

**ANALYSIS OF KAIZEN SYSTEMS ON PERFORMANCE OF TEA PROCESSING  
FIRMS IN KENYA**

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## DECLARATION AND APPROVAL

### Declaration by the student:

This research thesis is my true effort and hasn't been submitted for award in any other institution of higher learning.

Signed..... Date.....10<sup>th</sup>/06/2023.....

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### Approval by the University supervisors:

We confirm that this thesis has been undertaken by the student and approved for defense under our watch as university appointed supervisors.

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## DEDICATION

I devote this research thesis to my precious parents Mr. Richard Wanjobi Muchira, Mrs. Rosemary Wanjiku Wanjobi and my only sibling Mr. Victor Stanley Wanjobi for their perpetual prayers and thoughtful wishes.



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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ANOVA</b>	Analysis of Variance
<b>CLRM</b>	Classical Linear Regression Model
<b>GDP</b>	Gross Domestic Product
<b>ISO</b>	International Standardization Organization
<b>JIT</b>	Just In Time
<b>KETEPA</b>	Kenya Tea Packers
<b>KMO</b>	Kaiser-Meyer-Olkin
<b>RBV</b>	Resource-Based View
<b>SEM</b>	Structural equation modeling
<b>SME</b>	Medium-sized Enterprise
<b>SMSE</b>	Small-To Medium Sized Service Enterprise
<b>TFMEA</b>	Total Failure Mode and Effects Analysis
<b>TPM</b>	Total Productive Maintenance
<b>VSM</b>	Value Stream Mapping

## ABSTRACT

The purpose of the study was to ascertain the Analysis of Kaizen Systems on performance of Kenyan tea processing firms in Kenya. Performance of Tea Processing firms has been on an overtime decline of quality hence fetching low prices in the global market. The specific objectives that guided this research include to: determine influence of quality cycles, assess the influence of teamwork, influence of personal discipline and total productive maintenance systems on firm performance of tea processing companies in Kenya. The study is of significance to the administration of Tea processing firms, policy makers, scholars and the addition to the body of knowledge. The study also checked the moderating function of organizational dynamic capability on linkage between Kaizen Systems and performance of tea processing firms. The research was guided by Deming's quality improvement theory, dynamic capabilities theory and growth of the firm theory. Pragmatism research philosophy was employed in this research. Further, explanatory research design was deemed appropriate for the research. The study population under consideration was 66 operations managers of all the tea producing companies. A census of all the 66 operations managers was conducted. Utilizing structured questionnaires, both quantitative and qualitative data was gathered for analysis. Data analysis was undertaken utilizing SPSS Version 23.0. The multiple regression coefficient results indicated that quality cycles had greatest positive and significant relationship with performance of tea processing firms in Kenya where ( $\beta = .335$ ) and  $p = .011$ ). There was also a positive and significant relationship between personal discipline and performance of tea processing firms in Kenya where ( $\beta = .415$  and  $p = .031$ ). The regression coefficient of teamwork had positive and significant relationship with performance of tea processing firms in Kenya where ( $\beta = .511$  and  $p = .001$ ). Finally, the results indicate that there was a positive and significant relationship between total productive maintenance systems and performance of tea processing firms in Kenya where ( $\beta = .461$  and  $p = .012$ ). The study found that organizational dynamic capability moderates the relationship between Kaizen Systems and performance of tea processing firms. Based on the findings, the study concludes that quality cycles are critically important in the production of tea. The study also makes a conclusion that teamwork, personal discipline and total productive maintenance systems are significant component of Kaizen systems that influence tea production. The tea processing firms should work in coordination with quality standards bodies including Kenya Bureau of Standards, food Safety management systems among others to enhance production of quality tea. The study recommends that tea processing firms need to cultivate culture of team work among their workers by emphasizing virtues of unity and togetherness. The study recommends for the need to cultivate virtue of timeliness in task accomplishment among workers of tea processing firms. This can be conducted through workshops, close mentorship programs and support for employees' growth and welfare programs. The study recommends for periodic diagnostic and maintenance of firm machines and equipment through well trained firm personnel. Thus, training of personnel on the maintenance of tea production equipment is essentially important in ensuring that costs arising from breakdowns are minimized. Organizational dynamic capability moderates the relationship between Kaizen Systems and performance of tea processing firms. The study recommends that tea processing firms should invest in research and development, training, networking capability and innovation since it affects performance positively.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Tea is the leading beverage taken by people worldwide after water. Tea sector accounts for majorly 25% of total foreign earnings and 2% of the GDP of producing countries (Global Market Report 2019). The performance of tea producing companies aligns to their sustainability (Kumar, Bhavan, Velmurugan & Subashini, 2018). It is evidenced that improvement in the performance of tea processing firms increases their ability to operate efficiently, pay for suppliers, meet operational cost and enhance their sales revenue (Hong Yabe, 2015). However, it is the cost of producing tea, price of tea, quality of tea and others determine the performance of tea in any given producing country worldwide. Thus, to stimulate the performance of tea firms, new ways of production, processing and distribution might be required. These processes shall go a long way in minimizing cost of tea production by improving efficiency and enhancing quality of tea. Production, processing and distribution processes may require the use of technologies and other innovations and one of the innovations is the use of Kaizen Systems in tea production.

Kaizen Systems originated from Japan and entailed tasks and processes that result to enhancement of a product in order to improve its quality standards. Kaizen depicts constant upgrading of products and services, and value of manufacture through innovation processes founded on cooperative working situations. Kaizen aims at improving performance of a firm through improved standards activities (Misiurek, 2016). Kaizen systems aim to improve individual operations and processes by eliminating waste and improving their quality

standards (Rewers, *et al.*, 2016). The Kaizen approach has been inculcated in firms across the globe as a tenet to foster firm performance through improved production. It is characterized by quality cycles, teamwork, personal discipline and total productive maintenance systems (Rewers, *et al.*, 2016; Ranaweera, 2015). KAIZEN stipulates that employees partake in contributing their aptitude, capability, understanding, teachings and unsolicited contributions to their organizations (Macpherson *et al.*, 2016). In production industries the simplification of production process is aimed at expanding productivity (Terziovski, 2011). The teamwork as recommended by Kaizen version seeks to gain advantages associated with staff member spirits through positive participatory monitoring, team job and also employee involvement. On the other hand, individual discipline attempts to incorporate monitoring skills, technical elements and spirit of process improvement toward high quality improvement of product and services (Golas *et al.*, 2016). TPM (Complete Productive Maintenance) is a thorough system which assures that production centers are extraordinary to effectively and efficiently achieve tasks. The TPM procedure is set to reduce regular equipment break downs, enhance speed and reduce manufacturing flaws and errors. The TPM mechanism is additionally set to boost security of the production setting by limiting prospective threats as well as mishaps (Nallusamy, 2016).

Kaizen Systems have been employed in Japan to enhance productivity efficiency in the automobile sector. Toyota Motors have employed Kaizen System for very long time to enhance motor productivity and quality (Nakamori, Takahashi, Han & McIver, 2019). Kaizen Systems in Japan has also penetrated to the agricultural sector focusing on continuous improvements and efficiency in the sector. It has been employed to boost labor demand in Japanese farms in the face of a severe labor shortage. In one farm in Kanazawa, there are two main parts to the system. One is a cloud-based system in which workers collect data about individual fields and rice paddies using smartphones (Chiarini, Baccarani & Mascherpa,

2018). The other involves employees from Toyota coming to farms and identifying practices that are wasteful or inefficient.

Relocating Japanese Kaizen whereabouts to a foreign firm in China', found that, Kaizen activities in the states outside Japan, such as US, China, Australia, Sweden and the UK pinpointed that the idea, methods, and practices of Kaizen have become regularly taken on all over the world (Chiarini, Baccarani & Mascherpa, 2018). Though, dissertations point that, as Kaizen is rolled out to abroad operations following the Japanese business expansion undertakings, the performance of Kaizen administration is contextual dependent. Kaizen practices were rooted in Japanese culture. Over the years, it became challenging to exchange these practices abroad. However, some individuals suggested that only the rational features of were exchangeable in foreign states (Chiarini, Baccarani

Mascherpa, 2018). Kaizen practices were transferred to non-Japanese cultural environment. In addition to the national culture, compositions indicate that the organization culture significantly influences the adoption of Kaizen practices (Nath & Dutta, 2016). The biggest hurdle to Kaizen adoption is the centralization of power and lack of cross functional teamwork. In order to escalate the odds for holistic Kaizen approval, two characteristics of organizational culture are essential: power entrustment and empowerment, and great collaboration between internal and external stakeholders, i.e managers, workers, customers, and suppliers.

In Spain, many agricultural farms have adopted the culture of continuous improvement. There exists the notion that constant progress necessitates the initiative, involvement and readiness to learn from all stakeholders (Suárez-Barraza & Lingham, 2018). Administration, through their guidance and human resource management strategies, establish a working

environment in which employees can freely contribute their potential towards this mutual endeavor. Hence, necessary training is accorded to all workers pre-involvement in Kaizen teams, thus guaranteeing them of requisite skills required to execute newly attained job practices (Suárez-Barraza & Lingham, 2018).

In India, many tea firms are implementing Kaizen System to fasten their production ability in order to expand their market competitiveness globally (Gautam, Kumar & Singh, 2012). Among the notable challenges facing tea processing in India include limited customer service considerations, slow production operations and ballooning operational expenses (Gautam, et al., 2014). Basing on Jadhav, *et al.* (2014), Kaizen systems have been employed in India to minimize human intervention, fasten task productivity, increase work efficiency, cut on tea processing costs and to improve tea quality. Kaizen seeks to improve productivity while enhancing quality of products.

Kaizen Systems are used to enhance tea productivity in Sri Lanka (Ranaweera, 2015). The Sri Lankan tea sector employs different quality management techniques including Kaizen Systems to fasten tea production, enhance tea processing, consumer taste, sufficient food production, social growth and environmental conservation. Kaizen Systems implementation in the tea sector was first undertaken by Sri Lanka Tea Board and since then has gained acceptance as it has been employed into the all existing tea factories in the country. Most of the employees are aware of Kaizen systems and they operate it in their workplaces. Tea processing firms employing Kaizen system seeks to improve tea production, tea processing speed, check quality of tea products, minimize operational costs while protecting environment by appropriately disposing wastes. Basing on Lokunaragodage, *et al.* (2015) workers have been trained on the application of Kaizen systems in the tea sector.

Though, Kaizen is globally recognized as quality management tool, the application and use of Kaizen in Africa remains very low. In South Africa, numerous automotive companies spend lots of resources in procuring equipment and maintenance without considering the value of teamwork in facilitating decision-making and worker capacity building (Adeyemi & Chucks, 2012). South Africa has been in the frontline in implementing Kaizen suggestion system to enhance production capacity of automotive firms. However, the automotive organizations have not realized the fruits brought by Kaizen Systems because of underdeveloped use of teamwork to enhance work productivity. Malawian Government has been employing Kaizen to enhance quality assurance in the health sector. However, Kaizen systems have not been employed in the tea sector to enhance quality and productivity (Honda, 2012).

Kenya is the 3<sup>rd</sup> largest supplier of tea producing 10% (303,308 tonnes) of world tea produce and also the third biggest exporter of tea estimated at 18.2% world total aggregate of tea exported as in 2017 (Tea Research Institute, 2018). Kenya earned, 125.25 billion KES from tea exports in 2015, an increase of 23% from 101.11 billion KES recorded in 2014 (Kenya Tea Growers Association, 2016). According to a 2017 study from the Kenya Tea Development Authority (KTDA), revenues from the domestic market totaled KES 14.6 billion, or 7% of the industry's total production. However, there has been a decline in the quality of Kenya's tea. For some time now, the quality of Kenya's tea has been steadily declining. According to KTDA report (2016) poor quality has been attributed to poor processing and production methods, distribution challenges and low plucking standards.

The Kenyan Vision 2030 blue print aims at sustaining economic growth of 10.0% across time. The economic development blue print is based on 3 aspects: the economic, the social, and the political. Agriculture forms part of the Kenya's 2030 blue print and the Big Four agenda that include sufficiency of food as one of the pillar. In the agricultural sector, tea

production is a popular agricultural activity contributing 4% of the country's GDP in 2017 (Kenya National Bureau of Statistics report [KNBS], 2018). The 2015 Sustainable Development Goals (SDGs) calls for the eradication of hunger by adopting sustainable farming activities.

The ISO 9001:2015 standard allows Kenya Tea Packers (KETEPA) to continuously produce tea products of high quality meeting statutory and regulatory standards set in the international market. According to Kagira, Kimani and Githii (2012), close monitoring is required for the production of quality tea. However, despite subscribing to these quality accreditation bodies, the quality of tea produced has continued to deteriorate. Poor quality of tea hinders its overall performance, since tea of low quality fetches low value in the global markets (Tiampati, 2015).

Though Kaizen system is not very popular in Kenya, some big multinational firms particularly in the manufacturing sector are operating under guidance of Kaizen Systems. Moreover, the KAM has been organizing training workshops and seminars on the importance of Kaizen systems in the manufacturing sector (Ngothi, 2015). Kaizen system has been applauded in enhancing quality management of automotive products in the automotive industry. However, little is known on role of Kaizen system in promoting the growth of tea processing companies in the tea sector. In conducting this study, the researcher wished to determine the role of Kaizen Systems in expanding tea sector in Kenya.

Kenya's tea market is characterized both local and foreign tea processing firms (KTDA report, 2019). There exist 66 tea producing companies in Kenya grouped regions.

Aberdare Ranges has 21 tea processing firms, 16 in Mt. Kenya Region and Nyambene Hills, 13 in Kericho Highlands, 11 in Kisii higher regions and 5 in Nandi Highlands and Western higher regions. Thus for the study, tea processing firms are ranked as per region (KTDA

report, 2019). Nonetheless, at the Mombasa Tea auction, 6 firms only make up to 66.7% of the total tea transactions. Undoubtedly, big tea buyers largely influences the prices of tea at auction centers, high volume buyers strongly influence auction prices. Additionally, many of multinational firms buy Kenyan tea in bulk and take them to tea processing firms (Cheserek, Elbehri & Bore, 2015). Thus, multi-nationals firms are able to increase the profitability of tea by undertaking value addition through blending and repacking, representing 80 per cent of the market rates (Njogu, Kariuki, Kamau & Wachira, 2015).

The tea sector in Kenya is a significant contributor of Gross Domestic Product (GDP) adding an estimated 12% of the agricultural sector production to GDP. Tea exports brought in KES 125.25 billion for Kenya in 2015, a 23% increase from KES 101.11 billion in 2014 (Maina, 2018). The domestic market contributed KES 14.6 billion in revenue, or 7% of the industry's overall production, bringing the total to KES 139.85 billion (KTDA report, 2019). Moreover, tea crop in Kenya is one of the crops that have maintained constant upward growth in most years earning the country foreign earnings.

Despite tea production contributing immensely to the Kenyan Gross Domestic Product, the high costs of production, flooded market destination and limited value addition to the product threatens its survival (Mose, Mbeche & Ateka, 2016). Escalating production costs coupled with higher labor costs are some of major problems facing Kenyan tea sector. The cost of producing tea is viewed to be higher in comparison compared to peers like Sri Lanka and Vietnam.

Production costs of made tea is 1.34 dollars/Kg in Kenya. The figure is considerably high compared to production cost of 0.82 dollars/kg in Vietnam, 0.59dollars/kg in Indonesia, 1.31 dollars in Rwanda, 1.09 dollars in Uganda, 1.17dollars/kg in Tanzania, 1.15 dollars/kg in Malawi and 1.12 dollars in Zimbabwe. Some of critical elements resulting to the escalating

production costs include rising costs of farm inputs, rising cost of labour, expensive costs of energy, high transportation expenses and taxation charges (Kawooya, Tumwine, Namutebi, Mugisa, Naluugo & Kajobe, 2015). The escalating costs of tea production calls for effective cost reduction strategies to countercheck the alarming situation.

Moreover, the selling of tea in bulk has been common practice in Kenya and the practice is quickly losing popularity in the face of growing preference to value added tea products. Undertaking value addition entails processing, tea blending, tea branding, quality certification and accreditation and also tea quality enhancements. The growth of revenue and profits in the value added sector of the market is very high particularly when tea is prepared and presented as an end product to the consumer.

The performance of tea processing firms is pegged on their profitability and production output. In the context of this study, the profitability of tea producing companies was based on return on assets (ROA). The ROA enables the measuring of firm profitability in relation to total assets injected to production (Perera, 2014). Production output measures aggregate output to aggregate input injected in tea production. Thus, the difference between input growth and output growth represents tea productivity growth. The performance of tea processing companies was measured using sales revenue and quality of tea. Similar studies have applied same measures (Sales Revenue & Quality) these include Hassan *etal* (2011), Ngatia (2012), Moenna (2014), Nath and Dutta (2016). According to Ware (2015), profit generation shows how assets of a firm are used to make income. Owolabi and Obida (2012) additionally characterized productivity as the extent to which welfare from all business exercises. It approximates administrative proficiency in utilization of influential assets that increases the worth of a business. Productivity refers to a relative quantifiable term regarding satisfaction and their relationships with different components that directly affect a business' benefits. Profit generation is the connection between salary and monetary records which denote relative capacity to procure

resources. The evaluation of profit generations is generally done through the return on assets that estimates the percentage of net income to aggregate resources controlled by a firm.

Tea exports to the international market The performance for most Kenyan tea processing companies has been declining beginning the year 2013 to 2018 (KTDA report, 2019). Tea sales to major markets outside Kenya's border dropped by 30 per cent in 2018 in comparison to the preceding years of 2017 and 2016 (KTDA report, 2019). Kenya's tea export income declined by 16.4 percent in 2019 resulting to Sh117 billion additions to nation's nominal GDP. Moreover, bonuses payments to farmers have been delaying in the tea industry or among tea firms. In 2019, tea farmers in Chinga Tea Factory, Kangaita Tea Factory and Michimikuru Tea Factory had their annual bonus payments dropped by more than Sh10 per kilo compared to what they earned in 2018.

KTDA report (2019) highlighted various factors that have been attributed to the declining competitiveness of Kenyan tea both locally and international market. The factors included increased costs of production occasioned by declining tea quality, outdated production technologies, fluctuating global tea prices, and high tariffs and rising competition from other African tea growing territories. The quality of tea has been deteriorating hence undermining the performance of the tea product in the local and international market (KTDA report, 2016). To ascertain the quality of tea in Kenya, tea producing firms subscribe to internationally acclaimed quality standards including International Standard Organization (ISO) 9000:2015 and the HACCP (Karari, 2019).

## 1.2 Statement of the Problem

Globally, firms are experiencing an exponential turbulent headwind environment. Learning from derivatives introduced by The Scientific Management such as TQM and Quality Control Circles, The Japanese theory of Kaizen has permeated many institutions all over the world (Chiarini, et al., 2018). Joint forces have been adopted across all cadres of establishments to foster notions and ventures to establish a flexible learning organization that can endure unpredictable situations (Nakamor, 2019). Though an abundance of fruitful projects and developments have been reported and embraced in establishments, majority of the joint forces are often temporary thus they split shortly after conceptualization to execution phases (Davoudi & Fartash, 2012). However, in some establishments, not all joint forces are disbanded; they may proceed to other projects developed by the organization (Chiarini, et al., 2018). Regardless of this burgeoning of teams to promote organizational progress, they are not adequately educated on major challenges they might encounter in internal processes and outcomes of a Kaizen system (Suárez-Barraza & Lingham, 2018).

In Kenya, tea industry can generate up to USD 8.54 billion annually to the economy (KTDA report, 2019). However, this is not the case in Kenya as tea quality continues to decline in the tea processing firms fetching small prices at the global markets hindering their potential performance. In 2003, using a sample of 100 cups to taste and analyze the tea quality in those cups, there were 70 outstanding cups (KTDA report, 2016). In 2008, out of 100 sample cups tested, 55 outstanding cups met the quality standard laid. In 2015 out of the same quantity of 100 sample cups, only 45 outstanding quality cups were established. This is a clear indication that the quality of tea in the country is declining (Tea Research Institute, 2018).

In 2019, tea farmers in Chinga Tea Factory, Kangaita Tea Factory and Michimikuru Tea Factory had their annual bonus payments dropped by more than Sh10 per kilo compared to

what they earned in 2018 (KTDA report, 2019). Slowness in implementing technological innovation in the tea sector including fermentation technological innovations, pruning technological, weighing technological and information systems is undermined the profitability of tea producing industries in Kenya, particularly the small sized tea firms including Kapkatet Tea Company, Mudete tea Factory Company and Kathangariri tea Factory Company (KTDA report, 2019).

However, the current performances of tea processing firms have been on decline in Kenya, owing to reduced quality and low production. Exportation of Kenyan tea to major global markets reduced significantly by 30 percent in 2018 compared to the preceding years of 2017 and 2016 (KTDA report, 2019). Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea (Ateka, Onono & Etyang, 2018). There is need to employ Kaizen systems in enhancing the efficiency of tea production and competitiveness of Kenya's tea produce globally. A necessity to undertake an equivalent research is required focusing on Kaizen systems and performance of tea producing companies in the Kenyan situation. Due to the knowledge gaps regarding impact of Kaizen Systems on performance tea producing companies, there is need to analyze Kaizen systems and performance of Kenyan tea producing firms.

### **1.3 Purpose of Study**

The purpose of the research is to determine the Analysis of Kaizen Systems on the performance of tea processing firms in Kenya.

#### **1.3.1 Objectives of Study**

The specific objectives that informed the study were:

1. To determine the influence of quality cycles on performance of tea processing firms in Kenya.

2. To assess the influence of teamwork on performance of tea processing firms in Kenya.
3. To establish the influence of personal discipline on performance of tea processing firms in Kenya.
4. To examine the influence of total productive maintenance systems on performance of tea processing firms in Kenya.
5. To establish the moderating role of organizational dynamic capability between Kaizen Systems and performance of tea processing firms in Kenya.

#### **1.4 Hypotheses**

- H<sub>01</sub>** There is no significant relationship between quality cycles and performance of tea processing firms in Kenya.
- H<sub>a1</sub>** There is significant relationship between quality cycles and performance of tea processing firms in Kenya.
- H<sub>02</sub>** There is no significant relationship between teamwork and performance of tea processing firms in Kenya.
- H<sub>a2</sub>** There is significant relationship between teamwork and performance of tea processing firms in Kenya.
- H<sub>03</sub>** Personal discipline does not significantly influence performance of tea processing firms in Kenya.
- H<sub>a3</sub>** Personal discipline significantly influence performance of tea processing firms in Kenya.

- H<sub>04</sub>** Total productive maintenance systems does not significantly influence performance of tea processing firms in Kenya.
- H<sub>a4</sub>** Total productive maintenance systems significantly influence performance of tea processing firms in Kenya.
- H<sub>05</sub>** Organization dynamic capability does not significantly moderate the relationship between Kaizen Systems and Performance of tea processing firms in Kenya.
- H<sub>a5</sub>** Organization dynamic capability significantly moderates the relationship between Kaizen Systems and Performance of tea processing firms in Kenya.

### **1.5 Justification**

Despite the benefits brought by tea production, policymakers and stakeholders in the tea industry have raised concern over the deteriorating quality of Kenya's tea. Tea takes a significant portion in the economy of most tea producing countries. The performance of tea producing companies aligns to their sustainability. It is evidenced that improvement in the performance of tea processing firms increases their ability to operate efficiently, pay for suppliers, meet operational costs and enhance their sales revenue. However, it is the cost of producing tea, price of tea, quality of tea and others determine the performance of tea in any given producing country worldwide.

For some time now, the quality of Kenya's tea has been steadily declining. The country is losing the status as the leading producer of high quality across the globe. The deteriorating quality of tea in Kenya has been associated to handling procedures, production methods, processing challenges and delays in deliveries from farms to the factories. With tea being a

critical sector to the Kenya's economy, the country cannot afford to fall behind world set standards in terms of quality.

As a consequence of the declining supply and quality of tea yields in the country, there is need to employ quality improved and production mechanisms to boost the sector. One of the mechanisms is Kaizen systems for quality improvement. In 2015, Kenya for the first time employed Kaizen system in the tea processing firms to check and improve quality standard of tea produced in the country. Kaizen systems advocates for continued enhancement of quality in product production. In line to this move, it is of essence to analyze how Kaizen systems have influenced performance of tea processing firms in Kenya.

### **1.6 Significance of the Study**

The results are significant to the administration of the tea processing firms. This study finding enables the Kenyan tea processing firms in enhancing production of quality tea and this enabled them put in place corrective and preventive measures which can foster improvement. The management can understand the importance of Kaizen systems in enhancing quality of tea produced and market competitiveness. The tea processing firm can employ kaizen philosophy to enhance production of tea by observing quality standards of tea produce.

The results are also of significant to policymakers including the Kenya Tea Development Agency. Kenya Tea Development Agency in conjunction with quality certification bodies may participate in strengthening quality management systems of tea processing firms. The results also add to the realm of knowledge on Kaizen systems and firm productivity. Scholars may find this research important as it may form a basis for further investigations into the Kaizen systems and firm growth.

## **1.7 Scope of the Study**

The study determines the influence of Kaizen Systems on performance of Kenyan tea processing firms presenting content scope. The specific objectives are: to determine influence of quality cycles, to assess the influence of teamwork, to establish the impact of personal discipline and total productive maintenance systems on performance of tea processing firms in Kenya presenting variable scope. This research was guided by Deming's Quality Improvement Theory, Dynamic Capabilities Theory and Organizational Performance Theory presenting theoretical scope. This research focused on the Kenyan tea processing companies presenting a contextual scope. This research targeted 66 Tea producing companies in Kenya. Actual study was conducted in the years 2020-2021 presenting time scope where the 66 operations managers were the unit of analysis.

## **1.8 Limitations**

Quite a couple of limitations may be encountered during the study including low participation rate. There may be aspects of biasness in answering questions in the questionnaire. Biasness was mitigated by asking responses to be honest when answering the questions. Further, some respondents were unwilling to participate in the study for fear of airing out confidential information about the company. This was mitigated by assuring respondents of confidentiality. Besides, participants were assured that their responses were only to be used for academic research purposes. Moreover, the researcher mitigated low participation rate by distributing sets of questionnaires has them filled and collected the same day. An appointment letter was required from the school and be used to request for permit to undertake this research in their organization.

### **1.9 Delimitation of the study**

Study delimitations are the choices made by the researcher which describes the demarcations set for the study. In this study, Analysis of Kaizen Systems was studied through its dimensions on Tea Processing Firms due to lack of such literature in Kenya hence this was a contribution toward the body of knowledge. The context and statement of the problem is about a vibrant sector in Kenya, few studies have chosen other sectors, hence a contextual gap and to address a possible solution to problems facing the sector which has been outstanding for long.

The unit of analysis for the study was a total of 66 Tea Processing firms in Kenya categorized into Large, Medium & Small (KTDA Report 2019).

Additionally, the unit of observation for this study was a total sample of 66 Operations Managers in 66 Tea Processing firms selected from the 66 Tea Processing Firms in Kenya.

### **1.10 Assumptions of the Study**

This study makes an assumption that respondents provided honest answer the questionnaire. It is also assumed that the Kaizen Systems stated above are the only principles affecting performance of tea in the Kenyan context.

