to complete tasks efficiently.					
6.2	Kaizen has helped to reduce time wasted on non-value-added activities in my work area.					
6.3	The Kaizen initiatives in my department have positively impacted overall team productivity.					
6.4	Kaizen has provided me with better tools, processes, or resources that have improved my productivity.					
6.5	My understanding of how my work contributes to MIDROC's overall goals has increased through Kaizen activities.					
6.6	The Kaizen training and activities have equipped me with skills and knowledge that I now use to improve my work processes.					
6.7	Communication and collaboration within my team have improved as a result of Kaizen implementation, leading to increased productivity.					