## 1.11 Operational Definition of Key Terms

**Quality cycles:** describes operation and process of attaining enhanced productions through cost effective methods so as to increase sales growth. As a strategic tool, it includes aspects of quality control, efficiency, effectiveness surplus, reducing costs and minimizing wastes during production.

**Personal discipline:** is a methodology that facilitates cost-effectiveness in production by adhering to correct quantity, quality, time management while minimizing costs on tools and human resources. Just in Time is measured as close adherence to daily schedules, tool management layout, effective supply management and setup time reduction. **Kaizen:** is defined as ongoing improvement involving everyone in the organization. Kaizen is a production management approach encompassing teamwork, structured problem solving mechanisms, statistical approaches, brainstorming, quality control circles, personal discipline, or work study.

**Organizational dynamic capability:** refers to antecedents guiding the utilization of resources to the betterment of a firm.

**Teamwork:** is an aspect of Kaizen that emphasize on production benefits associated with positive participatory management and employee involvement.

**Total productive maintenance systems:** is a comprehensive system which guarantees that production facilities are exceptional to efficiently and effectively accomplish tasks. The TPM process is set to reduce frequent machine break downs, enhance speed and minimize production defects and errors. The TPM mechanism is also set to improve safety of the production environment by limiting potential risks and accidents.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The part lists empirical literature review, theoretical anchorage, conceptual model and recap of literature review. The theoretical foundation and empirical review on the core topic relevant to study objectives were reviewed to uncover research gaps.

#### 2.2 Empirical Literature

##### 2.2.1 Firm Performance

Performance denotes the degree to which organization's objectives are attained effectively and properly. Financial performance indicates just how lucrative an organization is relative to its overall properties. There has actually been a wide variety of interpretations of financial performance that have been recommended in the literary works. Performance is the capacity to maintain earnings stability as well as growth. Hassan *et al.* (2011) identified two thorough classifications of monetary performance steps. They include; investor returns whereby returns are gauged based upon shareholders' understandings and also audit returns which focuses on how organizations' profits respond to different supervisory approaches.

Additionally, accounting-based efficiency procedures consist of; return on assets (ROA), total possessions, growth of assets, sales growth as well as operating income development. On the other hand, some of the main steps utilized for investment-based returns consist of: yield of rewards and cost earnings proportion. Ngatia (2012) determined steps such as return on assets (ROA), return on equity (ROE), as well as return on sales as the major monetary procedures in most organizations.

Majorly, ROA is regarded as an accurate measure for financial performance in a firm (Berman *et al.*, 1999). This is because it is not influenced by the differential amount of leverage in organizations unlike other accounting measures such as return on sales. Because it is directly associated with stock prices, a higher ROA leads to an increase in value for the organization's shareholders. The ROA measures both profit facets and those linked to assets used to create the profit. Scholars have recommended for the use of ROA and ROE as profitability indicators (Moenna, 2014; Aras, et al., 2010).

The amount of total outputs and the ratio of inputs used in the production of goods and services are referred to as production output. Productivity growth is calculated by subtracting output growth from original input growth. There are two main ways to measure productivity. Firstly, there is multifactor productivity that measures growth in value of the outputs per unit of labor. Secondly, capital input is used to analyze growth in value of the inputs per unit of labor. Traditional accounting methods require independent measures of inputs and outputs when calculating multifactor productivity. In the study, sales volume, profitability and quality of tea were employed as measures of performance of tea processing firms.

Organizational performance is a primary and basic attribute for the existence of a company in today day competing world (Hang et al., 2022). According to Chmielewska et al. (2022), company performance is required to be concentrated on details since it is the process to boost the performance of the organization. In today day business environment, there are enhanced intricacy and unpredictability, and also these have their impacts on the organizational performance.

The performance of a firm simply means the outcome which indicate or reflect the organization efficiencies or inefficiencies in terms of corporate image, competencies and financial outcomes (George, 2019). It likewise entails the change of inputs right into results for attaining specific

outcomes; it is concerned about the effectiveness, productivity, efficiency, quality, or high quality of the organization (Avedi, 2016) informs concerning the relation between minimal and effective expense (economy), reliable expense and also recognized outcome (effectiveness), and also output as well as attained end result (performance). As mentioned by Palacios-Marqués, Gallego-Nicholls and Guijarro-García, 2021), organizational performance is essential in improving both the effectiveness of the organization and also the health of its staff members with planned interventions.

Firm performance refers to the actual outcome or results of the organization as determined against its designated results as well as goal. Furthermore, organizational performance is considered effective if it achieves its goals (performance) making use of a minimum of resources (performance) (Bley et al., 2022). These end results are linked to efficiency of numerous processes of the organization, staff members' productivity, customer complete satisfaction, and high quality of products and services (Jun et al., 2021). The traditional approach of determining organizational performance have been based upon financial outcomes; subsequently, profit is the financial indicator frequently made use of to assess performance. However, it is important to note that organizational performance can also be measured in terms of non-financial measures (Singh & Misra, 2021).

The new millennium has ushered in a number of changes to the commercial landscape, which has led to an increase in both complexity and unpredictability (Taouab & Issor, 2019). In the current climate, which is characterized by change and is characteristic of the global economy today, businesses are faced with strong competitive pressure to do things better, faster, and cheaper than their competitors. They need to be able to deal with an increasing amount of obstacles brought on by their environment, and they also need to be able to adapt more effectively (Lee, Romzi, Hanaysha, Alzoubi & Alshurideh, 2022). In today's business world, maintaining high performance is the goal of any company. This is due to the fact that performance is the only

way for a company to experience growth and advance in their field. As a result, evaluating and analyzing the performance of a company's business is of utmost significance because businesses are consistently looking for ways to improve their efficacy and effectiveness (Lee *et al.*, 2022).

The vast majority of businesses are looking for ways to boost their performance in any manner feasible; those who make an effort to innovate, to obtain, and to maintain performance may have a better chance of coming out on top (Desyllas, Salter & Alexy, 2022). Therefore, engaging in competition in an environment that is always shifting is extremely vital in order to comprehend and monitor performance. As a result, management teams as well as scholars have always been interested in evaluating the performance of companies. In addition, determining how to assess the performance of businesses in the current economic climate is an important topic for both academic researchers and managers who are actively in practice; researchers have made extensive attempts to identify measurements for the idea of performance (Desyllas, Salter & Alexy, 2022). In this regard, the literature on the subject of firms' performance is not comprehensive, and there is an ongoing discussion over this topic.

According to Yingfei, Mengze, Zeyu, Ki-Hyung, Avotra, and Nawaz (2022), prosperous businesses are an essential component for nations that are still in the process of development. When it comes to determining a nation's economic, social, and political development, many economists compare them to an engine. Every company needs to function under dynamics of performance if they want to be successful in today's cutthroat business climate (Yingfei *et al.*, 2022), in current times, the idea of company performance has emerged as an important one in the field of strategic management research, and it is widely employed as a dependent variable. In spite of the fact that it is a highly popular notion in the academic literature, there is very little agreement over the definition of it or how it should be measured. The

establishment of a measurement for the company's success paves the way for the comparison of that performance over a variety of time periods.

According to Giang and Dung (2022), a business that operates effectively can result in large profits over an extended period of time. These profits, in turn, will create new job openings and raise individual incomes. In addition, the financial viability of a company will enhance the returns that are provided to its employees, will result in improved production units, and will offer items of greater quality to the company's clients. Without an outcome measurement, this process simply cannot be carried out; hence, performance assessment is of utmost significance to the efficient management of the company (Giang & Dung, 2022). It plays a significant role as the primary provider for the company's perceptual and organization/control capabilities. In order to research and decide on the management plan, to foresee future internal and external situations, measurement of performance is important to keep track of the condition and behavior of an organization in relation to its goals, and to make decisions at the appropriate times (Giang & Dung, 2022).

Management academics have looked into a variety of elements and their effects on business performance because firm performance is such a vast topic, and they have looked at how many different aspects affect firm performance (Rahman, Zahid & Muhammad, 2022). Financial metrics including return on equity (ROE), earnings per share (EPS), return on assets (ROA), and return on sales (ROS) are regarded as some of the most crucial indicators of a company's overall performance. However, the performance of companies has also been evaluated based on non-financial factors that have an impact on their public image. Among these are the actions taken by the businesses in the area of corporate social responsibility (CSR), such as the usage of environmentally friendly materials, charitable contributions, ethics education and enforcement, and workforce diversity initiatives. Although it has been shown that these efforts have a detrimental effect on the company's financial performance in the short term, it

has also been shown that they have a positive effect on the company's financial success over the long run (Ahamed, Almsafir, & Al-Smadi, 2020).

Although it is simpler to pinpoint the primary industry characteristics that influence firm profitability, there are several business-specific factors that affect firm performance and span a variety of management-related themes (Rahman et al., 2022). Management experts have investigated the incremental effects of these organization-specific characteristics on company performance. The effects of additional factors from operations, management information system, strategic human resource management, business ethics, and finance have also been investigated (Rahman et al., 2022). However, the main sources of these business-specific factors are strategic management and organization theory & behavior.

The study of business profitability or firm performance has its roots in the numerous studies that have looked at the drivers of revenues and costs (Mugambi & Ndolo, 2022). Firms can maximize profit by increasing revenues and/or lowering costs. Numerous empirical research have been undertaken to support the theories of the firm that have been developed as a result of the numerous studies. The border of the firm, transaction cost economics, and agency theory are three important theories of the firm that have been extended by other studies (Korir, 2022). Industrial organization draws on firm theory and investigates how a firm's structure affects each employee's behavior, which in turn affects the firm's profitability. Several more studies have been carried out to investigate the effects of constructs from other areas of management on business performance, despite the fact that the literature has already established the main factors influencing firm profitability (Hristov & Appolloni, 2022). These variables, which include non-traditional firm-specific variables, are mostly organization-specific. These elements include unionization, information and communication technology, diversification, capital structure, ownership structure, entrepreneurialism, and other traits of the companies' owners and directors. For instance, it has been suggested that diversification can assist businesses

handle revenue swings, which is thought to boost business performance (Hristov & Appolloni, 2022). There have been conflicting findings from studies on how corporate diversifications within industries affect performance (Hashai, 2015). Examples of elements that have been demonstrated to have an impact on the relationship between diversification and company performance include the mode and extent of diversification. Whether diversity is achieved by merger/acquisition or organic expansion will determine the extent of its positive or negative impact on profitability (Hristov & Appolloni, 2022).

Due to the lower cost of loan capital compared to equity capital, a highly leveraged company is predicted to be more profitable (Bansal, Garg, & Yadav, 2022). Because older firms are thought to have higher capacities as a result of their relatively lengthy years of operation, firm age is also anticipated to have a favorable effect on firm performance (Nayal et al., 2022). When compared to comparable businesses with the same amount of sales, companies with high capital and R&D intensities spend more on capital assets and R&D (Taouab & Issor, 2019). As a result, it is anticipated that they will be more successful since they are likely to see greater returns on their superior capital and R&D efforts. Last but not least, it is theorized that businesses with higher revenue growth rates are more likely to be profitable than businesses with lower growth rates (Taouab & Issor, 2019).

Production output is defined as the sum of all outputs and the ratio of inputs used in the creation of goods and services (Bayraktaroglu, Calisir, & Baskak, 2019). There are two major approaches to assess productivity, and productivity growth is computed by subtraction of output growth from initial input growth (Bayraktaroglu et al., 2019). First, there is multifactor productivity, which gauges increases in the value of outputs per labor unit. Second, the rise in the value of the inputs per unit of labor is examined using capital input. When evaluating multifactor productivity using traditional accounting methods, independent measures of

inputs and outputs are required; in the study, sales volume, profitability, and tea quality were used as performance indicators for tea processing enterprises (Seo et al., 2021).

### **2.2.2 Kaizen Systems**

The Kaizen System was developed in Japan and consists of activities that lead to the continuous development of a product in order to improve its quality standards. Kaizen aims at improving performance of a firm through improved standards activities (Misiurek, 2016). Kaizen systems aim to improve individual operations and processes by eliminating waste and improving their quality standards (Rewers, Trojanowska, Chabowski & Żywicki, 2016). The Kaizen philosophy has been implemented in organizations around the world as a way to foster firm performance through improved production. Kaizen system is characterized by team work, personal discipline, total productive maintenance systems and quality cycles.

In production industries the simplification of production process is aimed at expanding productivity (Terziovski, 2011). Quality cycles describe the operation, the procedure of attaining much better manufacturing and also cost decrease in production and sales procedure and as a critical goal, it includes particular groups of complete quality control, performance rise, effectiveness excess, improvement promotion, cost reduction and also removal of defective things (wastes) from the productive process (Rahmanian & Rahmatinejad, 2014). The teamwork segment of the Kaizen model seeks to reap benefits associate with employee morale through positive participatory management, team work and employee involvement.

On the other hand, personal discipline attempts to integrate management skills, technical aspects and spirit of process improvement toward quality improvement of product and services (Golas *et al.*, 2016). TPM (Total Productive Maintenance) is a comprehensive system which guarantees that production facilities are exceptional to efficiently and

effectively accomplish tasks. The TPM process is set to reduce frequent machine break downs, enhance speed and minimize production defects and errors. The TPM mechanism is also set to improve safety of the production environment by limiting potential risks and accidents (Nallusamy, 2016).

The philosophy behind kaizen is that everything has room for improvement, and the idea behind this method is that small adjustments can add up to significant ones over time without the need for revolutionary innovation (Arai & Otawara, 2019). It is possible for this to be a lot kinder and more employee-friendly method of instituting the adjustments that need to take place as a company expands and adjusts to the changing environment. Because kaizen is more of a philosophy than a particular technology, its approach may be found in a wide variety of process-improvement strategies, ranging from Total Quality Management (TQM) to the usage of employee suggestion boxes. This is because kaizen was originally developed in Japan (Chung, 2018). When using kaizen, every employee is accountable for locating voids and inefficiencies, and everyone, at every level of the organization, contributes suggestions for areas in which the business could benefit from enhancements.

According to Kumar (2019), the kaizen philosophy was developed to improve manufacturing processes. As one of the factors that led to the success of Japanese manufacturing in terms of high quality and low costs, the kaizen philosophy is one of the elements that contributed to the success of Japanese manufacturing. You can, on the other hand, reap the benefits of the kaizen approach in a variety of other working contexts, both on an individual level and for the entirety of your team or company. In most cases, a company must engage in ongoing improvement activities if it is to fulfill and go beyond the requirements of its customers (Kumar, 2019). Kaizen is a strategy to continuous improvement that takes a scientific approach, makes use of statistical techniques, and infuses business values into the improvement process. This is where it comes in handy.

In addition to this, kaizen is predicated on the idea that a string of incremental changes can bring about a substantial shift in the way corporate operations are carried out (Vo, Kongar & Barraza, 2019). Therefore, kaizen fosters the participation and inventiveness of workers in the process of making changes. Because of this, workers are always willing to adapt to new methods of doing things as part of an effort to develop. In order to make this an easy read, we will concentrate on the primary benefits and drawbacks of kaizen, bringing attention to a number of kaizen's advantages as well as its constraints (Rossini et al., 2019). The business itself can benefit from the improvement strategy known as kaizen, but so can the employees, the consumers, and the organization as a whole. This management approach can be applied to a wide variety of different kinds of enterprises. Employees feel more valued in their roles within the company as a result of the recognition and rewards provided by Kaizen, which acknowledges and appreciates their hard work.

One of the most significant benefits of kaizen is an increase in teamwork; kaizen is a technique for quality improvement that is driven by collaboration (Gunawan, Fauzi, Worabay, Hafat & Nasution, 2022). Everyone who is involved in the operation of the firm will be better off as a result, not just a select few. The members of the kaizen team become closer to one another and create a stronger sense of team spirit as they work together to find solutions to problems. Therefore, workers are able to contribute to the company with an open mind, devoid of bias, and without preconceptions; in addition, teamwork contributes to the development of cross-functional collaborations (Gunawan et al., 2022).

Because highly trained employees from a variety of departments are responsible for implementing kaizen, members of the team have the opportunity to improve their abilities. In most cases, the most significant room for development is found at the point where one process transitions into another. According to Ozkaptan (2019), cross-functional partnerships give employees of diverse experience levels the opportunity to learn from one another and

work together to find solutions to challenges. Therefore, one of the benefits of kaizen is that it encourages employees to work together more effectively and cooperatively.

Additionally, each kaizen team needs a team leader who is in charge of setting up the team and supervising implementation (Criscione-Naylor, 2020). The kaizen team leader ensures that everyone is successfully carrying out their responsibilities. When additional resources are needed, the team leader is also in charge of finding them. However, to qualify as a team leader, s/he need not hold a management position (Alenezi, 2022). Consequently, another benefit of kaizen is that it gives staff members a chance to assume leadership positions.

Improved productivity is one of the primary benefits of kaizen; other kaizen enhancements contribute to an increase in the overall quality of services (Markov & Markova, 2018). It assists firms in implementing new process changes, boosting efficiency, and improving their ability to manage their time. For instance, Toyota Manufacturing Company uses kaizen in its production process. To begin, the company uses muscle-memory training to instruct its workers on the proper way to put together a vehicle (Janji, Bogievi, & Krsti, 2019). Training in muscle memory enables them to get correct results, and as a result, their staff members are able to work with accuracy.

The creation of a new and improved Standard Work Document is the end result of putting changes into action during kaizen. The Standard Work Document, which is also known as standardized work, is a piece of equipment that serves as the basis for kaizen-based changes (Omotayo, Awuzie, Egbelakin, Obi & Ogunnusi, 2020). It includes the most up-to-date and effective business practices currently available. This is sometimes the primary objective of putting kaizen into practice. In addition, the Standard Work Document acts as the foundation for any enhancements that may be made in the future. In addition to this, it can be used as a tool for assessing employee performance and instructing newly hired workers on how to make improvements (Omotayo et al., 2020).

It is also essential to point out that kaizen contributes to an increase in employee satisfaction; kaizen involves employees in the process of adopting changes for the purpose of improvement (Shatrov, Pessina, Huber, Thomet, Gutzeit, & Blankart, 2021). Through a proposal mechanism like team meetings, employees have the opportunity to give creative input and suggestions for upcoming changes. Employees gain a sense of belonging and worth when they are given the opportunity to participate in the decision-making process; as a result, they are eager to implement changes and think of new methods to improve the procedures (Shatrov et al., 2021). When this is done, it motivates the staff, which leads to an increase in production. Additionally, workers are more inclined to take ownership of the changes made to processes. Instead of reverting to outdated practices, they become proponents of quality enhancements.

According to Kumar and Arun (2022), one of the benefits that businesses can realize from implementing kaizen is an increase in workplace safety. When organizations employ initiatives that clean up and organize the workspace, there is an increase in overall safety. Employees will have a greater degree of control over business process equipment if they do this. In addition, there is an emphasis placed on the importance of employees offering suggestions to enhance workplace safety. This helps to reduce the likelihood of accidents and other injuries; as a result, workers become more productive and better able to schedule their time effectively (Sundararajan & Terkar, 2022). However, management also bears responsibility for the safety of the workplace. Kaizen is a method for cutting waste out of corporate processes. This is another significant benefit of kaizen.

Finding waste in the business process is the responsibility of management and personnel because everyone is liable for kaizen (Gupta, 2021). If they continuously make changes, they are able to pinpoint the root causes of waste and address them. When this is done, waste is eliminated from the operational process, which in turn lowers expenses. Additionally, there is

an improvement in resource use, which raises the company's overall profitability. Company managers must be aware of kaizen's limitations before deciding to apply it in their organizations, despite the fact that it has many benefits. This is because implementing kaizen entails changing the existing management systems, and once kaizen has been implemented in an organization, it is very challenging to go back to the management systems that were previously in place (Bejtovi, Drekovi, and Ahmatovi, 2021).

As a result, Kaizen might be simpler to implement in companies that don't currently have sophisticated management systems. Altering a company's management structure entirely, As a result, Kaizen might be simpler to implement in companies that don't currently have sophisticated management systems. the other hand, is a challenging and time-consuming endeavor. For this reason, it is essential for organizations to continue their practice of open communication in order for kaizen to be successful (Bejtovi et al., 2021). The possibility for employees to freely express their opinions should be made available to them at all times. However, this is not typically the case for the vast majority of companies. The majority of workers are afraid that if they are honest with their employers, it will hurt their chances of being promoted or receiving other advantages.

#### **2.2.2.1 Team Work**

Team work in Kaizen systems act as a fundamental area of individual-oriented Kaizen and stresses on the morale-boosting effects of positive participatory management and staff involvement. Teamwork is the procedure of working collaboratively with different people to accomplish a specific objective (Agarwal & Adjirackor, 2016). Teamwork effectiveness in a company can be influenced by inner and outside factors. Some outside aspects consist of; political, financial, social and technical elements whereas inner factors includes; management design, variety (society, talent and also personalities), communication as well as cohesiveness (Manzoor, Ullah, Hussain & Ahmad, 2011).

In Kaizen operations, employees' experiences, and learnt expertise are amassed and shared with the rest of the team (Macpherson et al., 2015). The success of Kaizen is solely based on the sharing of workers' expertise, experiences, and/or capabilities.

Teamwork is a concept of harmoniously working as a group to accomplish the same objectives to benefit consumers and establishments thus enhancing productivity (Sanyal & Hisam, 2018). Henceforth, reliable teamwork is essential to the success of any type of company. A basic active ingredient to efficient synergy requires bring in and also preserving one of the most suitable employee that would certainly facilitate productivity in an institution (Ooko, 2013). Teamwork promotes higher quality outcome that are well-thought of, faster, and more efficient. Notably, when a team works as a unit they accomplish more than what one member would accomplish alone.

Teamwork is absolutely necessary in order to get things done quickly and effectively in any kind of company or organization, and Kaizen places an emphasis on each and every member of a team rather than merely a select few, which will lead to improved teamwork in general (Berhe, 2021). A template geared specifically on Kaizen is provided by Stormboard and is titled "Kaizen Why's 5W and IH of Kaizen." This is quite similar to the fundamental Who, What, When, Where, Why, and How template that we have, but it provides additional depth and focuses on the Lean process. Before determining whether or not to implement changes, you and your team will be able to identify the precise aspects of your work process that need to be evaluated with the help of each of the parts that are provided (Omotayo, Awuzie, Egbelakin, Obi & Ogunnusi, 2020). The parts each feature questions that will drive your team to look at things more critically than they would typically look at them. These questions are exclusive to that subject.

The Japanese government and business community worked tirelessly to rebuild and strengthen their nation's economy over the following four decades, launching a number of initiatives aimed at streamlining and modernizing various internal business processes

(Vanichchinchai, 2022). In order to achieve this goal, seminars, courses, and research were conducted with the sole aim of better understanding how businesses operate, modernizing and improving them, and positioning the Japanese economy as one of the most potent and effective in the world (Krzywdzinski & Greb, 2022).

The Kaizen concept is a philosophical idea that advocates constant development in all spheres of life, including personal, professional, and familial spheres (Gunawan, Fauzi, Worabay, Hafat & Nasution, 2022). Kaizen seeks to extend this trend to the workplace, where people spend one-third of their lives, and for this it is necessary to involve all team members in this task, that of improving their own work environment. This is because each member of a team has something to contribute from their own unique and particular perspective. To accomplish a continuous and organic improvement of all the processes involved in the development of projects and production, it is crucial to communicate to the workforce that Kaizen is a means, not an end in itself (Gunawan et al., 2022).

According to Dinis-Carvalho, Monteiro, and Macedo (2019), having happy customers is essential for running a successful business. For this reason, the Kaizen approach starts by identifying and comprehending the requirements and expectations of the customer, followed by meeting and exceeding those wants and expectations. This is how all of the services and goods that a business provides to its customers must meet their needs and expectations in every aspect, including price, quality, timeliness, etc. To add value and so surpass both consumer and competitor expectations, products and services must always be improved. Every process carried out in the company must have a positive impact on the product or service and the customer service in order to achieve customer satisfaction and maximum efficiency. To this end, a thorough review is required to identify all processes that, in some way, enhance the customer experience with the company (Dinis-Carvalho et al., 2019).

Kaizen places an emphasis on the collective performance of an entire team rather than the performance of a select few individuals, which will lead to improved teamwork in general (Yokozawa, Nguyen & Tran, 2021). Companies that manufacture goods and services with a primary focus on satisfying the needs of their customers must make it a priority to ensure that their clients are pleased with the products and services they purchase. When this diagnosis is finished, it will be possible to incorporate these processes into the system for ongoing improvement (Alosani & Al-Dhaafri, 2022).

At the same time, all of the procedures that do not show any value for the well-being of the client need to be altered or abolished. When a cross-functional team is established to tackle interdepartmental challenges, the wasteful and unconnected procedures that this sort of culture permits to spread can be startling. This is because the culture allows for the proliferation of cross-functional teams. This stage may also feel daunting after the vast number of problems have all been documented in one place, which is typically the first time this has ever been done. However, in the same way that a physician can zero down on the source of a disease, the more information that is provided, the more accurate the diagnosis will be and the more probable it will be that the treatment will be successful (Alosani & Al-Dhaafri, 2022). The second instance in which conflict can be beneficial is during the process of determining the causes of problems and looking for possible solutions to those problems.

#### **2.2.2.2 Personal Discipline**

Personal discipline entails a guiding set of ideologies and philosophies that incorporate the integral management systems, current upgrading efforts, and technical equipment among workers. Indicators for personal discipline at work entail timeliness in task completion, efficiency and delivery (Mackelprang & Nair, 2010). This method emphasizes on long-term gains as a result of task completion, and a constant development to structures, programs and

produces (Golas *et al.*, 2016). It has a positive influence on quality control, procuring tasks, and work culture with an idea that includes cost, meeting delivery schedules, employee's empowerment and expertise improvement, supplier relationships and production of new merchandises.

Personal discipline refers to a problem-solving management approach that refines quality and facilitates efficient supply, production and distribution of items (Burch, 2008). Because of personal discipline, individuals within the organization involved are dedicated to their work and resources, progressions are fully exploited for maximum yield and efficiency (Mackelprang & Nair, 2010). Personal discipline has played a significant role since it permits an organization to provide high quality products/services.

Progressive discipline, according to Bacal (2012), is a technique used to address behavior connected to one's employment that falls short of the expected and stated performance requirements. Progressive discipline's main objective is to make it simpler for the employee to understand that there is either a problem with their performance or a chance for improvement. Progressive punishment helps a company to properly and thoroughly document the termination of an individual's employment when that employee is ineffective and refuses to improve on their performance. Such a procedure gives the employee feedback so that they can fix the issue, and if they don't, progressive discipline allows the corporation to fix the issue.

According to Bacal (2012), being late to work, being tardy to work, and having staff that are undisciplined have always been an issue for employers from the beginning of time. In light of this, it is impossible for any business to achieve the goals and objectives it has established without employing some form of disciplinary action to rein in the undesirable behavior in question. When used in its broadest definition, the term "discipline" refers to the practice of providing a person, such as an employee, with specific instructions to carry out or abstain

from a certain behavior. In most contexts, the verb "to discipline" is understood to have a pejorative sense. This is due to the fact that it constitutes an enforcement of an order by making certain that instructions are followed. It entails an instantaneous willingness and adherence to all orders, respect for authority, self-reliance, and cooperation with others.

"Discipline is the order, members of an organization who adhere to its essential norms because they seek to collaborate harmoniously in forwarding the end which the group has in view," is how Ordway (2013) defines discipline. Therefore, we can now define discipline as a situation that exists in the company when employees behave in a manner that is consistent with the organization's rules and standards of what constitutes appropriate conduct. According to Cooke (2012), discipline refers to the methodical operation of the business by the members of the organization, who do so while adhering scrupulously to all of the necessary rules and regulations. These employees and members of the organization work together as a team to accomplish the organizational mission as well as the vision, and they have a deep comprehension of the fact that individual goals and desires must be aligned with those of the group in order to guarantee the success of the organization. According to Cooke (2012), a well-organized employee will always be disciplined, and a well-disciplined employee will always be well-organized. The foundation of organizational discipline is found in the actions of workers.

Conforming one's behavior to the standards of conduct set forth by the company is an essential component in maintaining discipline. An organization's level of discipline is directly correlated to its level of production and efficiency (Limpo & Kamase, 2022). In addition to serving as a morale booster for the workforce, it fosters an environment that is conducive to cooperation and harmony among workers. There will be chaos, confusion, corruption, and disobedience in an organization if there is no discipline, according to Jamadar, Awasare, Mulani, Kanase, and Gumvant (2022). The performance of any company is dependent on the

commitment and resolve of its human capital. Companies have developed disciplinary procedures to harness, enhance, and encourage all employees to cultivate and maintain standards of conduct, attendance, and job performance in order to make employers and employees be committed to each other and for the progress of the organization.

These methods are intended to increase commitment between employers and employees and to advance the organization (Jamadar et al., 2022). In an ideal scenario, these procedures should apply to all employees and must be consistent and fair to everybody in the business. Some of these procedures are made available to employees through employee handbooks, while others are displayed in the offices of such companies. Employee handbooks contain information about some of these procedures. Others are on exhibit in these organizations' headquarters. Jamadar and colleagues (2012).

Everyone working in Kaizen is required to exercise self-discipline at all times; they should be organized, manage their time efficiently, make sensible use of resources, produce excellent work, and so on (Pawar, 2022). Without exercising their own self-control, no one can make a positive contribution to the organization's overall performance. According to Juwitasari and Miyake (2022), Kaizen is a practice that assists businesses and other organizations in their efforts to achieve continuous improvement. The meaning of the phrase is much clearer now that you understand what it is and the components that comprise it. When executed properly, Kaizen has the potential to make an organization extremely competitive and lucrative; front line personnel are in the best position to discover opportunities for improvement, suggest solutions, implement changes, and ensure outcomes over the long term (Juwitasari & Miyake, 2022).

It is impossible to implement the Kaizen process without first involving the people who actually carry out the work in efforts to improve those procedures. Everyone on the team ought to be aware of the connection between the tasks they perform and the overarching objectives of the business if they are to contribute effectively. They should be granted the

authority to report and respond to any process failures or quality issues, as well as the support necessary to do so. This indicates that leaders need to get rid of the fear of failing and cultivate an environment of transparency and trust (krkova, 2022). It ought to be abundantly obvious that innovation is not something that is delegated from the top of the organizational hierarchy, but rather something that is something that takes place at the Gemba on a daily basis.

Because Kaizen fosters process-oriented thinking, because it is people-oriented, and because it focuses on people's efforts, improvements made through Kaizen have a process focus. Kaizen stresses that the process is the aim, and that people can contribute improvements by understanding how their occupations fit into the process and changing it (krkova, 2022). Rather than emphasizing employees as the problem, Kaizen focuses on the fact that the process is the target. In Kaizen, individuals or teams are responsible for promoting the role of visual management as a concept, practice, or instrument in order to assist people in recognizing problems or in fostering feelings of empowerment.

Visual management is a practice that involves the open and obvious display of tangible things (gembutsu), charts, lists, and performance records. This is done so that management and workers are constantly reminded of all of the components that go into making the organization successful. Visual controls make it simple for everyone to determine if a condition is normal or abnormal, thereby providing managers and operators with visibility into how well the system is functioning (Škárkova, 2022).

Recognizing the need for improvement is the first step in making any kind of progress. The concepts of Kaizen place an emphasis on problem-awareness and provide hints that can be used to locate problems. Because problems, once discovered, need to be solved, Kaizen can also be seen of as a method for problem-solving. But most importantly, Kaizen is a

management philosophy that encourages continual improvement in all operations. This drives greater standards down through the ranks of an organization, which in turn forces higher standards overall. Professor Hitochi Kume of Tokyo University explored the differences and similarities between quality assurance practices in Japan and the West.

### **2.2.2.3 Total Productive Maintenance**

Total Productive Maintenance (TPM) is an all-encompassing approach to ensuring that all equipment is kept up to date to ensure flawless production. This guarantees that there are minimal cases of breakdowns, defects and slow running. This technique also aims at creating a working environment with least risks or no accidents (Nallusamy, 2016). According to Belekoukias, *et al.* (2014) the work environment refers to the place where individuals work from such as physical setting, job profile, culture and market condition.

Notably, every characteristic is connected to its impacts on employees overall performance and productivity (Slaichová & Marsíková, 2013). Work environment entails creating conditions whereby every individual can perform his/her duties comfortably. TPM is a strategy to preventive maintenance (PM) that encourages employee ownership and incorporates preventative measures for machine maintenance (Habidin, Hashim, Fuzi Salleh, 2018). To begin, the machines, tools, and fixtures that are going to be used should have their settings optimized for rapid changeovers, simple operations, and preventative maintenance. A company is required to provide appropriate training for its operators in the areas of equipment setup, changeover, and operation, as well as the necessary safety and cleanup measures (Habidin et al., 2018). You should try to avoid buying equipment that is both cheap and potentially unreliable. Despite the fact that there is a cost reduction in the short term, in the long run, the initial savings will be lost due to downtime, poor quality, and missed delivery dates, and the equipment could put worker safety in jeopardy.

A TPM program should consist of three levels, the first of which is the TPM that the machine operator is supposed to perform (Sahoo, 2018). These responsibilities involve the daily cleaning of the space and the examination of its operational parameters, including the measurement of fluid levels, temperature, and electricity. The first level of TPM is not overly complicated and should be carried out on a daily basis. The work that is done by a maintenance department on a less frequent basis, perhaps once a week or once a month, is considered to be the second level of Total Productive Maintenance (TPM). There are occasions when second-level TPM calls for a complete or partial disassembly of the machine in order to make repairs or replace parts (Sahoo, 2018). The work carried out by the machine's original manufacturer is the subject of the third level of TPM. This may take place once or twice per year at most. It is well worth the investment of both time and money to participate in any level of this TPM program in order to ensure that your machinery can perform at the highest possible levels of productivity over its entire lifespan (Sahoo, 2018).

Effective implementation of ergonomics can achieve a balance between staffs duties and demands (Gitonga & Gachunga, 2015). As a result, this enhances job satisfaction, operator productivity and guarantees on workers' safety and their physical and mental well-being thus promotes organizational performance (Garbie, 2014). A good work environment will improve employee performance, which will improve organizational performance. TPM improves quality, delivery schedule, and production quantity. Equipment difficulties and breakdowns have a direct influence on production cost, production quality, and production schedule (Poduval & Pramod, 2015). Total productive maintenance guarantees on a safe-work environment which increases productivity thus reducing cycle times, up time increment and flaw elimination (Méndez & Rodriguez, 2017). TPM focuses on improving equipment quality (Enofe & Aimienrovbiye, 2010). It seeks to maximize equipment systematically through preventive maintenance hence increasing the lifespan of equipment.

In lean manufacturing models and TPM, continual improvement is a requirement, as stated by Alsubaie and Yang (2018). In a controlled and repeatable approach, kaizen looks for ways to make processes more effective and efficient. Kaizen is a concept that can be used in a variety of contexts, including management, the maintenance plan for a particular piece of equipment, logistics, and even the supply chain. The Japanese term "continuous improvement" is called kaizen (Alsubaie & Yang, 2018). In addition, it encompasses everybody, from operators to managers, which is another quality that it has with TPM. Kaizen takes on a whole new meaning in the context of lean production and even lean maintenance. Getting rid of trash is an essential component of improving or making activities more efficient.

The phrase "Total Productive Maintenance" (TPM) is used in the manufacturing industry to describe a system of maintaining and enhancing production and quality systems by utilizing the people, processes, machinery, and equipment that provide an organization its value. Specifically, TPM focuses on the maintenance and improvement of the Toyota Production System (TPS) (Oroye, Sylvester & Farayibi, 2022). During a TPM event that lasts between three and five days, the primary focus is on establishing preventative maintenance routines for the equipment used in your work processes and ensuring that it is maintained in optimum working condition at all times. As a result, this guarantees that there will be very little downtime and very little delays in the manufacturing process. The factory floor, various pieces of equipment, and the maintenance department are inspected at the beginning of a TPM event. The operators and the area owners provide the input for evaluation in the form of a systems view of an organization in reference to the perfection of maintenance. When determining how far lean initiatives have advanced, a progression benchmark is employed. The results provide the criteria for determining the scope and the order of importance (Atikno, Wijaya, Setiawan, Susanto & Kurnia, 2022).

TPM is typically seen as a "bottom-up" tool because it can be implemented without any help from the top. Nevertheless, a team is still needed to set goals for the endeavor and identify the steps that must be performed for full implementation and sustainability. Even though TPM can be implemented without any help from the top, it does not (Sundararajan & Terkar, 2022). A "maintenance vision" for the company is also established with the help of the team. One of the reasons why so many attempts at Total Productive Maintenance reunsuccessful is because the scope of the project was made excessively broad. As a consequence of this, there is a lack of key resources that are required to complete the work. It is possible to minimize "emotional noise" from the identification process by making use of numerical scoring and having a criticality matrix. This enables data, rather than feelings, to be utilized to decide which pieces of equipment are genuinely critical to operations and need to be prioritized.

It is feasible to code the condition of the equipment depending on its current state if one examines each sub-system of the equipment, such as the controls, hydraulics, and pneumatics. This not only helps with the scheduling of any essential new equipment acquisitions, but it also helps with the planning and priority of any necessary rebuilding, upgrading, or overhauling that needs to be done (Sundararajan & Terkar, 2022). A significant competitive advantage for a company is having the capacity to anticipate and organize the necessary expenditures on capital. During this stage, all deficiencies in previous skill sets are remedied. The first thing that must be done is to determine whether or not there are any fundamental abilities that must be improved, as well as any process-or machine-specific expertise that must be developed. In addition to this, it gives one the chance to investigate the departmental structure in order to establish whether or not the operation requires efficient maintenance planners or teams.

According to Sukma, Prabowo, Setiawan, Kurnia, and Fahturizal (2022), the fact that many Total Productive Maintenance events are one-time occurrences is the reason why these events take a long time to exhibit any results or become unsustainable in the long run. This can be due to the fact that the systems that are required for continuous support of the efficacy of the equipment are not formed, the measures that are required to support continuous maintenance are not put into place, or the improper measures are used. TPM is not intended to be used for repairing malfunctioning systems or pieces of equipment. The goal is to locate, maintain, and expand industrial capacity while simultaneously maintaining the dependability of production systems (Sukma *et al.*, 2022).

Implementing a TPM program can have a significant influence on your overall equipment effectiveness (OEE) over time. This is because the primary objective of total productive maintenance is to increase production while simultaneously decreasing the amount of time spent in downtime (Logeshwaran & Nachiappan, 2022). In order to accomplish this goal, everyone should have preventative maintenance in the forefront of their minds at all times. For instance, operating equipment with the mentality that "we'll fix it when it breaks" is not an option with total productive maintenance because it reduces the likelihood of achieving maximum uptime. This mentality can be overcome with the assistance of a Total Productive Maintenance (TPM) program, which replaces it with one that places machinery at the center of an operation and strives to maximize its availability (Logeshwaran & Nachiappan, 2022).

According to Ondra (2022), one of the most common ways to increase OEE through TPM is by forming small, multidisciplinary teams with the purpose of addressing core areas such as preventive and autonomous maintenance, employee training on how to operate machinery, and the standardization and safety of work procedures. The goal of total productive maintenance is to maximize both the efficiency and effectiveness of the use of the means of production, which

necessitates the participation of all divisions (Mohanty, Rath & Jena, 2022). These smaller teams collaborate in order to boost overall productivity and reduce the amount of downtime experienced due to unreliable equipment.

The machine must be cleaned to a "baseline" quality in order for autonomous maintenance to be implemented, and the operator must continue to meet this standard (Mohanty, Rath & Jena, 2022). This includes instructing the operator on the technical abilities necessary to carry out a routine check in accordance with the instructions provided in the machine's handbook. After receiving training, the operator is responsible for creating their own timetable for autonomous inspections. Standardization guarantees that everyone adheres to the same procedures and processes by requiring that they all be documented.

#### **2.2.2.4 Quality Cycles**

Quality cycles entail assembling activities that make up a process projected to achieve performance improvement (Terziovski, 2011). Primarily, activities in production industries involve the simplification of production procedures. The idea of quality cycles is a cornerstone of the Deming philosophy of quality management processes by aligning organizations towards their goals. Quality should not be portrayed as a programme with a definite end-point, but as a continuous process (Misiurek et al, 2016). Kaizen is a frame of mind, sharing knowledge and improved product design embedded in the principles and values of an organization. It should be lived rather than imposed or tolerated.

Quality cycles in an organization's overall performance should be a permanent objective. Some of the key benefits include; performance improvement through organizational dynamic capabilities, alignment of all organizational activities, and flexibility to adopt opportunities (Nath & Ajoy, 2016). Implementation of constant progress principle often results to a consistent organization-wide approach thus enhancing organization's performance and

provide personnel with necessary skills and adequate training (Ebenezer, Devadasan, Sreenivasa & Muruges, 2011). Also helps an organization in making constant improvement of merchandises, systems and processes on individual goals, creating objectives, and establishing measures to monitor growth while acknowledging progresses. Service quality and product improvement involves planning, product design, production service innovations, assessment & action, and resource procurement. Outcome is the feedback mechanism for assessing compliance of external and internal fulfillment. The underlying principle of quality cycles entails identifying and resolving work-related challenges using a variety of problem-solving tools (Kemunto, 2015). It aims at using improvements and solutions made as new “benchmarks” in other firms. Henceforth, all improvements should be standardized to ensure efficiency. Quality cycles generate process-oriented thinking since all practices must be improved to obtain better results (Hall, 2015). According to Harrington (1995) quality cycles is a major driving force that fosters growth and better quality of products.

People are always thinking of new ways to improve the methods in which things are done, such as making them quicker, more efficient, or more helpful. This perpetual state of change is a hallmark of the human condition (Rodriguez, Delgadillo, Medini & Wuest, 2022). People make these kind of advancements on a daily basis, either at their place of employment or in their own homes. It is extremely unusual for a person not to consider ways in which things could be improved. Workers are given the freedom to innovate at their place of employment under the premise that they are not expected to break any rules or regulations, nor are they promised any incentives for their efforts. Kaizen presents an opportunity for progress to be made (Rodriguez, et al., 2022). It does not require any investment, and after the improvements have been achieved, regardless of how minor they may be, frequent reports on those improvements are provided.

It is imperative that a regular work schedule be kept in place, regardless matter how significant recent accomplishments may be. Activities that are planned and carried out in accordance with the tenets of kaizen, which involve all members of an organization, including managers and employees, in an attempt to boost overall performance on every front (Khorasani, Loy, Ghasemi, Sharabian, Leary, Mirafzal & Gibson, 2022). This increased performance is geared toward achieving cross-functional goals such as quality, cost, scheduling, personnel development, and new product development in order to achieve these goals.

It is presumed that the culmination of these actions will be an increase in the level of satisfaction experienced by customers. Workers who are employed in organizations frequently have the perception that their potential is not being utilized to its fullest; nevertheless, when Kaizen is implemented, they are able to contribute considerably more and in the process also experience personal development (Khorasani et al., 2022). The promotion of a strong sense of teamwork is one of the goals of the kaizen process. The improvements that were created in conjunction with other people are regarded as being superior, and as a result, they are valued higher than the improvements that were achieved individually. Creativity is encouraged through kaizen, which in turn helps workers create their own selves.

The idea behind quality cycles is to make the most of a workforce's resources so that a person can have the most possible impact on his or her work while also providing the greatest possible benefit to management (da Silva, Marins, Dias & Ushizima, 2021). The Quality Circle movement presents a sizeable opportunity for realizing the worker potential for innovation and creativity that is latent inside each individual. It creates an atmosphere conducive to the active participation of workers in problem areas, as well as their later recognition and study of the issue, as well as its repair. Today, the concept of teamwork serves as the guiding philosophy for all large-scale industrial organizations; as a result, team building receives a lot of focus and attention. In order to

give the process of team building a realistic shape, it has been urged across all of the divisions and departments of the industrial organization that employees participate in activities in smaller groups (da Silva, Marins, Dias & Ushizima, 2021). Meetings of various task groups, both formal and informal, take place on a consistent basis across all departments and sections in order to address issues and make preparations for the future.

The personnel of a department or section that work closely together face difficulties that are either shared or interdependent, and they can focus their efforts on finding solutions to these problems together (Rotella, Filice & Micari, 2020). A quality circle may consist of anywhere from five to around ten members of the workforce at a time. However, quality circles perform at their peak when there are between four and eight members since each member should have the opportunity to participate in the activities designed to solve the issues that have been raised. The quality circle process is an essential part of a successful competitive strategy, as it is easy to understand and can be implemented everywhere (Rotella, Filice & Micari, 2020). Because it is the core of Total Quality Management, the quality circle has an intrinsic concern for issues pertaining to quality as well as productivity, safety, and human resources. Through participation and collaboration on a voluntary basis, quality circles are able to preserve and uphold their reputations as sources of inspiration and innovation.

Aside from the fact that members of the circle donate their time, the fact that people care about other people is the most significant aspect. Being a people-building philosophy, there are a number of characteristics that, if cared for, can allow quality circles to emerge rapidly and have an eternal impact on the company. If you take care of these factors: (Khorasani et al., 2022). The "cooperative approach" is the fundamental tenet around which all quality circles are built. It is a group of five to ten workers performing work that is comparable to one another who voluntarily agree to meet on a regular basis in order to determine the factors that lead to issues on the job and

to put forward potential solutions. The concept of the quality circle is predicated on the idea that individuals who perform a task on a daily basis know more about that profession than anybody else does. It is a method that is predicated on the concept of interpersonal motivation.

### **2.2.3 Organization Dynamic Capability**

The capability of an organization to manipulate its sources to attain its objective is referred to as business vibrant capability. The vibrant capabilities of the company were analyzed by taking talent management and also innovativeness right into account. The implementation of incorporated strategies to boost work environment performance is described as talent management. This can be achieved by developing better practices for enticing, recruiting and retaining individuals with essential expertise to meet current and future business requirements (Naik, 2012). Talent management is the supplementary management processes and prospects provided to individuals in the organization who are considered to be 'talented' (Kehinde, 2012). Talent is linked to some features such as specific skills and abilities that distinguish individuals (Najm & Manasrah, 2017).

Innovation is viewed as applying better solutions that meet existing market needs and inarticulate requirements. New designs, marketing, and organizational innovation, is considered an essential component for surviving and growing (Shaukat, Nawaz & Naz, 2013). These activities generate competitive advantages and gives value to a successful company. Henceforth, understanding a company's overall innovation is essential to realize the role of innovation on firm performance (Gunday, Ulusoy, Kilic & Alpan, 2011). Innovation allows companies gain a competitive advantage, retain customers, attract new customers while at the same time strengthen ties with other partners (Karim & Suhag, *et al.*, 2017).

Dynamic Capabilities refer to an organization's capacity to integrate, build, and reconfigure both internal and external resources and competencies in order to respond to and shape quickly shifting business environments (Teece et al., 1997, 1990). The objective is to achieve abnormally high returns. There are occasions when dynamic capabilities can be traced back to certain change processes (for example, the progression of product development along a known trajectory) and analysis (e.g., of investment choices). On the other hand, their origins are most frequently to be found in inventive managerial and entrepreneurial behaviors (e.g., pioneering new markets). They are a reflection of how quickly and to what degree the firm's singular resources and competencies can be aligned and realigned to match the opportunities and demands of the business environment (Marrucci, Daddi & Iraldo, 2022). An organization that possesses robust dynamic capabilities may be able to realize anomalous returns due to the fact that markets do not price these skills at their true value to the buyer in the event that the buyer holds complementary and, in particular, specialized assets (Marrucci *et al.*, 2022). The core of assets/skills and dynamic capabilities is that they typically cannot be purchased; instead, they must be created (Arikan et al., 2022). Dynamic capabilities, as previously mentioned, assess the ability to realign and align resources and competencies in order to make them more responsive to the business environment. Particular characteristics of organizations that enable them to evolve and co-evolution with the business environment include sensing, seizing, and changing. Long-term profitability depends on these talents (Arikan et al., 2022).

According to Akpan, Johnny, and Sylva (2022), if a company has refined its core competences sufficiently, It will be able to carry out the tasks it has set out to undertake in an efficient way. However, the dynamic capabilities of the company will determine whether it is currently producing the right products, focusing on the right market segment, and whether its future plans are appropriately matched to consumer needs as well as technological and competitive opportunities. Dynamic capabilities, on the other hand, necessitate that an organization (and particularly its top management) develop hypotheses, test those hypotheses, and realign its

resources and competences to meet newly developed requirements. They make it possible for the business to successfully coordinate its resources, competencies, and other assets.

The organization will also utilize its dynamic skills to evaluate whether or not and how it should form alliances with other businesses. The increase in global trade has both made greater global specialization possible and needed it (Felsberger, Qaiser, Choudhary & Reiner, 2022). In order for the global system of vertical specialization and specialization (bilateral dependence) to function properly, there is a need (indeed, an enhanced need) for businesses to develop and align their assets, as well as combine the various components of the global value chain, in order to create and deliver a joint "solution" that is valued by customers. This is done in order to make the global system of vertical specialization and specialization (bilateral dependence) work.

In a nutshell, dynamic capabilities refer to a company's power to coordinate its operations, as well as its resources and assets, within the framework of global specialization and specialization (Felsberger et al., 2022). In addition to this, they are a reflection of the company's efforts to develop and mold the market in such a way that it is conducive to the production and acquisition of value. This often necessitates expanding, modifying, or, if necessary, completely revamping what the enterprise is doing in order to maintain a good fit with (and sometimes transform) the ecosystem and markets that the enterprise occupies. This often necessitates extending, modifying, or completely revamping what the enterprise is doing in order to maintain a good fit with (Wu, Sun, Chang, Zhang & Qi, 2022).

Dynamic skills are distinct in their particulars and the road that they took to evolve; nonetheless, there are substantial similarities between different companies in regard to these capabilities. Dynamic capabilities are defined by Zollo and Winter (2022) as learned and stable collective procedures that enable an organization to systematically build and modify its

operational activities in order to increase effectiveness. According to Zahra and George (2022), dynamic capabilities are essentially change-oriented capabilities that enable businesses to renew and reconfigure their resource base in order to meet the ever-evolving demands of their customers and the strategies employed by their competitors. (Rao, 2016) identifies dynamic capabilities as a firm's capability to manage alliances, learn, integrate, and restructure resource base to address changing business situations. This definition is more recent.

The influence that dynamic skills have on the efficiency of organizations has emerged as an intriguing topic of discussion among academics. However, research is currently being done to determine how the presence of dynamic capabilities impacts the success of an organization. In addition, there are not a lot of empirical research that look at this connection. This article presents a variety of perspectives on the question of whether or not dynamic skills have an effect on the effectiveness and performance of organizations. According to Helfat and Peteraf's argument (2019), dynamic capabilities do not have a direct influence on the efficacy and performance of organizations.

They influence organizational effectiveness and performance in a roundabout way by integrating and reconfiguring resources in order to respond to environmental turbulence or to bring about internal and external change (Eisenhardt and Martin, 2020; López, 2015). This is how they affect organizational effectiveness and performance. The dynamic capabilities of a company are what establish and define its individual resource configuration, which in turn affects the company's competitiveness and, consequently, its performance (Galunic & Eisenhardt, 2021).

There are a variety of positive ways in which dynamic capabilities contribute to the effectiveness and performance of an organization; dynamic skills can link the resource base

with evolving environments (Teece et al., 1997). Initiate a shift in the market (Eisenhardt and Martin, 2020). The dynamic capabilities of an organization improve the effectiveness, speed, and efficiency with which the organization responds to the requirements of its environment, which in turn fundamentally supports greater performance (Chmielewski & Paladino, 2017). Additionally, dynamic capabilities such as sensing, learning, and reconfiguration may be able to support decision-making inside the organization, which has the potential to boost the efficacy and performance of the organization (Eisenhardt and Martin, 2020; Teece, 2017).

According to Zollo and Winter (2022), dynamic capabilities allow businesses to acclimatize their operating routines constantly to changing environmental turbulence, which in turn allows them to increase the performance of their operating routines and survive in competitive environments. Similarly, Schreyogg and Kliesch-Eberl (2017) propose that dynamic capabilities may be able to improve the efficiency of operational routines by allowing businesses to better grab opportunities and overcome risks than their rivals. Employing sensing capability allows firms to notice new and technically significant opportunities, find the movements of suppliers and competitors, and identify hazards in a timely way. Dynamic capabilities have the potential to influence the efficacy and performance of organizations (Wilhelm et al., 2015).

#### **2.2.4 Teamwork and Performance of Tea Processing Firms**

Ashlaghi, Mahmud, Gorji, Morad, Morteza and Mansour (2016) did a study on the effect of recommendations framework on the representative execution in Mazandaran University. This research utilized descriptive-survey research design. The information was gathered by specialist made poll with 33 inquiries with 5-point Likert scale. The outcomes demonstrated that executing the proposals framework among the representatives of the study population

influenced the money related angles, client care, development and advancement and inside procedures of authoritative execution.

Golas, *et al.* (2016) did a study on the utilization of the proposal framework in enhancing generation procedure and item quality management. The investigation is a contextual analysis completed in the organization Alco-Mot Ltd that utilizes 120 individuals. The utilization of the proposal framework requires contribution of all representatives in the improvement procedure. Their contribution will be the more noteworthy; the more the administration of the organization will regard procedure and actualize their thoughts. The utilization of the recommendation framework is critical underway and quality control forms.

Ranaweera (2015) did a research on the viability of 5S utilization in tea sector. Tea sector has adjusted 5S as a significant idea in enhancing efficiency, quality and tidiness of the association while chopping down the waste. Over 75% of the representatives met had a 5S preparing in their past where it was simpler for instructing assembly line laborers to execute work guidance, mitigation upkeep, preparing and institutionalizing. Synchronization further diminished the quantity of reports utilized in the framework up, all things considered, just as recurrence of recording while at the same time improving the viability of recording.

Arif, Aburas and Al Kuwaiti (2010) conducted a study on suggestion system a usability based evaluation model. The principal reason of the investigation was that recommendation frameworks structured, in light of convenience improves advancement among representatives, and subsequently increment support. These frameworks were additionally surveyed for representative view of their ease of use and cooperation. Subsequent to gathering information on these three unique viewpoints ends are drawn. Out of the four frameworks broke down, the most usable recommendation framework had the most elevated interest rate and the least usable framework pulled in the least proposals.

### **2.2.5 Personal Discipline and Performance of Tea Processing Firms**

Belekoukias, *et al.* (2014) did an investigation on role of lean techniques and devices on execution exhibition of assembling associations. This paper examines the effect of five fundamental lean techniques that is JIT, autonomation, kaizen and absolute profitable upkeep. Auxiliary condition demonstrating (SEM) was utilized to cross confirm the discoveries of the relapse and relationship investigations. The outcomes showed that JIT and mechanization have the most grounded noteworthiness on task execution but kaizen, TPM and VSM revealed a small impact on task execution.

Ali (2017) undertook a research on the directing job of the board responsibility on the connection among kaizen and upper hand the instance of Khartoum Industrial Companies. The examination received an elucidating study configuration to gather information for investigation. An overview poll was utilized to gather information from ten assembling organizations from various industry types. Various leveled relapse examination demonstrated that kaizen rehearses by and large are decidedly and essentially influenced association upper hand. In the nick of time end up being emphatically and altogether identified with upper hand. Shambaro and Kisimbii (2017) conducted research on the impact of Gemba Kaizen Principles on the growth of Maternal Child Healthcare Projects in Kenya. The research utilized descriptive research design. The chi-square technique was done to predict the linkage of predictor and outcome elements. From study's findings, it was found that just in Time significantly impacts performance of maternal child healthcare projects in the county.

Mwikali (2017) did a study to set up the impacts of kaizen system on execution of Roto Molders Ltd. The examination utilized a contextual investigation look into plan while the information was dissected by utilization of substance examination since it is subjective information. It was found that kaizen system improves execution of Roto Moulders Ltd.

Manese (2014) conducted a study to evaluate JIT technique reception and execution of significant Kenyan oil firms. The examination configuration utilized right now an unmistakable study inquire about plan with a representation of a contextual investigation. The investigation outlines some parts of JIT rehearsed in the association. They included; set-up time decrease, smoothed line generation, JIT buying, Work group quality control and Flexible workforce. The investigation showed that the best execution pointers respondents experienced after using Just in Time (JIT) procedures led to improved firm performance.

#### **2.2.6 Total Productive Maintenance Systems and Performance of Tea Processing Firms**

Ondego (2016) did an investigation to determine linkage existing in between lean assembling practices and task execution. The examination received enumeration study look into structure cross section and longitudinal studies configuration were embraced. The discoveries of the examination showed computerization utilized lean assembling rehearses in tea handling companies in Kisii area where kaizen, led to complete beneficial upkeep, and institutionalized task and bottleneck investigation.

Ngothi (2015) undertook an examination on impact of kaizen framework on the budgetary presentation of Kenyan assembling companies. The investigation utilized clear review plan. The consequences of the investigation demonstrated that, kaizen framework had relentless impact on authoritative money related execution. The examination revealed a short run, no measurably critical distinction in the execution of the organization prior presentation of Kaizen framework and post presentation of kaizen framework.

Mesfin (2013) conducted study on the Chewaka Tea Estate's quality management system practices and problems. The study used a well-organized survey, interviews, individual perspectives, and a survey of prior research works to identify and analyze quality-related concerns of the organization. The research project determined that the company is distant

from meeting and achieving Total Quality Management in its overall operation after carefully evaluating the data and observing the quality system of the organization.

### **2.2.7 Quality Cycles and Performance of Tea Processing Firms**

Nath and Ajoy (2016) conducted a study on productivity improvement of black tea production. Data was collected from 10 tea estates in different locations of upper Assam. This information was regressed using software to generate the correlation model between total and partial productivity. The correlation model contributes to mindset changes among the management in issues such as organizational productivity. Productivity improvement of tea is critical in the tea sector. The study did not mention any aspects Kaizen in improving quality of tea produced.

Ebenezer, *et al.* (2011) did a research studying total failure mode and impacts in the tea zone. The study explored the TFMEA in the tea sector. TFMEA is without any mind boggling calculations and methods and consequently it encourages uneducated workers of the tea business to take an interest in the undertaking of accomplishing consistent quality improvement in tea producing. The paper finished up by calling attention to that realtime contextual analyses are required to be done for surveying the common sense of actualizing TFMEA program in the tea business.

Kemunto (2015) did a study to see to what extent operations management practices are being undertaken focusing Kenya's tea industry. The targeted firms in this study were the 65 KTDA firms. Primary data on the project implementation was collected using a questionnaire. It was revealed that continuous improvement positively influences performance of tea processing firms. There are many other aspects that influence the quality of tea and subsequently tea performance. The aspects including teamwork, personal discipline and total productive maintenance are not included in the study.

Hall (2015) did a study on the money related impacts from ceaseless improvement adjustments. The impacts from upgrades in an assembling setting are frequently clear and quantifiable, and can by and large be meant financial addition. A writing study was performed to make a comprehension of the idea of ceaseless improvement and how it is rehearsed in little to medium measured help ventures (SMSEs). The measurable examination indicated that there exist an association between constant improvement and budgetary execution. The investigation demonstrated that consistent improvement and budgetary execution were connected. Electrical contracting firms that had effectively executed the idea of persistent improvement had profited monetarily from such adjustments.

Yan and Makinde (2011) did a study on the effect of constant enhancement for new item improvement inside SMEs in the Western Cape, South Africa. Organizations for the most part grasp Continuous Improvement (CI) in their quality improvement forms. Information were selected from 40 SMEs through survey and meetings. Continuous improvement plays facilitates new product development.

Singh and Singh (2015) did a study on the appraisal of consistent enhancement technique in SMEs of Northern India. Ceaseless improvement (CI) is an administration approach concentrated on accomplishing significant upgrades in a procedure through little gradual enhancements. Ceaseless enhancement technique was utilized by little to medium undertakings (SMEs) in assembling division to enhance the exhibition of their assembling framework forms. The outcomes demonstrated that the assembling undertakings are profoundly centered around client relationship for doing persistent improvement and CI approach assumes an indispensable job in improving the nature of the item.

In another study by Terziovski (2011) on the impacts of ceaseless improvement and advancement the executives practice a mail study was considered appropriate to research the

connection between constant improvement/development the executive approaches and SME execution in Australia. Multi-thing technique was created and utilized to gauge key parts of ceaseless enhancement and advancement the executives and tried inside CIAIM system in the assembling segment. The accompanying outcomes were acquired utilizing multivariate investigation strategies: The Continuous Improvement and Innovation Management (CIAIM) system mechanism is a substantial and dependable structure for estimating and foreseeing the connection between nonstop improvement/development the board activity and SME execution. Conspicuous noteworthy indicators of greater SME execution were seen as the selection of a consistent enhancement and advancement the board procedure.

### **2.2.8 Organizational Dynamic Capability and Performance of Tea Firms**

Rehman and Saeed (2015) studied dynamic abilities and firm execution: directing job of hierarchical skills. The estimation of dynamic abilities depends on various aspects build on four basic principle elements that incorporate that is detecting, learning, solid coordination, and serious reaction to the opponents. Observational research sets that dynamic capacities directly affect the authoritative execution of the firm. It additionally demonstrates that hierarchical abilities have positive directing job in relationship of authoritative execution and dynamic capacities. This proposes the immediate connection between unique capacities and execution is insignificant.

Mwazumbo (2016) did a study to conceptualize the connection between hierarchical assets, natural dynamism, dynamic capacities and authoritative execution of huge assembling organizations in Kenya. The examination utilized an organized survey to get information from directors of 56 enormous assembling organizations recorded in the Kenya Association of Manufacturers database of 2014. The investigation uncovered that hierarchical asset have huge effect on authoritative execution; authoritative assets has noteworthy impact on powerful capacities; the outer dynamism has no huge directing impact on the connection between

association assets and dynamic abilities. Dynamic capacities have no noteworthy interceding impact on the connections between authoritative assets and money related execution yet have a huge mediating impact on the connection between hierarchical assets and non-monetary execution; the joint impact of hierarchical assets, dynamic abilities and natural dynamism on authoritative execution is altogether not quite the same as the free impact of each investigation factors.

Sungyuan and Ussahawanitchakit (2015) conducted a study on changing authoritative ability and firm achievement: an experimental examination of restorative organizations in Thailand. Changing organizational capability used as a perspective for reflecting competitive advantage leads to firm success, included as one of the key components that influence organizational outcomes. The study provided interesting points of dynamic organizational capability and how dynamic organizational capability enhances high organizational profitability. The results found that the relationships were significant with its consequences and antecedents, but the moderating effects were not significant with dynamic organizational capability.

Nyangi, Wanjere, Egessa and Wekesa (2015) led an examination on hierarchical unique capacities and execution of sugar organizations in Kenya. The examination received easygoing relative research plan while purposive inspecting procedure was utilized to choose the participants. Surveys and meeting plans were utilized to gather essential information. Outcome depicted significant effect of organizational dynamic capability on profitability of sugar producing companies.

Zehir and Acar (2006) did an investigation on hierarchical powerful abilities and its effects on business execution. Information gathered from 456 proprietors and ranking directors of 121 firms were broke down to test the speculations utilizing relapse investigation. Because of

this examination, it is discovered that expanding of the level on authoritative powerful capacities has constructive outcome on business execution.

## **2.3 Theoretical Literature**

The underpinning theory is Deming's Quality Improvement Theory. Besides, Dynamic Capabilities Theory and Organizational Performance Theory were employed to support the study. The approaches are discussed below, and their relevance to the study enumerated.

### **2.3.1 Deming's Quality Improvement Theory**

Deming's Quality Improvement Theory was proposed by Deming in 1982. Deming's theorem of Total Quality Management settles upon 14 items of factual information in an organization, following The Plan, Do, Check and Act. Quality is identical to expected outcomes of task tries to the aggregated costs (Deming, 1993). Deming's game plan of noteworthy data involves the System Appreciation an understanding of the process of monitoring quality (Dudin, Frolova, Gryzunova & Shuvalova, 2015). By observing the several types of information related to an association, at that point, quality can be suggested as a subject (Fonseca, 2015, Sadikoglu *et al.*, 2014, Goetsch, *et al.*, 2013).

The W. Edwards Deming Institute describes Deming's Theory as "representing a holistic approach to leadership and management." This definition describes Deming's Theory as a foundation for a system-based management philosophy. Deming articulated what he believed to be the essential shifts in managerial approach required to achieve quality improvement. Four primary areas, as well as a list of 14 principles designed to promote improvements in organizational structure and behavior, are used to show these changes. According to Deming's theory, there is always a way to solve a problem within the framework of how the system operates. An unsustainable business model would be one in which an employee is reprimanded for making a mistake but no effort is made to correct the flaw in the system that

enabled the employee to make the mistake in the first place. The emphasis needs to be placed on the optimization of systems and processes, as well as on the cohesive operation of the organization as a living organism. And to ensure that these procedures and processes continue to be followed, how are they to be maintained? That takes management. The idea of managing people is expanded in Deming's theory to the idea of managing a wider system, in which each component impacts the other components and interrelated pieces are considered as an all-encompassing whole. This is an extension of the idea of managing people. The theory of profound knowledge developed by Deming is a management philosophy with its foundation in systems theory. It is predicated on the idea that every organization is a system that is made up of people and processes that are connected to one another and together form the components of the system (Anderson, Rungtusanatham, & Schroeder, 1994). The ability of management to orchestrate the delicate balance of each component in order to maximize the effectiveness of the entire system is critical to the success of all workers who are a part of the system. Deming was of the opinion that significant knowledge almost always originates from outside the system and that in order for it to be beneficial, it must be solicited and received with an enthusiasm to learn and develop.

According to Gartner and Naughton (1988), a system is unable to understand itself without assistance from outside the system. This is due to the fact that previous experiences will lead objectivity to be skewed, which will inhibit critical examination of the organization. It is difficult to conduct a critical self-examination when there is no objective critique available from outside the organization. In addition, insiders can very rarely play the role of hostile critics who are able to speak openly without fear of repercussions. The measures that need to be followed to improve a company's quality culture are laid out in depth in Deming's theory of management for organizations. It is a notion that suggests it is not adequate to just find solutions to issues when they occur (Dudin, Frolova, Gryzunova & Shuvalova, 2015).

Establishing and sustaining a culture of continuous improvement is essential in order to meet the overarching aim of achieving high levels of customer satisfaction.

According to Dudin *et al.* (2015), The Deming method of routine 100% inspection is the same thing as planning for flaws; it is an admission that the process cannot run correctly or that the specification was meaningless from the beginning. The very idea of inspection is predicated on a focus on the "bad," on failures, and on the agreement that there is an abundance of low quality. It is recommended that mass inspection be replaced with inspection procedures that can discover and identify problems. These identified flaws should then be pushed back into an environment that promotes continuous development so they can be eliminated. Statistical data collection and analysis can be put to good use throughout the processes, and they can provide measures for quality improvement (Dudin *et al.*, 2015).

Once an organization as a whole has adopted Deming's fourteen ideas, those points can be utilized in any capacity and at any level within the organization (marketing, R & D, production etc.). The points are a general philosophy that call for the procedures that are carried out inside the organization or function to be rethought and altered with the goal of continuously improving them. It is impossible for changes to take place all at once; rather, there must be a gradual, well-organized shift in both the climate and the culture before the changes may take effect. In essence, management needs to give up the traditional role of being the thinkers and employees need to take on the role of the doers since in today's competitive world, both roles are required of everyone.

Quality is achieved by fine-tuning processes with knowledge. The fourteen points of Deming's total quality management theory include: reliability of purpose, adoption of the new theory, discontinuing reliance on mass checks, failure to reward businesses, constant production, and improved service quality. Chris (2009). It also involves introducing a cutting-edge on job

training, employing advanced leadership, eradicating fear among employees, reviewing departmental barriers, abolishing quantity-based work goals, eliminating quotas, enhancing craftsmanship, and making sure the leading management framework sustains the previous thirteen points (Goetsch, et alia, 2013).

By observing and implementing these aspects of Deming's Theory, quality tea production will be attained. Likewise, efficiency in the production of tea will be realized, expanding total output. Deming's Quality Improvement Theory guides these objectives; to determine the influence of teamwork, personal discipline, quality cycles, and whole productive maintenance systems on tea-producing firms' performance.

### **2.3.2 Dynamic Capabilities Theory**

This notion was set up by Teece *et al.* in (1997). The dynamic capabilities looks on how precious capabilities like human skills and financial resources can be utilized to the advantage of firm growth (Wang, Senaratne & Rafiq, 2015). Dynamic capacities approach opines to use capabilities to the advantage of the firm. Dynamic assets help a firm change its asset blend and along these lines keep up the supportability of the association's upper hand which in any case may be immediately disintegrated. Dynamic resources assist a company transform its source mix as well as likewise therefore protect the sustainability of the firm's competitive advantage which otherwise might be rapidly degraded.

The underlying foundations of dynamic capacities are situated in transformative financial matters and quickly the pith of dynamic abilities approach is that serious achievement emerges from the nonstop improvement, arrangement and reconfiguration of firm-explicit resources (Wheeler, 2002). Dynamic capacities endeavors good use of resources (Teece, 2014). While the RBV stresses asset decision or the choosing of suitable assets, dynamic abilities underline asset

improvement and recharging. As indicated by Kim, Song and Triche, (2015), assets controlled by a firm act as one of the significant dynamic traits to the business entity, and along these lines might be especially helpful to firms working in quickly evolving situations.

The dynamic capabilities (DC) theory was developed as both an extension of the resource-based view (RBV) and a reaction against the RBV's inability to interpret the development and redevelopment of resources and capabilities to address rapidly changing environments. DC theory emerged as a result of both of these factors. Cavusgil, Seggie & Talay, (2007). The District of Columbia could be seen as a potential source of a competitive advantage (Teece, Pisano & Shuen, 1997). The dynamic complementarity (DC) theory goes farther than the assumption that a company may maintain a sustained competitive advantage by acquiring valuable, rare, unique, and non-substitutable resources (VRIN).

According to Salvato and Vassolo (2018), dynamic capabilities are what make it possible for companies to integrate, marshal, and rearrange their resources and capabilities in order to adapt to surroundings that are always shifting. Therefore, dynamic capabilities are processes that enable an organization to rearrange its strategy and resources in order to achieve superior performance and sustained competitive advantages in settings that are undergoing fast change (Salvato & Vassolo, 2018). Despite the large number of studies that have been conducted on the topic of DC, in order to make further progress with the theory, researchers will need to collaborate in order to illustrate concepts that are related to the theory and figure out how to link them with empirical practices that are carried out within organizations.

It was evolved from RBV theory, and it compensated for that theory's flaws when it came to describing sustained competitive advantage and superior performance in a dynamic context. DC theory is an acronym for dynamic competitive advantage theory.

According to Teece, Pisano, and Shuen (1997), the definition of dynamic capabilities (DCs) is the company's capacity to integrate, grow, and reconfigure both internal and external skills in order to respond to quickly changing circumstances. DCs are "the organizational and strategic routines by which businesses attain novel resource configurations as markets originate, collide, divide, evolve, and perish," and as such, they are "the organizational and strategic routines" (Eisenhardt & Martin, 2000).

The author Teece (2007) made a significant contribution to the development of DC theory by writing about the micro-foundations for each of the following three dimensions: sensing (the identification and assessment of an opportunity), seizing (the mobilization of resources to address an opportunity and to capture value), and transforming (continued renewal "reconfiguring the business firm's intangible and tangible assets"). Despite this, the theory has been subjected to a barrage of severe criticisms, some of which include: the nature of the term itself; difficulties in determining the merits of the outcomes of the theory (Wang, Senaratne, & Rafiq, 2015); the difficulty in understanding the nature of DCs; the absence of clear models to measure these capabilities and how they affect the performance of organizations; and the difficulty in understanding the nature of DCs (Zott, 2003).

The postulation is useful to the study by highlighting the importance of training workers and automating tea processes to enhance operational performance. The theory guides the fifth objective; to determine the situational impact on Kaizen Systems and performance of tea producing companies.

### **2.3.3 Growth of the Firm Theory**

The theorem proposed that strong standards for managing the development of firms can become productive and beneficial. Penrose (1959) gives a hypothesis of compelling administration of association's assets, beneficial chances, and expansion technique. In particular,

Stam (2010) gives an informative justification to unravel causal links among assets, capacities, and firm execution. Development of the firm hypothesis provides at any rate three significant contentions regarding relations among association's assets, beneficial chances, and gainful organization development. Lee (2010) first contends that establishments can make financial value not because of unimportant possession of assets, however because of compelling and innovative administration of assets. This shows a firm instructing gigantic assets isn't really more gainful than firm ordering little assets. Innovative asset arrangements spike contrasts in gainful chances and monetary execution.

Her conceptualization of the nature of the firm itself as a collection of physical and human resources whose complementary productive services are made cohesive by, and thereby specific to, the firm's "coherent administrative organization" is arguably the most significant advancement in Penrose's theory of the growth of the firm (Penrose & Penrose, 2009). This one-of-a-kind collection of resources, in particular the company's "existing human resources," serves as both an encouragement for the company to expand and a limit to the rate at which the company can expand (Penrose, 1959). To get a grasp on the driving forces behind Penrose's expansion, one must first comprehend the ways in which the company's resources collaborate with its administrative structure to both broaden and narrow the scope of the productive opportunity it offers.

According to Penrose, a theory of the expansion of enterprises is, in essence, an investigation into the shifting opportunities for productive activity presented by firms. In the words of Penrose, this profitable opportunity "includes all of the productive possibilities that it's 'entrepreneurs' see and can take advantage of." Each resource that a company purchases or amasses comes with its own assortment of complementary potential services (Penrose, 1959). To the extent that some of these services are not required or cannot be utilized to support

ongoing operations, they become accessible for, and as a result, add to and help define the set of options for future expansion.

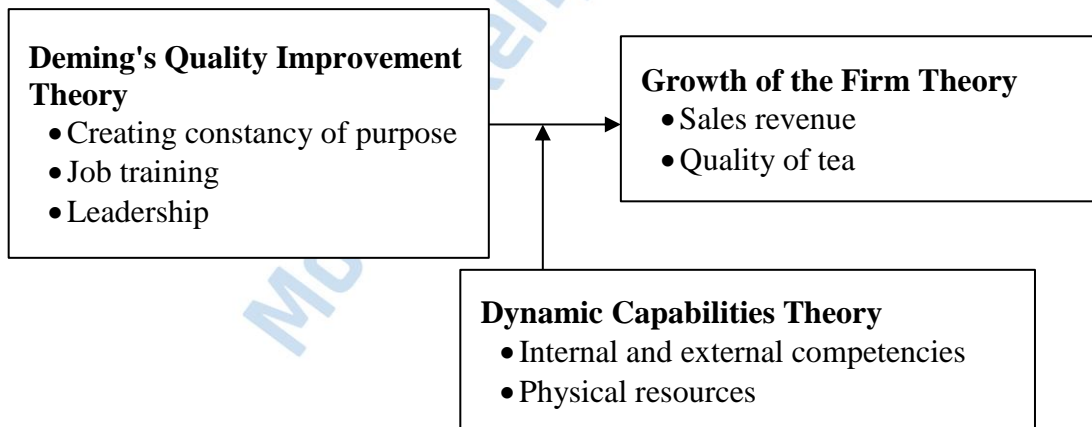
However, the productive opportunity of the company will only be increased by these newly additional opportunities for growth to the extent that these newly additional prospects for growth are understood and motivated within the context of the administrative organization of the company. This is the one and only need that must be met before this expansion can take place (Penrose & Penrose, 2009). That is to say, the productive opportunity of each company is restricted to only those possibilities for the deployment of productive resources that the company's founders, executives, and managers are able to see, as well as willing and able to act on. This is because the productive opportunity of each company is contingent on the founders, executives, and managers of the company being able to see these possibilities (Penrose, 1959).

The extent to which a company's resources are arranged to produce services that are mutually enhancing (i.e., complementary) reflects the ways in which the administrative structure, values, mias, and incentives of the company link these and other resources in the employees' minds. To put it another way, the degree to which a company organizes its resources to generate services that are in some way complimentary (i.e., mutually enhancing) is a reflection of the degree to which a company is organized. The term "coherency" when referring to the organization of the company's administrative structure (i.e., mutually enhancing) refers to the extent to which the company's resources are arranged to provide services that are in some way complementary.

Additionally, causal relationships between the age of lucrative open doors and resources for innovation and development are shown by Buckley and Casson (2010). The different assets in the business and the expertise and knowledge of the administrators affect how they

perceive the unique lucrative opportunities that are open to their organizations. Administrators serve as a catalyst for the transformation of association resources into business competencies and innovative product applications. The enablers of firm development are explained by McKelvie and Wiklund (2010). The obstacle for a company's rate of development within a certain timeframe is the availability of top administrative and specialized skill. In addition to explaining how enablers contribute to company growth, Koryak et al. (2015) argue that failing to recognize these barriers results in inefficient practices and a loss of advantage.

This study's foundation is helped by the Growth of the Firm Theory. A company's ability to grow depends on how its resources are used. The Growth of the Firm Theory aims to establish a connection between resource availability and tea company performance. So efficient resource usage has an effect on a company's ability to grow. The performance of tea processing enterprises serves as the dependent element's anchor. Figure 1 illustrates the theoretical framework.



**Figure 1: Theoretical Framework**

Source: Researcher, 2023

*eece et al., 1997 & Penrose, 1959)*

## 2.4 Conceptual framework

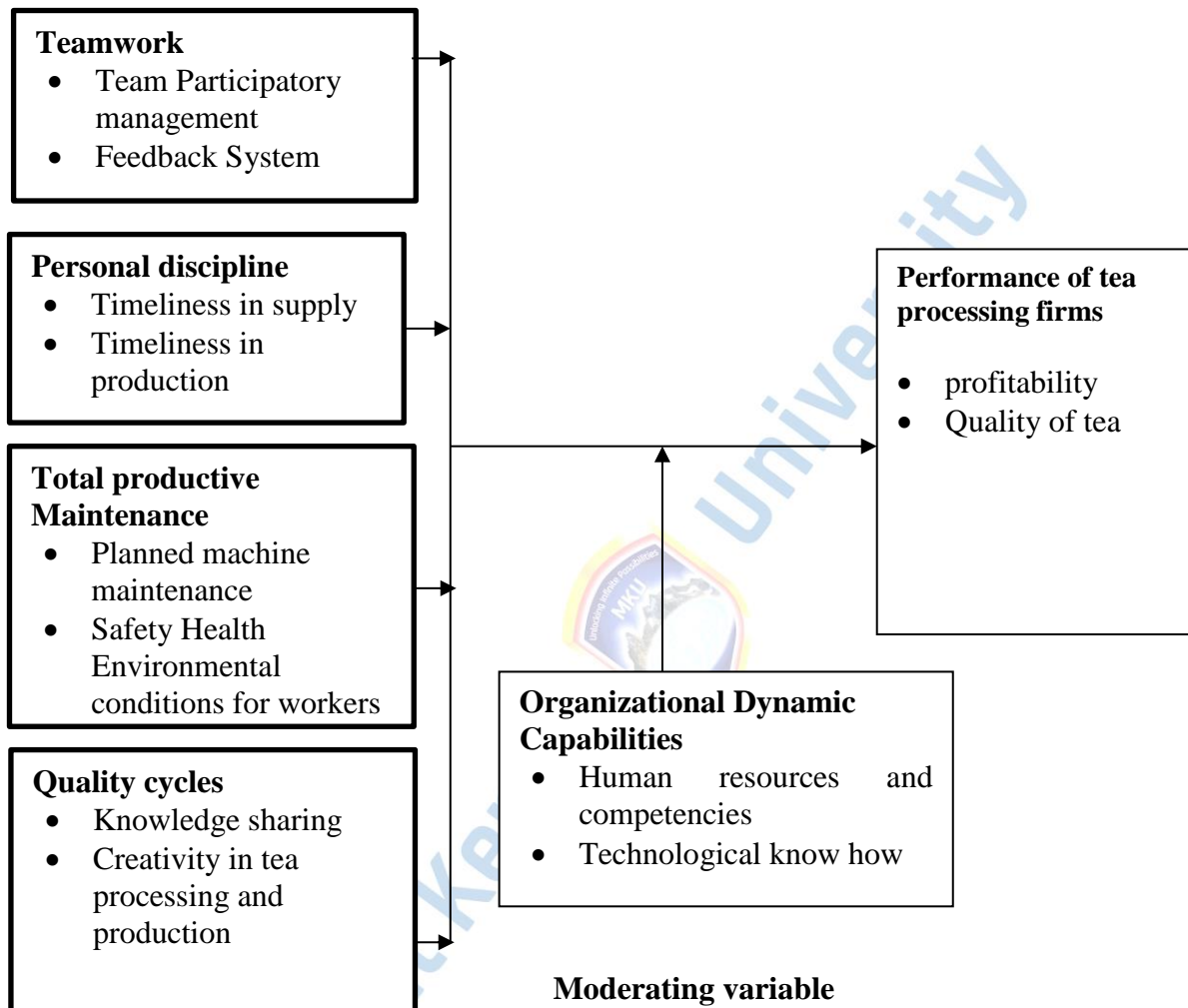
The variables in the theoretical version are discussed in this section. This is to explain exactly how they relate to various others. The theoretical structure web links the independent variables to the outcome component. Figure 2 illustrates the conceptual framework.



## Independent Variables

## Dependent Variable

### Kaizen Model



**Figure 2: Conceptual Diagram**

Source (Researcher, 2023)

Figure 2 illustrates the conceptual structure guiding this study. Independent variables include teamwork measured using team work and participatory management. Further personal discipline is operationalized as timeliness in supply and timeliness in production. Total productive maintenance will be measured number of breakdowns and safe working

environment. The dependent variables will be moderated by organizational dynamic capabilities operationalized into innovativeness and talent exploitation. Quality cycles will be operationalized as knowledge sharing and creativity in tea production and processing. The dependent variable is performance of tea processing firms measured employing ROA, sales volume and market prices. It is hypothesized that quality cycles, teamwork, personal discipline and total productive maintenance significantly influences performance of tea processing firms and that organizational dynamic capabilities moderates the relationship between Kaizen systems performance of tea processing firms.

#### **2.4.1 Performance of Tea Processing Firms**

The performance of tea processing companies was measured using sales revenue and quality of tea. According to Ware (2015), profit generation shows how assets of a firm are used to make income. This financial achievement is controlled by the size of the net benefit. Owolabi and Obida (2012) additionally characterized productivity is the capacity to benefit from all the business exercises. It estimates administrative proficiency by utilizing authoritative assets thus increasing the value of the business. Profitability of a firm is dependent on many firm factors that influence it including total assets controlled and operational costs. Profit generation entails the relationship between salary and monetary record measures that demonstrate the relative capacity to procure resources. The evaluation of profit generations is generally done through return on assets that estimates the ratio of net income to aggregate assets controlled by a firm. Quality of tea is essential in enhancing tea production growth. Quality tea shall attract favorable market quotation prices that increase total sales revenue (Tiampati, 2015). Poor quality of tea hinders the overall performance since tea of low quality fetches low value in the global markets. Basing on Jadhav, *et al.* (2014), Kaizen systems have been employed to minimize human intervention, fasten task productivity, increase work efficiency, cut on tea processing costs and to improve tea quality.

#### **2.4.2 Team Work and Firm Performance**

Teamwork as the second independent variable was measured using team work and participatory management (Agarwal & Adjirackor, 2016). The outer elements of cooperation are the political, financial, social and innovative variables that influence collaboration while the inward factors of cooperation comprise nature of leadership (Manzoor, Ullah, Hussain & Ahmad, 2011).

Teamwork results to task efficiency (Sanyal & Hisam, 2018). Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker (Ooko, 2013). At the point when a group functions admirably all together they can achieve beyond what the individual individuals can do alone.

Participative administration has been extensively received as a methodology in authoritative improvement. This is on the grounds that a great many people accept that participative administration not just urges laborers to relate to their obligations, yet additionally improves their own presentation just as hierarchical execution (Mutai, Cheruiyot & Kirui, 2015). Participative administration help improve task improvement in a firm (Wensveen, 2016). Examples of participative administration differ; they may incorporate exercises, for example, objective setting and critical thinking.

Recommendations framework is considered as the easiest, generally fundamental, most affordable, most secure and quickest method for representative cooperation in association (Moneim, 2009). The recommendation framework works as a basic piece of individual-arranged Kaizen and underscores the confidence boosting advantages of positive participatory management, team work and employee involvement (Tadesse, 2014). Teamwork stimulates worker enthusiasm by urging employees to give numerous recommendations, regardless of how little (Ashlaghi, *et al.*, 2016). Teamwork principle

encourages employees to examine their recommendations verbally with administrators and set them vigorously right aside, even before submitting proposal structures. Creating kaizen - disapproved and self-taught workers is the essential objective (Ranaweera, 2015).

#### **2.4.3 Personal Discipline and Performance**

The indicators for personal discipline were timeliness in supply and timeliness in production. Personal discipline is both way of thinking and controlling arrangement of rules that incorporates the essential administration procedures, existing improvement endeavors, and specialized devices (Mackelprang & Nair, 2010). The methodology weighs on long haul benefits coming about because of waste disposal, and ceaseless enhancements to frameworks, projects, items and individuals (Golas *et al.*, 2016). It has noteworthy effect on quality control, buying capacities, and work culture with a way of thinking that includes price, meeting conveyance plans, representative's strengthening and expertise advancement, provider relations and improvement of new items (Davy *et al.*, 1992).

Personal discipline refers to an incorporated, problem-solving management method directed towards improvement of quality and suitable supply, manufacture and distribution processes (Davy *et al.* 1992). Because of personal discipline, persons within the firm involved are committed to their work and resources, processes are fully exploited for maximum yield and efficiency. Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations (Davy *et al.* 1992).

#### **2.4.4 Total Productive Maintenance and Performance**

TRM is measured using number of machine breakdowns and safe working environment. TPM is a well-characterized and sorted out program which disposes of the misfortunes brought about by separate of machines and hardware by recognizing and assaulting all reasons for gear separate downs and framework time (Mukhedkar, 2016). TPM is a savvy

procedure through this strategy it is conceivable to keep up the plant, hardware and devices in gainful state in least expense. All around kept up machines prompts profitability (Enofe & Aimienrovbiye, 2010). There is connection between cost of upkeep and cost of value. In any case, the expense of support after separate is no uncertainty more than the expense of upkeep whenever done occasionally (Slaichová & Marsíková, 2013). TPM assists with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan.

Total Productive Maintenance is a comprehensive method which guarantees that gear support is forward-thinking so as to accomplish immaculate generation. This guarantees minimal breakdowns enhancing efficiency. This method likewise takes a gander at a workplace with negligible dangers or no mishaps (Nallusamy, 2016). TPM underlines on tending to start change as opposed to responding to occasions so as to advance gear operational effectiveness. More underscore is set at putting and engaging experts to monitor machines (Ngothi, 2015).

Complete beneficial support guarantees safe-workplace which thus prompts compelling improvement of efficiency that is decrease of process durations, up time addition and imperfection disposal (Poduval & Pramod, 2015). TPM centers around improving hardware quality. TPM tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware. As indicated by Tripathi (2015) the workplace ought to depict the physical setting and culture favorable to firm growth. Every angle is bury connected and impacts on workers in general execution and profitability.

Workplace is associated with creating the right conditions whereby a representative plays out their obligations freely and easily. Compelling use of ergonomics can accomplish a harmony between laborers undertaking and requests (Gitonga & Gachunga, 2015). This will upgrade administrator efficiency, give specialist security and physical and mental prosperity and

occupation fulfillment along these lines improved authoritative exhibition (Garbie, 2014). An agreeable and comprehensive work environment condition will help the representatives' presentation henceforth boosting the authoritative execution.

#### **2.4.5 Quality Cycles Improvement and Performance**

Quality Cycles is measured by considering knowledge sharing and creativity. Information sharing alludes to the arrangement of errand data and realizes how to help other people and to work together with others to tackle issues, grow new thoughts, or actualize approaches or systems (Davoudi & Fartash, 2012). Information is a pivotal authoritative asset that prompts hierarchical execution. Associations must consider how to move aptitude and information from specialists who have it to recently utilized staff who need to know (Takano & Kanama, 2019). That is, associations need to think and all the more successfully misuse information based assets that as of now exist inside the association.

Ngah and Ibrahim (2010) accentuate that information foundations, for example, innovation, structure and culture alongside information obtaining, transformation, application and insurance are fundamental authoritative capacities for higher hierarchical execution.

Creativity is the development of ideas and skills. It is critical for the organizational performance (Dul & Ceylan, 2014). The creativity aspect among employees in organization includes methods of monitoring employees' knowledge growth, how they achieved particular goals and milestones and how to improve them so as to stimulate organizational performance.

According to Sulaiman, *et al.* (2015), impact of information innovativeness is connected to increment in multifaceted of profitability that reflects increment in the general authoritative presentation.

The idea of quality cycles enhancement is a cornerstone of the Deming philosophy of quality management processes by aligning organizations towards their goals (Ebenezer, et al., 2011). Quality should not be portrayed as a programme with a definite end-point, but as a continuous process (Misiurek *et al.*, 2016). Kaizen is a perspective, sharing information and improved item configuration inserted in the way of thinking and estimations of the association. It ought to be lived instead of forced or endured, at all levels (Nath *et al.*, 2016).

Quality cycles include forms arranging, item configuration, process structure, creation and administration, appraisal and activity, and asset obtainment. Activity is the input component for assessment of consistence for outer and inward fulfillment. As indicated by Terziovski (2011), ceaseless improvement involves assortment of exercises that establish a procedure expected to accomplish execution improvement. Underway businesses the exercises basically include rearrangements of generation forms. The supporting guideline ceaseless improvement is the utilization of different critical thinking instruments for the recognizable proof and arrangement of work-based issues (Kemunto, 2015). The point is for development by benchmarking systems. To combine the new benchmark, the improvement must be institutionalized. Constant improvement process creates process-arranged intuition since forms must be improved before improved outcomes can be acquired (Hall, 2015). Persistent improvement connotes little enhancements made in the norm because of progressing endeavors. As indicated by Singh and Singh (2015) quality cycles is the significant main impetus behind any improvement exertion and improved nature of items.

#### **2.4.6 Kaizen Systems on Performance with moderating role of Organization Dynamic Capabilities,**

Organizational vibrant capacities describe a company's capacity to efficiently utilize resources in order to accomplish its goals (Kehinde, 2012; Shaukat, Nawaz & Naz, 2013).

The organization dynamic capabilities will be measured by considering talent management and innovativeness (Naik, 2012). Ability is related with a lot of highlights, aptitudes, information, and capacities that portray people in the association (Najm & Manasrah, 2017). Ability the executives is significantly related with organizational performance (Naik, 2012).

Innovation allows companies to attain competitive advantage, customer retention, acquire new customers while at the same time strengthen ties other partners (Suhag, *et al.*, 2017). Innovation is revolves around exploring untapped user needs through use of technology so as to enhance performance, while at the same time satisfy user needs (Tuan, Nhan, Giang & Ngoc, 2016; Gunday, Ulusoy, Kilic & Alpkan, 2011). Organizations that have embraced innovation have seen a reduction in cost of production while at the same time, enhanced revenue output (Han, Jung & Joo, 2015).



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**Table 1: Operationalization**

<b>Variable</b>	<b>Kind of Variable</b>	<b>Indicators</b>	<b>Measure</b>	<b>Scale</b>	<b>Tools of Analysis</b>	<b>Expected results and nature of relationship</b>
Teamwork	Independent	<ul style="list-style-type: none"> <li>• Team Participatory management</li> <li>• Feedback System</li> </ul>	<ul style="list-style-type: none"> <li>-group work</li> <li>-consultation</li> <li>-number of suggestions</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	+ positive relationship
Personal discipline	Independent	<ul style="list-style-type: none"> <li>• Timeliness in supply</li> <li>• Timeliness in production</li> </ul>	<ul style="list-style-type: none"> <li>-time taken in supplying tea products</li> <li>- time taken in production</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	+ positive relationship
Total productive Maintenance	Independent	<ul style="list-style-type: none"> <li>• Planned machine maintenance</li> <li>• Safety Health Environmental conditions for workers</li> </ul>	<ul style="list-style-type: none"> <li>-number of equipment</li> <li>-frequency of breakdowns</li> <li>-Number of accidents and incidents reported</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	+ positive relationship
Quality Cycles	Independent	<ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• Creativity</li> <li>• Stakeholders' involvement</li> </ul>	<ul style="list-style-type: none"> <li>-seminar</li> <li>-workshop</li> <li>-training</li> <li>-internal communication</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	+ positive relationship
Organizational dynamic capabilities	Moderating	<ul style="list-style-type: none"> <li>• Human resources and competencies</li> <li>• Technological know how</li> </ul>	<ul style="list-style-type: none"> <li>-amount of resources allocated</li> <li>-Human resource competence</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	+ positive relationship
Performance of tea processing firms	Dependent	<ul style="list-style-type: none"> <li>• Sales volume/ profitability</li> <li>• Quality of tea</li> </ul>	<ul style="list-style-type: none"> <li>- net income divided by total assets</li> <li>-growth in profitability</li> </ul>	Ordinal	Descriptive (mean and SDs) and Inferential (correlation and regressions)	

## 2.5 Recap of Literature Review

A research by Ateka *et al.* (2018) showed that the nature of made tea decides the costs of tea in the market, with better teas incurring more significant expenses than lower quality teas. Tea quality is largely affected by weather changes in the area in which it is grown. Ondego (2016) did a research on lean production techniques and performance of tea producing companies in Kisii, Kenya and picked automation as one of the largely employed lean manufacturing techniques by tea producing companies in Kisii including Kaizen systems, standardized work, TPM and bottleneck evaluation process. However, the paper indicated a conceptual gap as it only looked at lean practices that are too broad without focusing on quality of tea. Lean practices are too broad and was majorly focused on waste minimization with little focus on quality. In a research to predict impact of kaizen system on firm growth focusing at manufacturing companies in Kenya Ngothi (2015), showed that Kaizen system impacted on firm performance. However, the study focused on manufacturing firms. Manufacturing sector is very broad comprising of different segments. As a consequence we may not be able to deduct the outcomes to agricultural sector specifically tea sector. In another study by Mwikali (2017) on Kaizen approach and performance of Roto Moulders Ltd, research found that kaizen strategy improved the performance of firm. However, the area of specialization of the firm is different from tea sector hence we cannot generalize the findings to Kenyan tea sector.

In research to determine quality management practices employed by tea firms in Kenya Mwangi, (2015), found that quality management practices are practiced at the tea firms and positively influences performance of the tea companies. However, the study presented a conceptual gap since the investigation employed ISO 9001:2008 certification to check on the quality of tea produced. In Sri Lanka, Herath and De Silva (2011) undertook a research on strategies to enhance competitive strategies by adding value to tea and the study found that

competitive advantage of tea produce could be attained by investing in technological innovation in order to increase tea yields. An empirical study by Ganewatta and Edwards (2010) established that so as to enhance quality tea output in the Sri Lanka tea sector Kaizen System was required in order to cut down costs of production in the tea sector. Nevertheless, the research was undertaken in Sri Lanka, highlighting a contextual problem.



## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

The part highlights the methodological approach that was utilized to answer proposed hypotheses. In particular, this part summaries the design, research paradigm, target population, sample population, sampling methods, data gathering tools, data gathering techniques, pilot tests, and reliability of tools, data validity and data analyses techniques.

#### 3.1 Research Philosophy

Saunders, Lewis, and Thornhill (2012) identify the research study technique as a means of taking a look at social sensations as well as attempting a description from the understandings accomplished. Creswell (2014) views study design as a certain world sight. Creswell (2014) describes research criteria as a philosophical alignment worrying the world and the nature that a researcher brings to research. The research study perspective is the hidden anticipation where upon research and developments in the field of inquiry are based. Research ideology is a perspective that is based upon the collection of common presumptions, values, ideas and practices (Padilla-Díaz, 2015). It is an approach whereby scientists think of the growth of expertise.

Pragmatism research philosophy recognize that there are many different ways of interpreting the world and undertaking research, that no single point of view can ever give the entire picture and that there may be multiple realities. Pragmatism research philosophy accepts concepts to be relevant only if they support action

The option of the research is based on the theory that the researcher wants to examine. In this regard, the research study philosophy that ideal fits our objectives are Pragmatism.

Pragmatism study paradigm was adopted in this research. Pragmatism was adopted due to its inclination of allowing the researcher utilize more than one research method or technique simultaneously (Collis, J. & Hussey, R. (2014). The paradigm employs structured approaches to study population so as to ensure that the population is as representative as possible (Eriksson & Kovalainen, 2015).

### **3.2 Research Design**

Research design is a 'blueprint' that enables the researcher to come up with solutions to problems as well as overviews in the process of accumulating, analyzing, and analyzing the data as well as monitoring (Bryman & Bell, 2011). According to Laurel (2011) as well as Kothari (2008), a research study style is a real setup as well as framework the research study process is based upon. The research study style products directions on what method, type of information collection, in addition to the type of evaluation, is called for to unambiguously resolve the research study worry.

The research study made use of explanatory research study design. An insightful research study sets out to explain as well as comprise the detailed details. So, while descriptive researches could ask the 'what' sort of inquiries, interesting research studies look to ask 'why' as well as likewise 'just exactly how' concerns (Boru, 2018). It enhances exploratory and additionally descriptive research and happens to acknowledge genuine variables a feeling occurs. A helpful research study seeks factors and uses evidence to receive or obliterate a description or forecast. It is carried out to locate and report some links amongst different aspects of the feeling under research.

In this study, the design establishes the cause and effect linkage between performance of tea, teamwork, personal discipline, total productive maintenance systems and quality cycles. Explanatory research design is appropriate when establishing the relationship between

variables. Explanatory research design was also employed by Nath and Ajoy (2016) to conduct a study on productivity improvement of black tea production, Shambaro and Kisimbii (2017) on influence of Gemba Kaizen's Concepts on the efficiency of Mother's Kid Medical Care Projects.

### 3.3 Target Population

The study population was 66 tea producing companies in Kenya comprising 17 large size tea firms, 21 medium size tea firms and 28 small size medium firms (Appendix IV). Kenya Tea Development Agency groups tea firms into three categories (large, medium and small) based on annual sales revenue of each of the tea firm. The units of observation were one operation manager from each of the tea processing firm. As a result, the study's target population was 66 operations managers. Operations managers oversee daily operations of the tea firm and thus resourceful in understanding the function of Kaizen systems in catalyzing performance of tea producing firms.

**Table 2: Study Population**

<b>Categorization by region</b>	<b>Target population</b>
Aberdare Ranges	21
Mt. Kenya Region and Nyambene Hills	16
Kericho Regions	13
Kisii Regions	11
Nandi Highlands and Western regions	5
<b>Total</b>	<b>66</b>

Source: KTDA report, 2019

### 3.4 Census

A census is a study of every unit, everyone or everything, in a population. Census technique based on regions was used to include all 66 tea processing firms. The unit of observation was

one operations manager from each of the tea processing firm making a total of 66 operations managers. Therefore, the study conducted a census of all the 66 operations managers of tea producing firms that were included in the study. Operations managers' one from each of the tea processing firm filled a questionnaire. Census is more suitable in a small population hence allows a researcher to include the entire population.

**Table 3: Unit of Observation/ Tea Operations Managers by Region**

<b>Categorization by region</b>	<b>Operations managers</b>
Aberdare Ranges	21
Mt. Kenya Region and Nyambene Hills	16
Kericho Region	13
Kisii higher regions	11
Nandi and Western regions	5
<b>Total</b>	<b>66</b>

Source: author, 2019

The tea processing companies' operations managers served as the observation unit. The research included a census of all 66 operations managers. As a result, the study included all 66 tea processing companies. Because the target population is small and thus manageable, a census of all operations managers was conducted.

### **3.5 Research Instruments**

The study employed structured questionnaires in collecting data. Structured questionnaires were created according to the purposes of the study. Questionnaires are suitable and efficient for vast geographical areas (Sekaran & Bougie, 2016). According to Ekinici (2015) structured questionnaires are suitable in measuring opinions and perceptions of persons under study. The questions in the survey were on a 5-point Likert scale. The likert scale has been designed based on how questions are reframed in the questionnaire.

The study's structured questionnaires were divided into six sections. Part A of the structured questionnaire consist of the general profile of the tea processing firm, section B influence of team work, section C influence of personal discipline, section D influence of total productive maintenance systems, section E influence of Quality cycles on performance of tea processing factories section F organizational dynamic capability and Section G, the performance of tea processing firms. Secondary data also collected on performance of tea processing firms from tea processing firms' financial statements and Kenya Tea Development Authority reports.

### **3.6 Data Collection Methods and Procedures**

To collect primary data, this study used structured questionnaires. Structured questionnaires were distributed in person with the help of well-trained research personnel from each study region. Mail questionnaires or survey monkey were also prepared and send to operations managers to enhance data gathering processes. The structured questions were availed to operations managers of the tea processing firms. The operations managers filled the questionnaires in persons. According to Ekinci (2015), questionnaires are suitable in measuring opinions and perceptions of persons regarding a particular in the study.

Secondary data were also collected on performance of tea processing firms. Secondary data for profitability and percentage sales growth were also extracted from tea processing firms' financial statements and Kenya Tea Development Authority reports for the period 2015-2019.

### **3.7 Pilot Test**

A pilot is a small study conducted before the actual research begins. Pilot is undertaken to assess the competence of the data collection tool (Cooper, Schindler & Sun, 2011). In ascertaining reliability test, a pilot test was conducted (Noble & Smith, 2015). In the pilot test, certain criterion is laid for the data collection tool and if the criterion is attained, the tool is subjected to actual study. Piloting was carried out in Chinga Tea Factory Company,

Aberdare Ranges and Toror Tea Factory Company Limited in Kericho Highlands. The participants in the pilot study were not included in the final analysis.

### **3.7.1 Validity Test**

Validity involves the capability of research study instruments to evaluate and measure what the researcher means to gauge (Joppe, 2010). A survey in construct credibility was categorized into several sectors to certify that each segment analyzes data for a particular goal, and to make certain that they are closely connected to the theoretical framework of the study. In guaranteeing content validity, the device was scrutinized by superiors. Their comments were used to boost the material validity of the tool. To enhance construct validity, the device is split right into several locations to ensure that each area analyzed information for a detail's objective, in addition to additionally ensuring that the very same extremely close connections to the academic structure for the research study.

Factor analysis was used to pick the relevant statements to be included in the analysis. A statement with a component matrix of more than 0.5 is included in the analysis. For data output to be considered appropriate and ideal for analytical analysis, the worth of KMO needs to be above 0.5 according to Williams, Onsman and Brown (2010) and Loehlin & Beaujean, (2016). The subsequent sections present the factor loading results.

#### **3.7.1.1 Factor Analysis for Kaizen functionalities**

The statements of Kaizen functionalities were subjected to factor analysis. Factor loading of 0.5, according to Tabachinick and Fidell (2007), is a fair measure of real-world data. The factor loading for Kaizen functionalities is shown in Table 4.

**Table 4: Factor Loading for Kaizen functionalities**

<b>Kaizen functionalities</b>	<b>Factor Loading</b>
-------------------------------	-----------------------

<b>Sorting tea</b>	
Extent Kaizen system has enhanced tea branding	.913
Extent Kaizen system has helped in grading tea based on quality standard	.874
Extent Kaizen system has helped in separating raw tea from processed tea	.887
<b>Tea Standardization</b>	
Kaizen system has helped enhance and maintain quality standard of tea produce	.872
Periodic monitoring and evaluation of tea processing plants by Kaizen systems has enhanced tea quality	.872
<b>Task management</b>	
Task breakdown by use of Kaizen system has enhanced efficiency of the tea processing company	.916
Kaizen system has helped in the separation of duties among employees in this tea processing company	.916

Table 4 shows that all of the statements about Kaizen tea functionalities, such as sorting tea, tea standardization, and task management, had factor loading values greater than 0.5, indicating that they were accepted and no sub variables were dropped.

### 3.7.1.2 Factor Analysis for Teamwork

Tea processing companies' measures of teamwork and performance were subjected to factor analysis. Factor loading of 0.5, according to Tabachnick and Fidell (2007), is a fair measure of real-world data. The factor loading for teamwork is shown in Table 5.

**Table 5: Factor Loading for Teamwork**

<b>Teamwork</b>	<b>Factor Loading</b>
Employees are encouraged to work as a team so as to enhance tea production	.905
Workers actively participate in the management of the tea processing company	.900
Employees participate in suggesting ways on how to improve quality of tea produced	.888
This tea processing company promotes workers morale through rewards so as to enhance operational efficiency	.901

There is an elaborative process to enhance skill development though creative thinking in this company	.920
The firm encourages employees to discuss their suggestions with supervisors on how to improve quality of tea	.888
In this company, the exchange of ideas between the management and employees has helped promote a friendly working environment for working	.483

Table 5 shows that all of the teamwork measurements had factor loading values greater than 0.5, indicating that they were accepted and no sub variable was dropped.

### **3.7.1.3 Factor Analysis for Personal discipline measurement indicators**

Personal discipline and tea processing company performance statements were subjected to factor analysis. Factor loading of 0.5 is considered a fair measure of real-world data by Tabachnick and Fidell (2007). Personal discipline's factor loading is shown in Table

**Table 6: Factor Loading for Personal discipline**

<b>Personal discipline</b>	<b>Factor Loading</b>
This firm supplies tea products to the market in time	.734
Tea production process is keenly monitored by line managers and employees	.876
Due care is undertaken by firm's workforce when transporting tea produce from farm to processing plants in order to minimize damage	.959
Personal discipline has helped enhanced task scheduling by minimizing time wastage in sorting raw and processed tea	.824
The application of the statistical process control to check system functionality of the tea processing machines has enhanced operational efficiency	.940
The use of Kaizen systems has enhanced employee cross-training where employees can perform certain tasks when required.	.796

Table 6 shows that all of the personal discipline and tea processing company performance measures had factor loading values greater than 0.5, indicating that they were accepted and no sub variables were dropped.

#### **3.7.1.4 Factor Analysis for Total Productive Maintenance**

The statements of total productive maintenance and performance of tea processing companies were subjected to factor analysis. Factor loading of 0.5, according to Tabachnick and Fidell (2007), is a fair measure of real-world data. The factor loading for total productive maintenance is shown in Table 7.

**Table 7: Factor Loading for Total Productive Maintenance**

<b>Total Productive Maintenance</b>	<b>Factor Loading</b>
The machines available in this company can effectively process tea	.834
Tea processing equipment are adequately maintained and thus experiences less breakdowns	.967
Senior management dedicates time and distributes sufficient resources for total productive maintenance purposes	.976
There is adequate illustration of TPM master plan that comprises objectives, action plan by the administration of this company	.996
The company production lines run uninterrupted through working hours	.758
There is adequate total productive maintenance training organized for all staff covering the summary of TPM concept, redefined roles of operators and maintenance people and expected benefits	.866
There are clear appliances for recording maintenance performance metrics including mean time to patch-up and mean time between failure so as to monitor production efficiency of machines and take action to prevent reoccurrence	.959
The company uses pareto charts that include why analysis so as to eliminate productivity losses	.943

Table 7 shows that all of the measurement statements for total productive maintenance and performance of tea processing companies had factor loading values greater than 0.5, indicating that they were accepted and no sub variables were dropped.

### **3.7.1.5 Factor Analysis for Quality Cycles**

The statements of quality cycles and performance of tea processing companies were subjected to TFactor analysis. Factor loading of 0.5, according to Tabachinick and Fidell (2007), is a fair measure of real-world data. Table 8 shows the factor loading for tea processing companies' quality cycles and performance.

**Table 8: Factor Loading for Quality Cycles**

<b>Quality Cycles</b>	<b>Factor Loadings</b>
There is continuous knowledge sharing among employees to improve quality of tea produce	.729
Creativity in tea blending is encouraged in the firm	.863
Tea product design is continuously improved to meet customers desires	.568
Tea products are systematically implemented to the standards	.940
Process design is continuously improved in order to enhance quality of tea products	.785
Benchmarking is done to compare quality of tea products among firms	.621
Process-oriented thinking is conducted enhance process efficiency in producing tea products	.741
There is continuous knowledge sharing among employees to improve quality of tea produce	.713

Table 8 shows that most measures of tea processing company quality cycles and performance had factor loading values greater than 0.5, indicating that they were accepted and no sub variable was dropped.

### **3.7.1.6 Factor Analysis for Organizational Dynamic Capability**

The performance of tea processing companies' organizational dynamic capability statements were subjected to factor analysis. Factor loading of 0.5 is considered a fair measure of real-world data by Tabachinick and Fidell (2007). Table 9 depicts the factor loading for the performance of tea processing companies' organizational dynamic capability.

**Table 9: Factor Loading for Organizational Dynamic Capability**

<b>Organizational Dynamic Capability</b>	<b>Factor Loading</b>
The company often review tea development process to ensure they are in line with customers' taste	.969
The company has operational routines to pinpoint, assess and impart fresh knowledge on its employees	.958
The company is able to tap employees talents and use them to enhance its operations	.939
The firm is able to redeploy and reconfigure its resource to address customer desires and maintain competitive advantage in the sector	.931
The company has adequately invested in research and development so as to promote innovation that enhances firms' operations.	.931
Employees are assigned tasks that correspond to their task-relevant knowledge and skills.	.852
There is continuous renewal and modification of factory processes aimed at maintaining competitiveness of the company.	.720
The company sufficiently coordinates its activities so as to enhance aggregate operational efficiency	.871

Table 9 shows that all of the statements about tea processing companies' organizational dynamic capability performance had factor loading values greater than 0.5, so they were accepted and no sub variables were dropped.

### 3.7.1.7 Factor Analysis for Firm performance using non-financial measures

Non-financial measures were used in the factor analysis of firm performance statements. Factor loading of 0.5, according to Tabachinick and Fidell (2016), is a fair measure of real-world data. The factor loading for firm performance is shown in Table 10.

**Table 10: Factor Loading for Firm performance**

<b>Organizational Dynamic Capability</b>	<b>Factor Loading</b>
Profitability of the company	.761
Annual sales volume of tea sold by the company	.797
Tea market prices at the auction market	.835
Quality of tea produced in this company	.705
The turnaround time in processing raw tea	.646

Table 10 shows that all non-financial measures of firm performance had factor loading values greater than 0.5, indicating that they were accepted and no sub variables were dropped.

From the validity results, the measurement statements for the study variables attracted component matrix greater than 0.5 and thus all the statements were retained for further analyses. Based on validity results, the instrument was consistent for actual data collection.

### 3.7.2 Reliability Test

Reliability refers to the repeatability, stability or internal uniformity of a survey. Dependability examination was conducted utilizing 10 percent (6 procedures managers of the tea handling firms) of the example population (Creswell & Creswell, 2017). The tea firms where pilot study was carried out were left out in real research study. According to Creswell and Creswell (2017), a Cronbach alpha of 0.7 or more show that the tool is reliable and also ideal for real. This research took on the Cronbach alpha coefficient of 0.7 as well as above. For this research, integrity was computed using Cronbach's alpha formula and also results created with the help of SPSS.

**Table 11: Reliability Test**

<b>Variables</b>	<b>Items</b>	<b>Cronbach Alpha</b>	<b>Remark</b>
<b>Kaizen functionalities</b>			
Sorting tea	3	.926	Reliable
Standardization	2	.832	Reliable
Task management	2	.896	Reliable
<b>Variables forming objectives of the study</b>			
Teamwork	7	.870	Reliable
Personal discipline	6	.886	Reliable
Total productive maintenance	8	.883	Reliable
Quality cycles	8	.804	Reliable
Organizational dynamic capability	8	.852	Reliable
Performance of tea processing firms	5	.897	Reliable

The findings in Table 11 reveal that Cronbach's alpha for all the things was all above 0.7 indicating that the tool was effectively reputable for measurement and consequently served. Since all the variables determined had a Cronbach's alpha above 0.7, they were all dependable and hence approved. Based on the pilot results, the study discovered that the set of questions was trusted as the Cronbach alpha values for research variables that consist of a team effort, personal self-control, overall effective maintenance, top quality cycles as independent variables organizational dynamic capacity as a mediator as well as efficiency of tea processing firms as a reliant variable were higher than the advised worth of 0.7. Based upon dependability outcomes, the tool was trustworthy for actual data collection.

### **3.8 Data Analysis Methods and Procedures**

Ott and Longnecker (2015) describe data analysis as an approach of subjecting collected data to mathematical inquiry so as to help interpret and understand the study. The quantitative data was gathered using the Likert scale questionnaire. The quantitative data assembled from the questionnaire were analysed using SPSS Version 23.0. Secondary data from KTDA financial reports on the performance of tea processing firms were analyzed using Microsoft excel application and presented using trend graphs.

The statistics that needed to be created included both descriptive and inferential results. The specific descriptive outcome comprised the averages and SD. Inferential included the Pearson Correlations to check the association between variables and multiple regression approaches. The ANOVA test was employed to check the satisfactoriness of the model. The coefficients of the equation assessed the link between Kaizen systems and the performance of tea companies. The level of confidence to be used in this study was 95%. The particular multiple regressions equation is;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where;

Y = Performance of tea processing firms as the dependent variable

X<sub>1</sub> = Team work

X<sub>2</sub> = Personal discipline

X<sub>3</sub> = Total productive maintenance systems

X<sub>4</sub> = Quality cycles

ε = refers to the error term

In the model,  $\beta_0$  = the constant value while the coefficient  $\beta_i = 1 \dots 4$  is the slope of the coefficients showing effect of independent variables X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> on the dependent variable (Y). The error ( $\epsilon$ ) term shows the unexplained factors in the model.

### 3.8.1 Moderating Role of Organizational Dynamic Capability

Moderation occurs when the linkage between two variables is interacted by another variable (Dawson, 2014; Fairchild & MacKinnon, 2009). Moderation describes is individual differences or conditional that influence the power of the linking predictor and outcome element (Bryman, 2015). This research employed the Kenny and Baron (1986) approach to check for moderation. Variation in R<sup>2</sup> confirms the presence of the moderating effects of organizational dynamic capability. Therefore, the model is as shown below;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_1 X_1 * M + \beta_2 X_2 * M + \beta_3 X_3 * M + \beta_4 X_4 * M + \epsilon$$

Whereby;

Y = Performance of tea processing firms

X<sub>1</sub> = Team work

$X_2$  = Personal discipline

$X_3$  = Total productive maintenance systems

$X_4$  = Quality cycles

M= Moderator (Organizational Dynamic Capability)

$\varepsilon$ = Error term.

### **3.9 Hypothesis Testing and Rejection/Acceptance Criteria**

Hypothesis was conducted by employing p-value. The acceptance/rejection rule is that a p-value smaller than 0.05 leads to the rejection of  $H_0$  (Bonett & Price, 2002).

### **3.10 Ethical Consideration**

Ethical considerations describe research morals and ethics that ought to be adhered to during research process (Basit, 2013). To prevent plagiarism, the literature used was properly cited. Plagiarism was checked and a report was attached to confirm the study's originality. The university was asked to provide a consent letter and an Ethical Review Committee (ERC) form. NACOSTI and Tea company management were asked for an Authorization Permit.

All participants were asked to fill an informed consent form in appendix 1 prior engaging in this research. Participants were also told not to indicate personal names in the questionnaire; instead, unique identification codes were used. The respondents' anonymity was respected, as was the confidentiality of the data collected. Access to the gathered data was restricted to only appropriate parties and were used for purpose of academic research.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.0 Introduction

This section of the study presents the interpretation and discussion of research findings derived from descriptive and inferential data analysis. The study was undertaken focusing at tea processing firms in Kenya. A total of 66 questionnaires were issued. Descriptive analysis was useful in reduction of data, analysis of item, and exhibition of summaries. This also gave a clear depiction of distribution of data and a general impression of values as well as served as the basis for inferential measurements. Inferential statistics allowed the study to make predictions or inferences. Table 12 shows the participation response rate.

**Table 12: Response Rate and Demographic Data**

Response	Questionnaires	
	Frequency	Percentage
Returned	60	90.1
Unreturned	6	9.9
Total	66	100

**Source: Researcher (2021)**

66 questionnaires were dispensed and 60 of them were found acceptable yielding a response rate of 90.1%. When the response rate is above 50%, it is considered as satisfactory (Mugenda et al., 2003 and Kothari, 2004). A return rate exceeding 50% is considered adequate to analyse and publish, that of 60% is considered good while 70% rates as very good (Babbie, 2004). Accordingly, grounded on affirmations from distinguished scholars, 90.1% response rate from questionnaires was very good and adequate and could therefore be

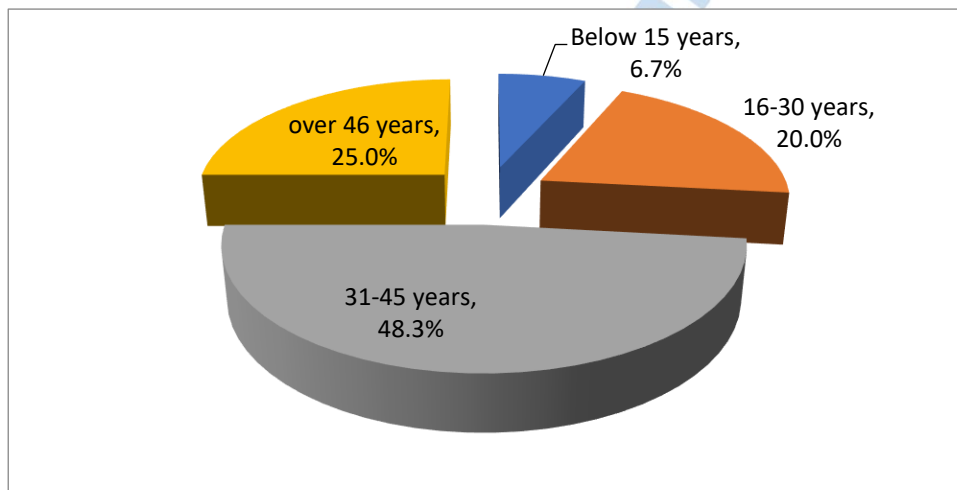
analysed without prejudice. The good response rate is attributed to prior notification of the firms to participate in the study and follow up procedures on dispatched questionnaires.

#### 4.1 Demographic information

The study investigated age of the firm, period when the firm acquired the Kaizen System and Kaizen system functionality.

##### 4.1.1 Age of the Firm

The study investigated the age of the firm. Age of the firm may have an influenced on firm performance. The results are shown in Figure 3.



**Figure 3: Age of the firm**

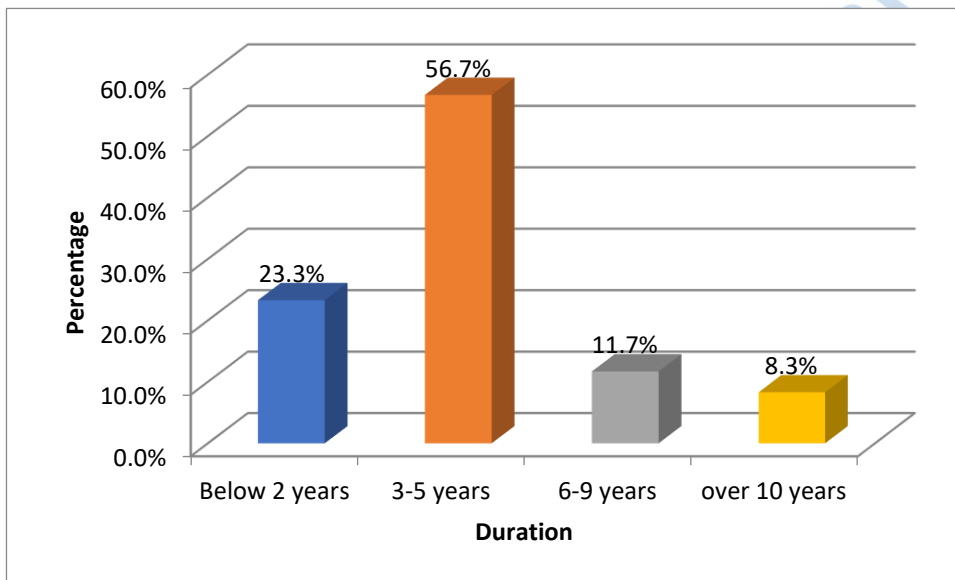
**Source: Researcher (2021)**

Most of the tea processing firms (48.3%) were aged 31-45 years. It was also established that 25.0% of the firms were aged 46 years and above while 20.0% were aged 16-30 years. Only 6.7% of the firms were aged 15 years and below. The age of the firm may define firms' capabilities in terms of resources and innovation capacity in the efficient production of tea. This is supported by the assertion by Coad, Holm, Krafft and Quatraro (2018) that there is an

adverse as well as the convex connection between firm age and success gauged by return on properties, return on equity, or gross profit margin, recommending that more youthful companies begin to see a decline in their success from the get-go but they may come to be profitable once more at aging.

#### 4.1.2 Period When the Firm Acquired the Kaizen System

The study investigated the duration the firm has been operational. The results are shown in Figure 4.



**Figure 4: Period when the firm acquired the Kaizen System**

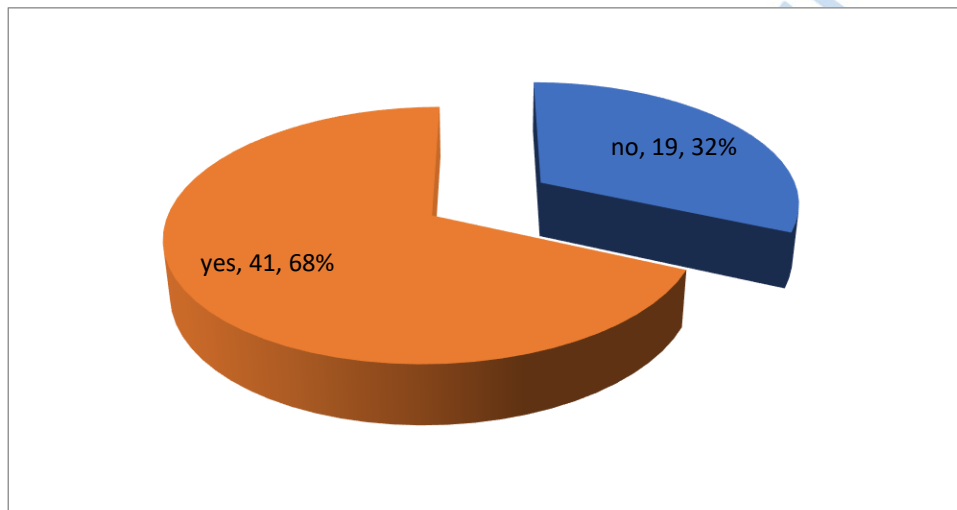
**Source: Researcher (2021)**

Majority 56.7% of the tea processing firms acquired the Kaizen system 3-5 years ago. It was also established that 23.3% of the tea processing firms acquired Kaizen 2 years ago while 11.7% acquired the Kaizen 6-9 years ago. Only 8.3% of the tea processing firms acquired Kaizen 10 years ago. The results imply that Kaizen process is a relatively new concept in tea production in Kenya. According to Kakowska and Wodarkiewicz-Klimek (2021), the Kaizen system aims to reduce waste by eliminating overproduction, improving quality, becoming

more efficient, reducing idle time, and eliminating unnecessary activities. As a result, the higher the efficiency and performance, the longer the company uses the system. All of these factors add up to cost savings and the potential for profit.

#### 4.1.3 The Current State of Kaizen System

The study sought to investigate if the Kaizen system functioning as planned. The results are shown in Figure 5.



**Figure 5: Kaizen system functioning as planned**

**Source: Researcher (2021)**

Outcomes of the research showed that the Kaizen system was operating properly as suggested by 68% of the tea handling firms. A substantive number of tea handling companies, 32% showed that the Kaizen system was not working as intended. This was credited to the truth that the Kaizen system is new concept in tea manufacturing in Kenya and lots of tea handling companies are still discovering it. The searchings for are in arrangement with the final thought made by Ngothi (2015) that implementing kaizen cause advantages in both financial and human resource aspects; that's why kaizen is a basic method used by business for taking full advantage of human potentials while reducing costs, to name a few benefits which the

advantages of kaizen is mainly split right into qualitative; which belongs to human resources motivation and self-esteem, etc, as well as measurable; which is likewise known as economic advantages, as well as belong to time-savings in cycle time, wait time, arrangement time, reducing workplace crashes, overflow, over-processing and so on.

## 4.2 Results of Descriptive Analysis

### 4.2.1 Kaizen Functionalities

The Kaizen functionalities were investigated. The participants responded on Kaizen functionalities categorized into sorting of tea, standardization and task management with seven measurement indicators. The minimum, maximum, means, and SD were included in the descriptive statistics. Table 13 shows the descriptive summary statistics on Kaizen functionalities.

**Table 13: Descriptive Summary Statistics on Kaizen functionalities**

<b>Kaizen functionalities</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Sorting tea</b>					
Extent Kaizen system has enhanced tea branding	60	1	5	3.7	1.3
Extent Kaizen system has helped in grading tea based on quality standard	60	1	5	3.7	1.1
Extent Kaizen system has helped in separating raw tea from processed tea	60	1	5	3.7	1.2
<b>Standardization</b>					
Kaizen system has helped enhance and maintain quality standard of tea produce	60	1	5	3.8	0.9
Periodic monitoring and evaluation of tea processing plants by Kaizen systems has enhanced tea quality	60	1	5	3.8	1.1
<b>Task management</b>					
To what extent did task breakdown by use of Kaizen system enhanced efficiency of the tea processing company	60	1	5	3.7	1.0
To what extent did Kaizen system helped in the separation of duties among employees in this tea processing company	60	1	5	3.8	0.9

**Source: Researcher (2021)**

Key: 1= very low extent, 2=low extent, 3 = moderate extent, 4=great extent, 5=very great extent.

The seven Kaizen functionalities recorded an overall mean of 5 (great extent) which was above 3 that was the neutral score. The study's findings revealed that four Kaizen functionalities received a mean response of 3.7, while three received a mean response of 3.8. The Kaizen system improved tea branding, as evidenced by a mean of 3.7 and a SD of 1.3. The Kaizen system aided in grading tea based on quality standards to 3.7 and SD1.1. Descriptive results revealed that the Kaizen system aided in the separation of raw tea from processed tea, as evidenced by a mean of 3.7 and a SD of 1.2.

Under use of Kaizen in tea standardization, it was established that Kaizen system has helped enhance and maintain quality standard by mean of 3.8 and SD 0.9. Likewise, periodic monitoring and evaluation of tea processing plants by Kaizen systems has enhanced tea quality by mean of 3.8 and SD 1.1. Further, results indicated that task breakdown by use of Kaizen system has enhanced efficiency of the tea processing company to great extent (mean of 3.8 and SD 1.0). It was also noted that Kaizen system has helped in the separation of duties among employees in this tea processing company as implied by mean of 3.8 and SD 0.9. The descriptive results concur with the explanation by Misiurek (2016) that Kaizen System entailed tasks and processes that result to enhancement of a product in order to improve its quality standards. Kaizen depicts constant upgrading of products and services, and value of manufacture through innovation processes founded on cooperative working situations. Kaizen aims at improving performance of a firm through improved standards activities.

#### 4.2.2 Teamwork

The study investigated the teamwork indicators measures of Kaizen system. Table 14 shows the descriptive summary statistics of teamwork.

**Table 14: Descriptive Summary Statistics on Teamwork**

<b>Teamwork</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
-----------------	----------	------------	------------	-------------	-----------

Employees are encouraged to work as a team so as to enhance tea production	60	1	5	3.8	1.0
Workers actively participate in the management of the tea processing company	60	1	5	3.7	1.1
Employees participate in suggesting ways on how to improve quality of tea produced	60	1	5	3.9	0.9
This tea processing company promotes workers morale through rewards so as to enhance operational efficiency	60	1	5	3.7	1.1
There is an elaborative process to enhance skill development though creative thinking in this company	60	1	5	3.8	1.1
The firm encourages employees to discuss their suggestions with supervisors on how to improve quality of tea	60	1	5	3.8	1.0
In this company, the exchange of ideas between the management and employees has helped promote a friendly working environment for working	60	1	5	3.7	1.2

1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree

**Source: Researcher (2021)**

Majority of respondents agreed that employees are encouraged to collaborate as a group so as to enhance tea production as shown by mean of 3.8 and SD1.0. It was also indicated that workers actively participate in the management of the tea processing company as shown by mean of 3.7 and SD 1.1. Respondents agreed that employees participate in suggesting ways on how to improve quality of tea produced as shown by mean of 3.9 and SD 0.9.

Further, most respondents agreed that the tea processing companies promote workers morale through rewards so as to enhance operational efficiency as shown by mean of 3.7 and SD 1.1. Likewise, it was noted that there is an elaborative process to enhance skill development though creative thinking in this company as indicated by mean of 3.8 and SD 1.1. Further, most participants agreed that the firm encourages employees to discuss their suggestions with supervisors on how to improve quality of tea as indicated by mean of 3.8 SD 0.9. The exchange of ideas between the management and employees of the firms helped promote a friendly working environment for working as implied by mean of 3.7 and SD 1.2.

Synergy has the prospective to provide participants of a group with a higher degree of mental security, self-confidence, and the capability to strategize and make desirable choices with others. In addition, it aids in the growth of a healthy as well as well-balanced work environment with convenient schedules, innovative activities, positive strategies, as well as values. On the other hand, a lack of teamwork may result in work failure, frustration, low worker morale, and decreased company productivity, endangering the sustainability of tea handling firms. The aspect of teamwork is also viewed as necessity in the implementation of Kaizen system in the tea industry. The results concur with Golas, *et al.* (2016) study on the influence of teamwork on firm production and found that team work is important ingredient among workers as it promotes joint focus on the goals of the organization. Likewise, Ranaweera (2015) researching on the viability of 5S utilization in tea sector found that teamwork has positive impact on overall productivity of tea producing firms.

#### **4.2.3 Personal Discipline**

The study investigated the personal discipline as measure of Kaizen system.. Table 15 shows the descriptive summary statistics of personal discipline.

**Table 15: Descriptive Summary Statistics on Personal discipline**

<b>Personal discipline</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
This firm supplies tea products to the market in time	60	1	5	4.0	1.0
Tea production process is keenly monitored by line managers and employees	60	1	5	3.8	1.0
Due care is undertaken by firm's workforce when transporting tea produce from farm to processing plants in order to minimize damage	60	1	5	3.7	1.2
JIT has helped enhanced task scheduling by minimizing time wastage in sorting raw and processed tea	60	1	5	3.6	1.2
The application of the statistical process control to check system functionality of the tea processing machines has enhanced operational efficiency	60	1	5	3.8	1.0
The use of JIT has enhanced employee cross-training where employees can perform certain tasks when required.	60	1	5	3.8	1.0

1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree

**Source: Researcher (2021)**

Majority of the tea processing firms agreed that their firm supplies tea products to the market in time as shown by mean of 4.0 and SD1.0. It was also indicated that tea production process is keenly monitored by line managers and employees as indicated by mean of 3.8 and SD 1.0. Respondents also agreed that due care is undertaken by firm's workforce when transporting tea produce from farm to processing plants in order to minimize damage as shown by mean of 3.7 and SD 1.2.

Descriptive results indicated further that JIT has helped enhanced task scheduling by minimizing time wastage in sorting raw and processed tea as shown by mean of 3.6 and SD 1.2. Moreover, it was noted that the application of the statistical process control to check system functionality of the tea processing machines has enhanced operational efficiency as indicated by mean of 3.8 and SD 1.0. The use of JIT has enhanced employee cross-training where employees can perform certain tasks when required as agreed by majority of tea processing firms.

Discipline is essential not only for a person's overall success, but also for the success and progression of a company. Proper management of discipline causes prepared teamwork and awareness of the policies developed to accomplish business objectives and also purposes. As a result of personal discipline, individuals within the firm involved are committed to their job as well as sources, procedures are fully manipulated for maximum return and effectiveness.

Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations. The results agree with the findings by Belekoukias, *et al.* (2014) who did an investigation on role of lean techniques and devices on execution exhibition of assembling associations and established that just in time has great influence on task execution in a firm. In a similar line, Ali (2017) indicated that employee decline in terms of time and task accomplishment positively impacts firm productivity and competitive advantage in a study on the effect of management commitment on the relationship between kaizen and competitive advantage.

#### **4.2.4 Total Productive Maintenance Systems**

The study investigated the total productive maintenance systems as a component of Kaizen system and whether it influences performance of tea processing firms. Table 16 shows the descriptive summary statistics of total productive maintenance systems.

**Table 16: Descriptive Summary Statistics on Total productive maintenance systems**

<b>Total productive maintenance systems</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
The machines offered in this business can successfully process tea	60	1	5	3.5	1.4
Tea handling equipment are properly kept and thus experiences less break downs	60	1	5	3.6	1.3
Senior monitoring commits time as well as assigns adequate sources for total efficient maintenance objectives	60	1	5	3.7	1.2
There is adequate demo of TPM plan of attack that makes up goals, activity strategy by the administration of this firm	60	1	5	3.8	1.0
The company assembly line run undisturbed with functioning hrs	60	1	5	3.8	1.0
There is adequate overall productive maintenance training conducted for all employees covering the overview of TPM idea, redefined roles of operators and upkeep individuals and also anticipated advantages	60	1	5	3.9	1.0
There are clear system for taping maintenance performance metrics consisting of mean time to repair as well as mean time between failing so regarding check manufacturing performance of makers and also take action to avoid reoccurrence	60	1	5	3.7	1.0
The company uses pareto charts that include why analysis so as to eliminate productivity losses	60	1	5	3.7	1.1

**Source: Researcher (2021)**

Majority of respondents agreed that the machines available in this company can effectively process tea as shown by mean of 3.5 and SD1.4. It was also indicated that tea processing equipment are adequately maintained and thus experiences less breakdowns as shown by mean of 3.6 and SD 1.3. Most tea processing firms also agreed that the senior management devotes time and allocates sufficient resources for total productive maintenance purposes as shown by mean of 3.7 and SD 1.2. It was also agreed by majority of tea processing firms agreed that there is adequate demonstration of TPM master plan that comprises goals, action plan by the management of this company (mean of 3.8 and SD 1.0).

Further, majority of the tea processing firms agreed that the company production lines run uninterrupted through working hours as shown by mean of 3.8 and SD 1.0. Likewise, it was

noted that there is an elaborative process to enhance skill development through creative thinking in this company as indicated by mean of 3.8 and SD 1.1. majority of the tea processing firms further agreed that there is adequate total productive maintenance training conducted for all workers covering the overview of TPM idea, redefined roles of drivers as well as maintenance people and expected benefits as shown by mean of 3.9 SD 1.0. Regarding the statement that there are clear mechanism for tape-recording maintenance efficiency metrics consisting of mean time to fix as well as mean time in between failure so as to keep an eye on manufacturing efficiency of equipments as well as act to stop reoccurrence, majority of the tea processing companies were in agreement as suggested by mean of 3.7 and also SD 1.0. Lastly, most of respondents remained in agreement that the firm makes use of pareto charts that consist of why evaluation so as to eliminate productivity losses as indicated by mean of 3.7 and also SD 1.1.

Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan. Total productive maintenance systems tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware. Thus, equipment effectiveness is a reliable way of analyzing equipment efficiency by taking into account the downtime losses, equipment failings, arrangement and adjustments, rate losses, idling and small standstills and flaw losses. This guarantees minimal breakdowns enhancing efficiency. The results concur with the study by Mesfin (2013) who undertook a research on practice and challenges of quality management system in Chewaka Tea Estate and found that total productive maintenance systems ensures that the machines and other equipment are operating optimally for optimum tea production. Also, Ondego (2016) investigating the linkage between lean assembling practices and task execution

indicated that total productive maintenance systems led to increased tea production via enhanced working hours and reduced machine breakdowns.

#### 4.2.5 Quality Cycles

Quality cycles are critical component of Kaizen system in tea production. The study investigated how quality cycles influence the competitiveness of tea produce. Table 17 shows the descriptive summary statistics of quality cycles.

**Table 17: Descriptive Summary Statistics on Quality cycles**

Quality cycles	N	Min	Max	Mean	SD
There is continuous knowledge sharing among employees to improve quality of tea produce	60	1	5	3.6	1.1
Creativity in tea blending is encouraged in the firm	60	1	5	3.7	1.2
Tea product design is continuously improved to meet customers desires	60	1	5	3.8	1.0
Tea products are systematically implemented to the standards	60	1	5	3.7	1.1
Process design is continuously improved in order to enhance quality of tea products	60	1	5	3.8	1.1
There is periodic tea product assessment to check and monitor quality of tea produced	60	1	5	3.8	1.0
Benchmarking is done to compare quality of tea products among firms	60	1	5	3.7	1.2
Process-oriented thinking is conducted enhance process efficiency in producing tea products	60	1	5	3.7	1.0

1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree

**Source: Researcher (2021)**

Majority of respondents agreed that there is continuous knowledge sharing among employees to improve quality of tea produce as shown by mean of 3.6 and SD1.1. It was agreed that creativity in tea blending is encouraged in the firm as shown by mean of 3.7 and SD 1.2. Respondents agreed that tea product design is continuously improved to meet customer's desires as shown by mean of 3.8 and SD 1.0.

Further, most respondents agreed that tea products are systematically implemented to the standards as shown by mean of 3.7 and SD 1.1. Likewise, it was established that process design is continuously improved in order to enhance quality of tea products as indicated by mean of 3.8 and SD 1.1. Further, most tea processing firms agreed that there is periodic tea product assessment to check and monitor quality of tea produced as indicated by mean of 3.8 SD 1.0. Majority of respondents also agreed that benchmarking is done to compare quality of tea products among firms as implied by mean of 3.7 and SD 1.2. Regarding process-oriented thinking is conducted enhance process efficiency in producing tea products, majority of respondents agreed as shown by mean of 3.7 SD 1.0.

Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality. Quality cycle's emphasis for precise tea plucking to ensure that quality tea is harvested for final processing. In addition, quality cycles during tea production advocates for keen observance of conditions in which tea is planted, the kind of input used, transportation, processing and subsequent packaging to ensure that tea quality is maintained for enhanced market competitiveness. A declining quality of tea results to low returns to producers and other industry players. The results agree with Nath and Ajoy (2016) who conducted a study on productivity improvement of black tea production and indicted that quality factor is critical in the production of tea. Likewise, Kemunto (2015) in a study to see to what extent operations management practices are being undertaken focusing Kenya's tea industry revealed that continuous improvement positively influences performance of tea processing firms.

#### 4.2.6 Organizational Dynamic Capabilities

The study investigated the organizational dynamic capability as a component of Kaizen system and whether it influences performance of tea processing firms. Table 18 shows the descriptive summary statistics of organizational dynamic capability.

**Table 18: Descriptive Summary Statistics on Total productive maintenance systems**

<b>Organizational Dynamic Capability</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
The firm typically examine tea growth procedure to ensure they remain in line with clients' preference	60	1	5	3.8	1.1
The company has reliable routines to determine, value and also impart brand-new details as well as expertise on its employees	60	1	5	3.7	1.1
The company is able to tap employees' talents and use them to enhance its operations	60	1	5	3.8	0.9
The firm is able to redeploy and reconfigure its resource to address customer desires and maintain competitive advantage in the sector	60	1	5	3.9	1.0
The company has adequately invested in research and development so as to promote innovation that enhances firms' operations.	60	1	5	3.9	0.9
Employees are assigned tasks that correspond to their task-relevant knowledge and skills.	60	1	5	3.8	0.9
There is continuous renewal and modification aimed at maintaining competitiveness of the company.	60	1	5	3.7	1.1
The company sufficiently coordinates its activities so as to enhance aggregate operational efficiency	60	1	5	3.8	1.1

**Source: Researcher (2021)**

Majority of respondents agreed that the company often review tea development process to ensure they are in line with customers' taste as shown by mean of 3.8 and SD 1.1. It was also indicated that the tea process companies have effective routines to identify, value and impart new information and knowledge on its employees as shown by mean of 3.7 and SD 1.1. Most tea processing firms also agreed that the tea process companies are able to tap employees' talents and use them to enhance its operations as shown by mean of 3.8 and SD 0.9. It was also agreed by majority of tea processing firms that the firm is able to redeploy and

reconfigure its resource to address customer desires and maintain competitive advantage in the sector (mean of 3.9 and SD 1.0).

Further, majority of the tea processing firms agreed that the tea processing firms have adequately invested in research and development so as to promote innovation that enhances firms' operations as shown by mean of 3.9 and SD 0.9. Likewise, it was noted that employees are assigned tasks that correspond to their task-relevant knowledge and skills as indicated by mean of 3.8 and SD 0.9. Majority of the tea processing firms further agreed that there is continuous renewal and modification aimed at maintaining competitiveness of the company as indicated by mean of 3.7 and SD 1.1. Regarding the statement that the company sufficiently coordinates its activities so as to enhance aggregate operational efficiency, majority of the tea processing firms were in agreement as indicated by mean of 3.8 and SD 1.1. Total productive maintenance guarantees on a safe-work environment which increases productivity thus reducing cycle times, up time increment and flaw elimination. TPM focuses on improving equipment quality. It seeks to maximize equipment systematically through preventive maintenance hence increasing the lifespan of equipment.

In the context of the study, organizational dynamic capabilities entail the capability of the tea processing efficiently utilize resources for the purpose of achieving its firm strategic goals that include improved productivity and quality of tea. The results concur with Rehman and Saeed (2015) studied dynamic abilities and firm execution and found that employee competence have positive effect on the relationship of authoritative execution and dynamic capacities. Nyangi, Wanjere, Egessa and Wekesa (2015) in a study on organizational capabilities and performance of sugar companies in Kenya established that resource configuration influences firm productivity. However, the study by Sungyuan and Ussahawanitchakit (2015) on dynamic organizational capability and firm success in Thailand

indicated that the relationships were significant with its consequences and antecedents, but the moderating effects were not significant with dynamic organizational capability.

#### 4.2.7 Performance of Tea Processing Firms

The study investigated the performance of tea processing firms after the introduction of Kaizen system. Key performance measures were profitability, Annual sale volume of tea, tea market prices at the auction market, quality of tea produced in this company and the turnaround time in processing raw tea. Table 19 shows the descriptive summary statistics of performance of tea processing firms.

**Table 19: Descriptive Summary Statistics on Performance of Tea Processing Firms**

<b>Performance indicators</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
Profitability of the company	60	1	5	3.8	1.1
Annual sales volume of tea sold by the company	60	1	5	3.7	1.1
Tea market prices at the auction market	60	1	5	3.9	0.9
Quality of tea produced in this company	60	1	5	3.7	1.2
The turnaround time in processing raw tea	60	1	5	3.7	1.2

1: Greatly declined; 2: declining; 3: stagnated; 4: Improved; 5: Greatly improved.

**Source: Researcher (2021)**

Majority of respondents agreed that profitability of the company greatly improved after introduction of Kaizen as shown by mean of 3.8 and SD1.1. It was also indicated that annual sales volume of tea sold by the company greatly improved after introduction of Kaizen as shown by mean of 3.7 and SD 1.1. The tea processing firms also indicated that tea market prices fetched good prices at the auction market as shown by mean of 3.9 and SD 0.9. Further, quality of tea produced in the company greatly improved as shown by mean of 3.7 and SD 1.2. It was also noted that the turnaround time in processing raw tea improved as shown by mean of 3.7 and SD 1.2 after introduction of Kaizen system.

### 4.3 Correlation Analysis

This section presents results derived from correlation and multiple linear regression analysis. Correlation analysis was conducted to ascertain connection between Kaizen systems (quality cycles, teamwork, personal discipline and total productive maintenance systems) and performance of tea processing firms in Kenya. Correlation is the procedure used to discover the nature of strength of an organization in between two or even more variables. Correlation analysis can establish the degree, direction and strength of that connection. Correlation analysis depicts correlation coefficient with values which may assume -1 to +1. A value of +1 suggests two variables are perfectly connected in a favorable (straight) way, -1 shows two variables are perfectly related in an unfavorable [straight] way, while 0 shows there is no straight connection between variables (Gogtay & Thatte, 2017).

**Table 20: Multiple Correlation Matrix**

Variables		Performance of tea processing firms	Quality cycles	Teamwork	Personal discipline	Total productive maintenance systems	Organizational dynamic capability
Performance of tea processing firms	Pearson Correlation	1.000					
	Sig. (2-tailed)						
Quality cycles	Pearson Correlation	.431**	1.000				
	Sig. (2-tailed)	0.000					
Teamwork	Pearson Correlation	.350**	0.182	1.000			
	Sig. (2-tailed)	0.005	0.192				
Personal discipline	Pearson Correlation	.441**	.375**	0.124	1.000		
	Sig. (2-tailed)	0.000	0.004	0.492			
Total productive maintenance systems	Pearson Correlation	.411**	0.116	0.205	0.237	1.000	
	Sig. (2-	0.003	0.511	0.316	0.071		

	tailed)						
Organizational dynamic capability	Pearson Correlation	.501**	.323*	0.245	0.220	0.312	1.000
	Sig. (2- tailed)	0.000	0.012	0.071	0.121	0.135	

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Source: Researcher (2021)**

The first variable of the study was quality cycles. The study had sought to determine the influence of quality cycles on performance of tea processing firms in Kenya. The results indicated existence of a fairly strong positive and significant association between quality cycles and performance of tea processing firms in Kenya with ( $r=.431$ ,  $P=0.000$ ) at 95% confidence level. The results imply that quality cycles and performance of tea processing firms in Kenya move in the same direction, that is as level of quality cycles increases, performance of tea processing firms in Kenya also increases and vice versa. Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality. Quality cycles emphasis for precise tea plucking to ensure that quality tea is harvested for final processing. In addition, quality cycles during tea production advocates for keen observance of conditions in which tea is planted, the kind of input used, transportation, processing and subsequent packaging to ensure that tea quality is maintained for enhanced market competitiveness. The results agree with Nath and Ajoy (2016) who conducted a study on productivity improvement of black tea production and indicted that quality factor is critical in the production of tea. Likewise, Kemunto (2015) in a study to see to what extent operations management practices are being undertaken focusing Kenya's tea industry revealed that continuous improvement positively influences performance of tea processing

firms. As indicated by Terziovski (2011), ceaseless improvement involves assortment of exercises that establish a procedure expected to accomplish execution improvement.

The second specific goal was to examine the impact of synergy on performance of tea handling companies in Kenya. Based on correlation outcomes, there was a rather strong favorable and also significant association between teamwork and also performance of tea processing firms in Kenya with ( $r=.350$ ,  $P= 0.005$ ) at 95% self-confidence degree. The outcomes indicate that synergy among employees in the tea sector as well as performance of tea handling companies in Kenya relocate the same instructions, that is as workers work in group, efficiency of tea handling firms in Kenya additionally boosts as well as the other way around. Team work is the capability to collaborate in the direction of a typical vision.

Teamwork results to task efficiency. Collaboration makes more superb outcomes that are progressively efficient, sharp as well as effective equally as quicker. Teamwork has the capability to make it feasible for the members of the team to have a higher degree of psychological security and security, self-confidence and also the capability to plan as well as choose with others positively.

Furthermore, it assists in producing a healthy and balanced workplace with useful programs, imaginative tasks, favorable approaches and also values. The aspect of teamwork is also viewed as necessity in the implementation of Kaizen system in the tea industry. The results concur with Golas, *et al.* (2016) who did a study on the influence of teamwork on firm production and found that team work is important ingredient among workers as it promotes joint focus on the goals of the organization. Likewise, Ranaweera (2015) researching on the viability of 5S utilization in tea sector found that teamwork has positive impact on overall productivity of tea producing firms.

The third objective was to establish the impact of individual technique on efficiency of tea handling firms in Kenya. Outcomes of relationship evaluation revealed a rather solid favorable as well as considerable organization in between individual discipline and efficiency of tea processing companies in Kenya with ( $r=.441$ ,  $P= 0.000$ ) at 95% confidence degree. The results imply that individual self-control among employees in the tea industry and also efficiency of tea handling companies in Kenya move in the same instructions, that is as individual technique among workers in the tea handling companies boosts, performance of tea processing companies in Kenya likewise raises and also vice versa. Discipline is crucial not only for the success of the general life of a person but for the success and progression of success of a company. Proper management of discipline leads to ready teamwork as well as observation of the rules established to achieve business objectives and purposes.

Because of personal discipline, persons within the firm involved are committed to their work and resources, processes are fully exploited for maximum yield and efficiency. Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations. The results agree with the findings by Belekoukias, *et al.* (2014) who did an investigation on role of lean techniques and devices on execution exhibition of assembling associations and established that just in time has great influence on task execution in a firm. In the same line, Ali (2017) in a study on effect of the commitment of management to the relationship between kaizen and competitive advantage, found that employee decline in terms of time and task accomplishment positively impacts firm's productivity and competitiveness advantage.

The fourth objective of the study was to examine the influence of total productive maintenance systems on performance of tea processing firms in Kenya. Results indicated existence of a fairly positive and significant association between total productive maintenance systems and performance of tea processing firms in Kenya with ( $r=.411$ ,

P=0.003) at 95% confidence level. The results imply that total productive maintenance systems in the tea sector and performance of tea processing firms in Kenya move in the same direction, that is as total productive maintenance systems improve in the tea processing firms increases, performance of tea processing firms in Kenya also increases and vice versa. Total productive maintenance is a comprehensive method which guarantees that gear support is forward-thinking so as to accomplish immaculate generation. Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan. Total productive maintenance systems tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware.

This guarantees minimal breakdowns enhancing efficiency. The results concur with the study by Mesfin (2013) who undertook a research on practice and challenges of quality management system in Chewaka Tea Estate and found that total productive maintenance systems ensures that the machines and other equipment are operating optimally for optimum tea production. Also, Ondego (2016) investigating the linkage between lean assembling practices and task execution indicated that total productive maintenance systems led to increased tea production via enhanced working hours and reduced machine breakdowns.

The fifth objective was to establish the moderating role of organizational dynamic capability between Kaizen Systems and performance of tea processing firms in Kenya. Results indicated existence of a fairly positive and significant association between organizational dynamic capability and performance of tea processing firms in Kenya with ( $r=.501$ ,  $P=0.000$ ) at 95% confidence level. The results imply that organizational dynamic capability in the tea sector and performance of tea processing firms in Kenya move in the same direction, that is as organizational dynamic capability improve in the tea processing firms increases, performance of tea processing firms in Kenya also increases and vice versa. Organizational

dynamic capabilities in terms of configuration of firm financial resources and human resources forms important ingredient in enhanced firm production and competitiveness.

The implementation of dynamic capabilities involves repeated cycles of organizational learning. In the context of the study, organizational dynamic capabilities entail the capability of the tea processing efficiently utilize resources for the purpose of achieving its firm strategic goals that include improved productivity and quality of tea. The results concur with Rehman and Saeed (2015) studied dynamic abilities and firm execution and found that employee competence have positive effect on the relationship of authoritative execution and dynamic capacities. Nyangi, Wanjere, Egessa and Wekesa (2015) in a study on organizational capabilities and performance of sugar companies in Kenya established that resource configuration influences firm productivity.

#### **4.4 Assumption Tests**

The subsequent assumptions of the study were tested. Diagnostics are undertaken before running any model to ensure that correct model coefficients are attained.

##### **4.4.1 Normality Test**

Parametric tests such as relationship and multiple regression analysis require that error term in information is generally distributed. When the error term is not generally dispersed it might distort the results of any additional evaluation. Preliminary analysis to analyze if the data fits a regular distribution was done. The test was checked employing Shapiro-Wilk (Saunders & Lewis, 2012). Shapiro-Wilk is appropriate when the number of observations is less than 100 (Razali & Wah, 2011). The null hypothesis that states that data is normal is not rejected if the K-S values are larger than 0.05 (Park, 2015).

**Table 21: Tests of Normality**

Variable	Shapiro-Wilk		
	Statistic	df	Sig.
Teamwork	.871	60	.061
Personal discipline	.911	60	.082
Total productive maintenance systems	.955	60	.064
Quality cycles	.968	60	.902
Organizational dynamic capability	.948	60	.345

\* This is the true significance's lower bound.

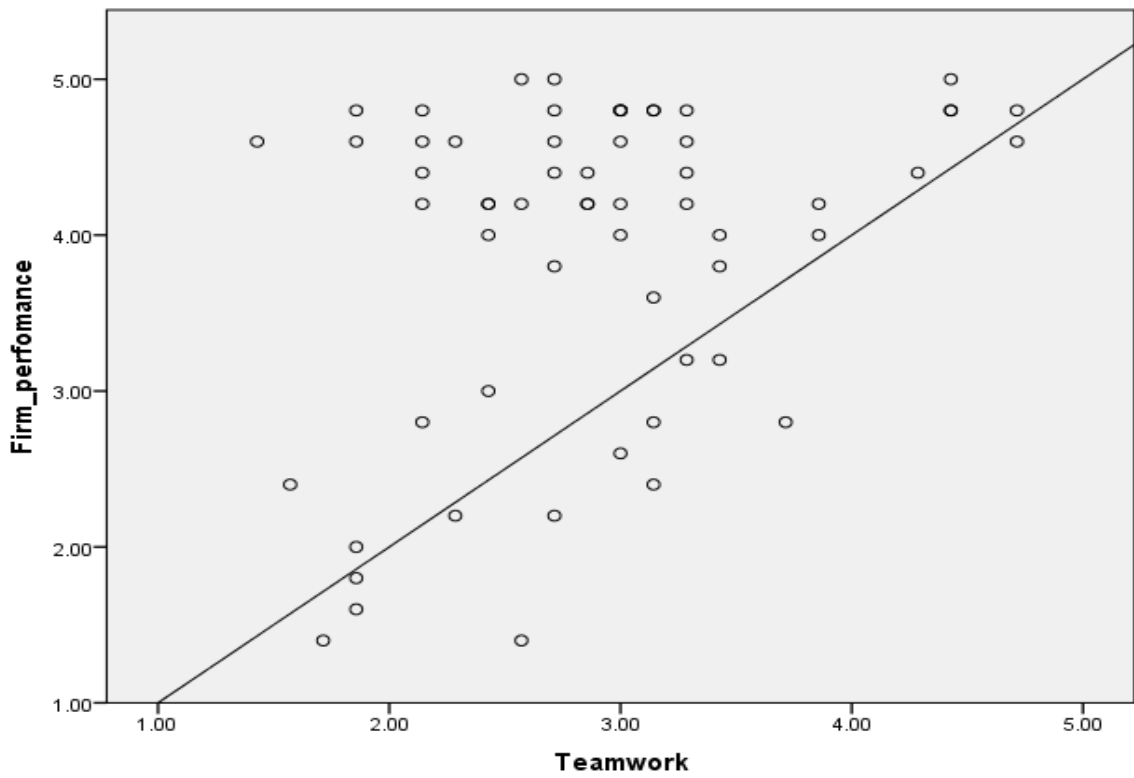
a. Lilliefors Significance Adjustment

**Source: Researcher (2021)**

The data in Table 21 reveals the outcomes of the Shapiro-Wilk examination. The outcomes acquired as received in Table 12 indicate that the information in connection with each variable is normally dispersed as the significance worth in all instances is above 0.05. This implies the information appropriates for analysis using the connection and regression analysis.

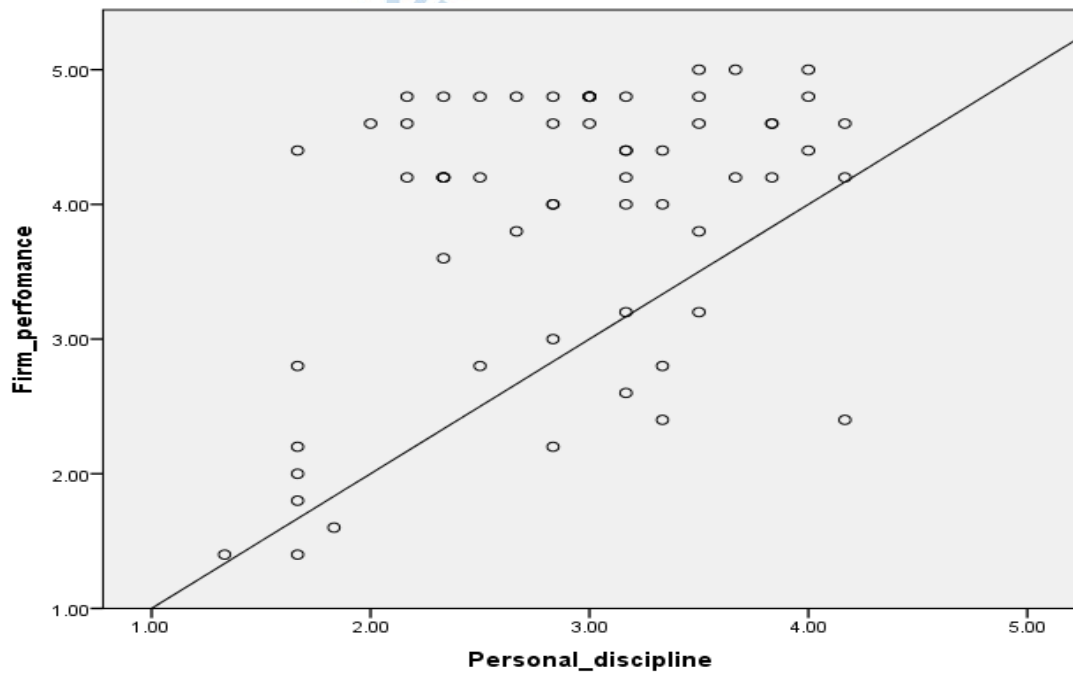
#### **4.4.2 Linearity Test**

Scatterplots were employed to check the linearity of data prior running our model. Linearity tests helps to ensure that data under investigation observes a straight line across the observation under study. The scatter plot tests the linkage existing between predictor and outcome variables. Regression designs can only precisely approximate the connection in between dependent and also independent variables if the connection is straight (Osborne & Seas, 2002). The scatter story of the connection in between the dependent and also independent variables is shown in Figures 6-10.



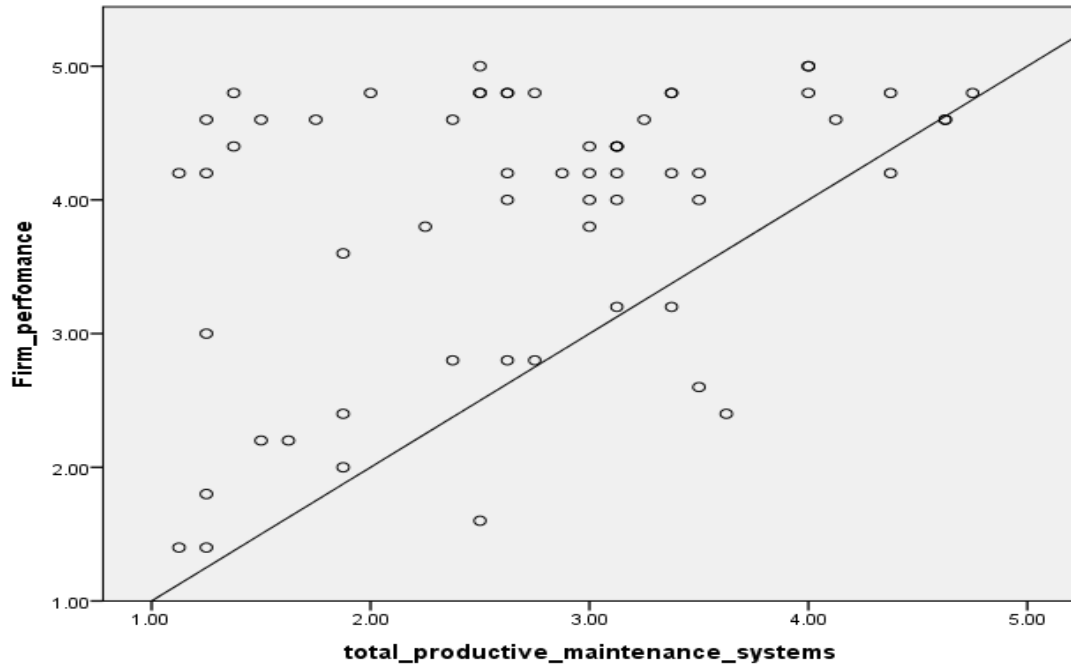
**Figure 6: Scatter Plot for the Relationship between Teamwork and Performance of tea processing firms**

Source: Researcher (2021)



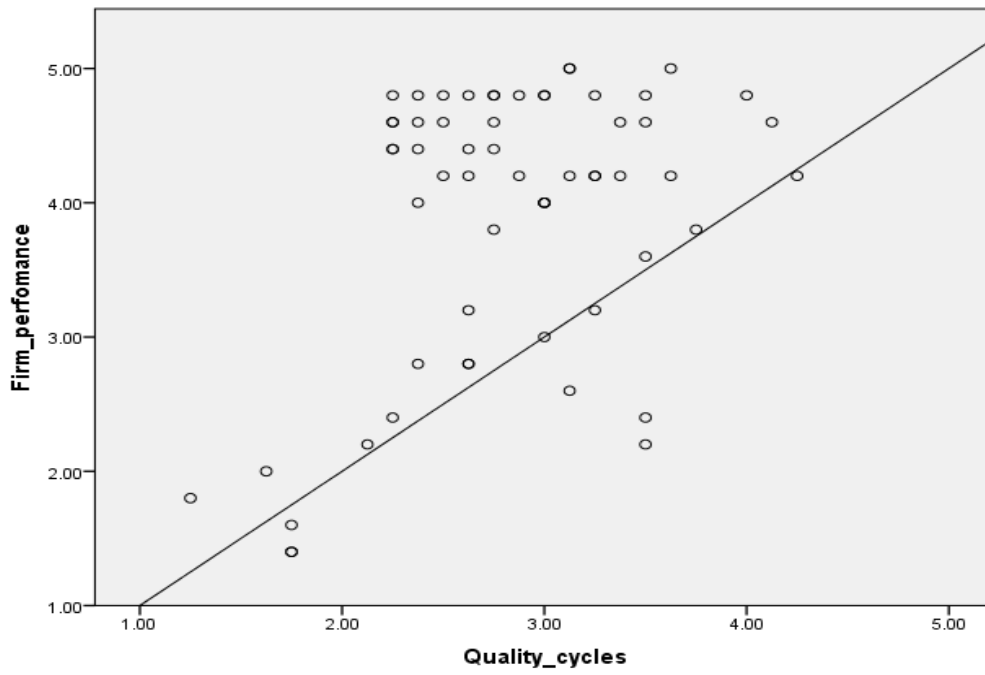
**Figure 7: Scatter Plot for the Relationship between personal discipline and Performance of tea processing firms**

Source: Researcher (2021)



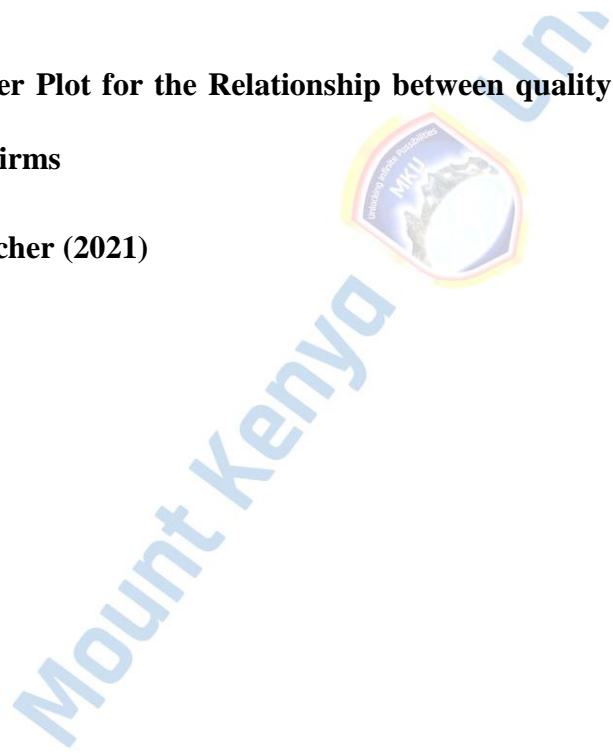
**Figure 8: Scatter Plot for the Relationship between total productive maintenance systems and performance of tea processing firms**

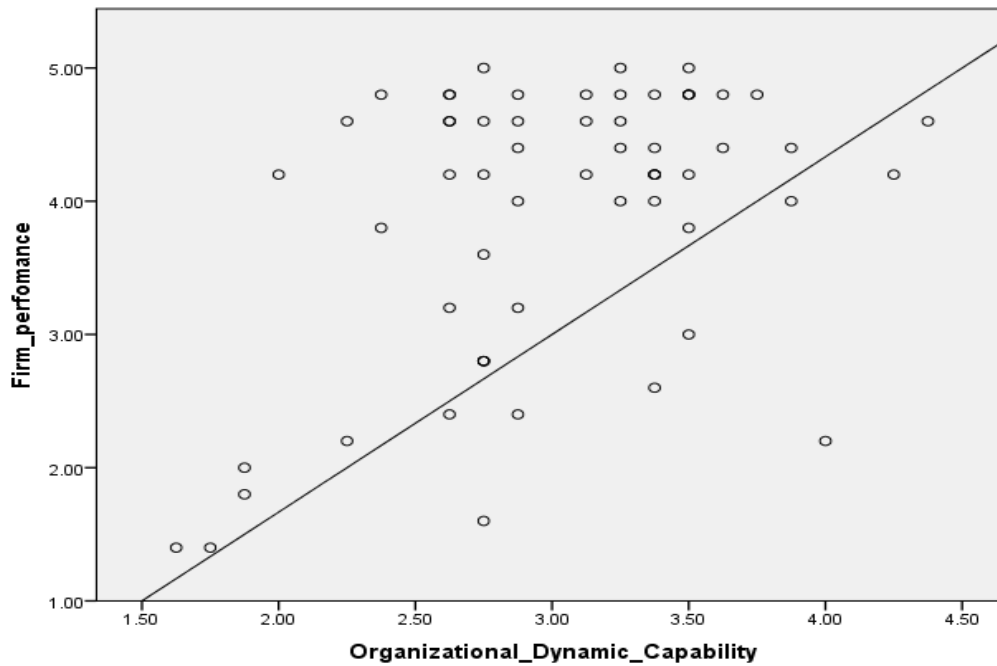
Source: Researcher (2021)



**Figure 9: Scatter Plot for the Relationship between quality cycles and performance of tea processing firms**

Source: Researcher (2021)





**Figure 10: Scatter Plot for the Relationship between organizational dynamic capability and performance of tea processing firms**

**Source: Researcher (2021)**

The linearity examination suggests the partnership in between depended and also independent variables. For straight regression to be carried out, the partnership in between the independent and depended variables requires to be directly. The linearity presumption can best be examined with scatter stories along with graphs. The linearity test results program that the data collection was showing direct pattern thus direct regression modeling could be conducted.

As shown the scatter stories in Number 3-7 there was a direct as well as the positive partnership between team effort and also performance of tea processing companies along with individual self-control and efficiency of tea processing companies. There was a direct and positive relationship in between total efficient maintenance systems and performance of tea processing companies, a direct positive connection in between high quality cycles and

also performance of investment firms. Similarly, straight positive connection was displayed between organizational vibrant capacity and performance of investment firms. Direct regression modeling can thus be carried out to figure out the impact of Kaizen Solutions on firm performance of tea handling companies in Kenya under moderating impact of business dynamic capability.

#### 4.4.3 Test for Multicollinearity

Multicollinearity is defined as a high level of association between dependent and independent variables. Lack of a faultless multicollinearity leads to infinite standards errors and indeterminate regression coefficients whereas presence of imperfect multicollinearity causes large standard errors (William *et al.* 2013). Large standard errors affect the accuracy of the null hypothesis thus a researcher either accepts or rejects it. Besides, during estimation it is important to note the severity of multicollinearity as it can cause changes in results. Presence or absence of multicollinearity was checked by employing VIF where  $VIF \geq 10$  denotes presence of multi-collinearity (Field, 2013).

**Table 22: Multicollinearity Results**

Variables	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Teamwork	1.255	3.132
Personal discipline	0.941	2.891
total productive maintenance systems	1.321	3.007
Quality cycles	1.111	2.644

**Source: Researcher (2021)**

The results of the test of multicollinearity are presented in Table 22. Collinearity data suggested a Difference Rising cost of living Element (VIF)  $<10$  for all the variables hence an indication that the variables were not extremely correlated, for this reason no existence of multicollinearity. The VIF for team effort was  $3.132 < 10$ , personal technique  $2.891 < 10$ ,

overall productive maintenance systems  $3.007 < 10$  and top-quality cycles  $2.644 < 10$ . This is an indicator of the suitability of the variables for several regression evaluation.

#### 4.4.4 Heteroscedasticity

Heteroscedasticity was examined by making use of Breusch-Pagan/Godfrey technique. Running a regression model without audit for heteroscedasticity might bring about biased criterion price quotes (Koenker, 1981). Table 23 shows the results obtained when the Breusch Pagan examination.

**Table 23: Results of Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity**

---

$H_0$ : Constant variance
$\chi^2(1) = 0.032$
$\text{Prob} > \chi^2 = 0.756$

---

Null hypothesis; error variance is homoskedastic. The results in Table 23 show that the p value is more than 0.05 (0.756) therefore the null hypothesis set up for this examination is supported. Rejecting null hypothesis means that error variance heteroscedastic and this phenomenon may call for the prediction of FGLS model.

#### 4.5 Regression Analysis

The section presents the regression analysis of the study. Key statistical vales include model summary, analysis of variance tests and regression coefficients.

#### 4.5.1 Quality Cycles and Performance of Tea Processing Firms in Kenya

**Table 24: Model Fitness: Quality cycles and performance of tea processing firms in Kenya**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430 <sup>a</sup>	.185	.171	.94035

a. Predictors: (Constant), Quality cycles

**Source: Researcher (2021)**

Results of regression indicated a coefficient of determination R Square of .185, R of .427<sup>a</sup> and Adjusted R Square of 0.168 which is significant. The coefficient of determinant (R-squared) of .182 presents 18.5% of the total variation in performance of tea processing firms in Kenya is explained by quality cycles. On the other hand, the Adjusted R Square of .171 shows that quality cycles, in exclusion of constant variable, explains the changes in performance of tea processing firm by 17.1%. The remaining (81.5%) can be attributed to other factors not included in the regression model under investigation. The average deviation of the independent variable from line of the best fit is (.94002). Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality. Quality cycles emphasis for precise tea plucking to ensure that quality tea is harvested for final processing. In addition, quality cycles during tea production advocates for keen observance of conditions in which tea is planted, the kind of input used, transportation, processing and subsequent packaging to ensure that tea quality is maintained for enhanced market competitiveness. A declining quality of tea results to low returns to producers and other industry players.

**Table 25: ANOVA: Quality cycles and performance of tea processing firms in Kenya**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.429	1	11.429	12.934	.000 <sup>b</sup>
	Residual	49.231	58	.884		
	Total	62.679	59			

a. Dependent Variable: Firm performance  
b. Predictors: (Constant), Quality cycles

**Source: Researcher (2021)**

The results indicated that the model was statistically considerable in explaining the impact of high quality cycles on performance of tea processing firms in Kenya as suggested by a p-value = 0.000; F (1, 58) =12.934. The determined p-value of .001 which is less than the critical value of 0.05 bring about the rejection of the void theory and also acceptance of the alternative hypothesis that there is no substantial partnership in between top quality cycles as well as performance of tea handling firms. Quality cycles are important in enhancing the competitiveness of Kenyans tea enhancing overall performance of tea sector.

**Table 26: Regression Coefficient: Quality cycles and performance of tea processing firms in Kenya**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.905	.569		3.351	.001
	Quality cycles	.707	.197	.427	3.596	.001

a. Dependent Variable: Firm performance

**Source: Researcher (2021)**

Performance of tea processing firms = 1.905+ .707X<sub>1</sub>

Where X<sub>1</sub>= Quality cycles

The regression coefficient results indicated that quality cycles positively and significantly affects performance of tea processing firms in Kenya ( $\beta=.707$ ,  $p=0.001$ ). The coefficient

results denote that a unit change in quality cycles results to an increase in performance of tea processing firms in Kenya by .707 units. Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality.

#### 4.5.2 Teamwork

**Table 27: Model Fitness: Effect of Teamwork on performance of tea processing firms**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.346 <sup>a</sup>	.120	.105	.97527

a. Predictors: (Constant), Teamwork

**Source: Researcher (2021)**

The model fitness results show a coefficient of determination R Square of .120, R of .346<sup>a</sup> and Adjusted R Square of 0.105. The model indicates that teamwork explains 12.0% of the variation in performance of tea processing firms in Kenya. This means 12.0% of performance of tea processing firms is affected by teamwork. The Adjusted R Square of .105 shows that teamwork in exclusion of constant variable, explains the variations in the performance of tea processing firms in Kenya by 10.5%. The remaining 89.5% can be explained by the various other factors which are not included in the regression model under investigation.

The average deviation of the independent variable from line of the best fit was (.97527). Team effort performance in a company can be influenced by inner and outside factors. Some external factors consist of; political, financial, social and technological facets whereas interior elements consists of; management style, variety (society, skill as well as personalities), communication as well as cohesiveness. In Kaizen operations, employees' experiences, and learnt expertise are amassed and shared with the rest of the team (Macpherson et al., 2015). The success of Kaizen is solely based on the sharing of workers' expertise, experiences,

and/or capabilities. Teamwork promotes higher quality outcome that are well-thought of, faster, and more efficient. Notably, when a team works as a unit they accomplish more than what one member would accomplish alone.

**Table 28: ANOVA: Teamwork and performance of tea processing firms**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.513	1	7.513	7.899	.007 <sup>b</sup>
	Residual	55.166	58	.951		
	Total	62.679	59			

a. Dependent Variable: Firm performance

b. Predictors: (Constant), Teamwork

**Source: Researcher (2021)**

The ANOVA results show that the model was statistically significant in explaining the influence of teamwork on performance of tea processing firms in Kenya in Kenya as indicated by a p-value =0.007; F (1, 58) =7.899. Teamwork was acknowledged by participants to be essential in enhancing tea production. Teamwork results to task efficiency. Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker. Teamwork has the ability to enable the participants of the team to have a higher degree of psychological protection, self-esteem as well as the ability to strategy and determine with others positively. Likewise, it helps in developing a healthy and balanced work environment with workable agendas, innovative tasks, positive approaches and values.

**Table 29: Regression Coefficient for Teamwork**

Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	2.579	.488		5.286	.000
	Teamwork	.458	.163	.346	2.811	.007

a. Dependent Variable: Performance of tea processing firms

**Source: Researcher (2021)**

Performance of tea processing firms = 2.579+.458X<sub>2</sub>

Where X<sub>2</sub>= Teamwork

The regression coefficient results indicated that teamwork positively and significantly affect performance of tea processing firms in Kenya. ( $\beta=.458$ ,  $p=.007$ ). This implies that a unit change in teamwork leads to a positive change in performance of tea processing firms by .458 units. Teamwork results to task efficiency. Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker.

#### 4.5.3 Personal Discipline and Performance of Tea Processing Firms

**Table 30: Model Fitness: Personal discipline and Performance of tea processing firms**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.436 <sup>a</sup>	.190	.176	.93556

a. Predictors: (Constant), Personal discipline

**Source: Researcher (2021)**

The model fitness results registered the coefficient of determination R Square of .190, R of .436<sup>a</sup> and Adjusted R Square of 0.176. The model revealed that personal discipline explains 19.0% of the variation in performance of tea processing firms in Kenya. This means 19.0 percent of performance of tea processing firms in Kenya is affected by personal discipline. The results in addition show that the adjusted R squared is .176 implying that; personal discipline in exclusion of constant variable explains performance of tea processing firms in Kenya by 17.6%. The remaining (82.4%) can be explained by the other factors not included in the regression model under investigation. The average deviation of the independent variable from line of the best fit is (.93556). Personal discipline entails a guiding set of ideologies and philosophies that incorporate the integral management systems, current upgrading efforts, and technical equipment among workers. Indicators for personal discipline at work entail timeliness in task completion, efficiency and delivery (Mackelprang & Nair,

2010). This method emphasizes on long-term gains as a result of task completion, and a constant development to structures, programs and produces. It has a significant influence on quality control, procuring tasks, and work culture with an idea that includes cost, meeting delivery schedules, employee's empowerment and expertise improvement, supplier relationships and production of new merchandises.

**Table 31: ANOVA: Personal discipline and Performance of tea processing firms**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.914	1	11.914	13.612	.000 <sup>b</sup>
	Residual	50.765	58	.875		
	Total	62.679	59			

a. Dependent Variable: Performance of tea processing firms

b. Predictors: (Constant), Personal discipline

**Source: Researcher (2021)**

The results show that the model was statistically significant in explaining the influence of personal discipline on performance of tea processing firms in Kenya as indicated by  $F(1, 58) = 13.612, P < 0.000$ . This means that personal discipline is a satisfactory predictor explaining performance of tea processing firms. Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations. Discipline is crucial not just for the success of the general life of a person but also for the success and progression of an organization. Proper management of technique leads to prepared collaboration and observation of the regulations established to attain business goals and also purposes.

**Table 32: Regression Coefficient: Personal discipline and Performance of tea processing firms**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.148	.491		4.374	.000
	Personal discipline	.604	.164	.436	3.689	.000

a. Dependent Variable: Performance of tea processing firms

**Source: Researcher (2021)**

$$\text{Performance of tea processing firms} = 2.148 + .604X_3$$

Where  $X_3$  = Personal discipline

The regression coefficient results show that personal discipline positively and significantly influences performance of tea processing firms in Kenya. ( $\beta = .604$ ,  $p = 0.000$ ). This implies that a unit change in personal discipline leads to a positive change in performance of tea processing firms in Kenya by .604 units. Personal discipline refers to an incorporated, problem-solving management method directed towards improvement of quality and suitable supply, manufacture and distribution processes. Because of personal discipline, persons within the firm involved are committed to their work and resources, processes are fully exploited for maximum yield and efficiency.

#### **4.5.4 Total Productive Maintenance Systems and Performance of Tea Processing Firms**

The study sought to examine the influence of total productive maintenance systems on performance of tea processing firms in Kenya. This was examined using model fitness, ANOVA results and regression coefficients.

**Table 33: Model Fitness: Total productive maintenance systems and performance of tea processing firms in Kenya**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407 <sup>a</sup>	.166	.151	.94951

a. Predictors: (Constant), Total productive maintenance systems

**Source: Researcher (2021)**

Results of regression indicated a coefficient of determination R Square of .166, R of .407<sup>a</sup> and Adjusted R Square of 0.151 which is significant. The coefficient of determinant (R-squared) .166 indicates that 16.6% of the total variation in performance of tea processing firms in Kenya is explained total productive maintenance systems. On the other hand, the Adjusted R Square of .151 shows that total productive maintenance system, in exclusion of constant variable, explains the changes in performance of tea processing firm by 15.1%. The remaining 84.9% can be attributed to other factors not included in the regression model under investigation. The average deviation of the independent variable from line of the best fit is (.94951).

Total productive maintenance is a well-characterized and sorted out program which disposes of the misfortunes brought about by separate of machines and hardware by recognizing and assaulting all reasons for gear separate downs and framework time. TPM is a savvy procedure through this strategy it is conceivable to keep up the plant, hardware and devices in gainful state in least expense. All around kept up machines prompts profitability. There is connection between cost of upkeep and cost of value. In any case, the expense of support after separate is no uncertainty more than the expense of upkeep whenever done occasionally. TPM assists with improving quality, conveyance calendar, and creation amount.

Total productive maintenance systems guarantees safe-workplace which thus prompts compelling improvement of efficiency that is decrease of process durations, up time addition

and imperfection disposal. TPM centers on improving hardware quality. TPM tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware. As indicated by Tripathi (2015) the workplace ought to depict the physical setting and culture favorable to firm growth. Every angle is bury connected and impacts on workers in general execution and profitability.

**Table 34: ANOVA: Total productive maintenance systems and performance of tea processing firms in Kenya**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.388	1	10.388	11.522	.001 <sup>b</sup>
	Residual	52.292	58	.902		
	Total	62.679	59			

a. Dependent Variable: Performance of tea processing firms

b. Predictors: (Constant), total productive maintenance systems

**Source: Researcher (2021)**

The results indicated that the version was statistically significant in explaining the impact of complete effective maintenance systems on performance of tea handling companies in Kenya as indicated by a p-value = 0.000;  $F(1,58) = 11.522$ . The  $P < 0.001$ , which is much less than the important value of 0.05 lead to turning down the void theory and accepting the alternate theory that there is no substantial partnership in between complete effective maintenance systems and performance of tea processing firms. Total productive maintenance is a comprehensive method which guarantees that gear support is forward-thinking so as to accomplish immaculate generation. This guarantees minimal breakdowns enhancing efficiency.

**Table 35: Regression Coefficient: Total productive maintenance systems and performance of tea processing firms in Kenya**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.742	.364		7.541	.000
1 Total productive maintenance systems	.424	.125	.407	3.394	.001

a. Dependent Variable: Performance of tea processing firms

**Source: Researcher (2021)**

$$\text{Performance of tea processing firms} = 2.742 + .424X_4$$

Where  $X_4$  = total productive maintenance systems

The regression coefficient results indicated that total productive maintenance systems positively and significantly affects performance of tea processing firms in Kenya ( $\beta=.424$ ,  $p=0.001$ ). The coefficient results denote that a unit change in total productive maintenance systems results to an increase in performance of tea processing firms in Kenya by .424 units. Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan. Total productive maintenance systems tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware.

#### **4.5.5 Overall Regression Model**

It was important for the study to conduct a multiple regression on all the variables to establish the joint effect of quality cycles, teamwork, personal discipline and total productive maintenance systems on performance of tea processing firms.

**Table 36: Goodness of fit Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.751 <sup>a</sup>	.564	.469	.87436

a. Predictors: (Constant), Quality cycles, total productive maintenance systems, Teamwork, Personal discipline

**Source: Researcher (2021)**

Results registered indicated that quality cycles, teamwork, personal discipline and total productive maintenance systems can satisfactory explain performance of tea processing firms. This was also reinforced by the R square of .564 and Adjusted R Square of 0.469. The R square of .564 indicates that quality cycles, teamwork, personal discipline and total productive maintenance systems explain 56.4% of the variations in the performance of tea processing firms, Kenya. In addition, the Adjusted R Squared of .469 indicates that the Kaizen Systems (quality cycles, teamwork, personal discipline and total productive maintenance systems) in exclusion of constant variable explained 46.9% of the variations in the performance of tea processing firms in Kenya. This therefore implies that the remaining (53.1%) was explained by other factors not included in the regression model under investigation. The average deviation of the independent variable from line of the best fit is .87436.

In production industries the simplification of production process is aimed at expanding productivity. The teamwork as suggested by Kaizen model seeks to reap benefits associated with employee morale through positive participatory management, team work and employee involvement. On the other hand, personal discipline attempts to integrate management skills, technical aspects and spirit of process improvement toward quality improvement of product and services. Total Productive Maintenance is a comprehensive system which guarantees that production facilities are exceptional to efficiently and effectively accomplish tasks. The TPM process is set to reduce frequent machine break downs, enhance speed and minimize

production defects and errors. The TPM mechanism is also set to improve safety of the production environment by limiting potential risks and accidents.

**Table 37: ANOVA Analysis for the Overall Model**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.304	4	6.261	17.640	.000 <sup>b</sup>
	Residual	6.345	55	.036		
	Total	37.648	59			

a. Dependent Variable: Performance of tea processing firms

b. Predictors: (Constant), Quality cycles, total productive maintenance systems, Teamwork, Personal discipline

**Source: Researcher (2021)**

The ANOVA results suggested that the total design was statistically significant. Therefore top quality cycles, team effort, personal technique and overall effective maintenance systems are great forecasters of efficiency of tea processing firms in Kenya. An F statistic of 17.640 and a p value (0.000) which was less than the conventional possibility of 0.05 declares this assertion. It is for that reason ended that high quality cycles, team effort, individual technique as well as overall efficient upkeep systems had substantial combined influence on performance of tea processing companies in Kenya.

**Table 38: Regression Coefficient Analysis of Overall Model**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.076	.632		.120	.923
	Teamwork	.335	.142	.251	2.359	.011
	Personal discipline	.415	.160	.244	2.594	.031
	Total productive maintenance systems	.511	.137	.298	3.730	.001
	Quality cycles	.461	.192	.259	2.401	.012

a. Dependent Variable: Performance of tea processing firms

**Source: Researcher (2021)**

The regression model therefore became;

$$\text{Performance of tea processing firms} = .076 + .335X_1 + .415X_2 + .511X_3 + .461X_4$$

Whereby

$X_1$  = Teamwork

$X_2$  = Personal discipline

$X_3$  = Total productive maintenance systems

$X_4$  = Quality cycles

The multiple regression coefficient results indicated that quality cycles had greatest positive and also significant relationship with performance of tea processing firms in Kenya where ( $\beta = .335$ ) as well as  $p = .011$ ). This was reinforced by a computed t-statistic of 2.359 which is more than the critical t-statistic of 1.96. Regression coefficient results disclosed that individual technique had 2nd greatest positive and also substantial connection with performance of tea handling firms in Kenya where ( $\beta = .415$  and also  $p = .031$ ). This was reinforced by a calculated t-statistic of 2.594 which is greater than the vital t-statistic of 1.96 further validating the insignificance.

Additionally the regression coefficient of teamwork had positive and also significant partnership with performance of tea handling firms in Kenya where ( $\beta = .511$  and  $p = .001$ ). This was sustained by a calculated t-statistic of 3.730 that is larger than the vital t-statistic of 1.96 additional showing relevance. Ultimately, the outcomes show that there was a positive as well as considerable partnership in between overall effective upkeep systems and efficiency of tea processing companies in Kenya where ( $\beta = .461$  and also  $p = .012$ ). This was

enhanced by a calculated t-statistic of 2.401 that was less than the critical t-statistic of 1.96, therefore further verifying the significance of the relationship.

Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan. Total productive maintenance systems tries to boost tea production by taking into consideration the downtime losses, equipment failures, setup and adjustments, speed losses, idling and minor stoppages and defect losses. This guarantees minimal breakdowns enhancing efficiency. The regression coefficient results imply that growth in quality cycles, personal discipline, teamwork and total productive maintenance systems by a unit, leads to an increase in performance of tea processing firms by .335, .415, .511 and .461 units respectively.

Kaizen systems aim to improve individual operations and processes by eliminating waste and improving their quality standards fostering firm performance through improved production. It is characterized by quality cycles, teamwork, personal discipline and total productive maintenance systems. The finding of this study agree with, *et al.* (2014) in a study on the role of Kaizen to improve productivity in India found that Kaizen system minimize human intervention, fasten task productivity, increase work efficiency, cut on tea processing costs, improve tea quality and tea productivity.

#### **4.5.6 Moderating Effect of Organizational Dynamic Capability Kaizen Systems and Performance of Tea Processing Firms**

##### **a) Goodness of Fit for the moderating effect of organizational dynamic capability**

The results in Table 39 shows the goodness of fit for the moderating effect of organizational dynamic capability on the relationship between Kaizen Systems and performance of tea processing firms.

**Table 39: Model Fitness for the moderating effect of organizational dynamic capability**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.783 <sup>a</sup>	.622	.583	.80991

a. Predictors: (Constant), Quality cycles, total productive maintenance systems, teamwork, personal discipline, quality cycles\*M, total productive maintenance\*M, teamwork\*M, personal discipline\*M

b. Dependent Variable: performance of tea processing firms

**Source: Researcher (2021)**

The R squared was used to check how well the model fitted the data after moderation. The results in Table 39 show that the R squared after moderation by organizational dynamic capability was .622 which was higher than the non-moderated effect of kaizen system on performance of tea processing firms that had an R-square of .564. This means that organizational dynamic capability moderates the relationship between Kaizen system and performance of tea processing firms in Kenya and explains 62.2% of the variations in the performance of tea processing firms in Kenya.

**b) ANOVA Analysis for the moderating effect of organizational dynamic capability**

The results presented in Table 40 shows the Analysis of Variance (ANOVA) results on the moderating effect of organizational dynamic capability.

**Table 40: ANOVA for the Moderating Effect of organizational dynamic capability**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	29.226	8	3.653	5.569	.000 <sup>b</sup>
1	Residual	33.453	51	.656		
	Total	62.679	59			

a. Dependent Variable performance of tea processing firms

b. Predictors: (Constant), Quality cycles, total productive maintenance systems, teamwork, personal discipline, quality cycles\*M, total productive maintenance\*M, teamwork\*M, personal discipline\*M

**Source: Researcher (2021)**

The results in Table 40 confirm that the moderating effect of organizational dynamic capability on the relationship between Kaizen Systems and performance of tea processing firms is significant and supported by ( $F=5.569$ ,  $p=0.000<0.05$ ). The results affirm the importance of organizational dynamic in influencing the operations of the tea processing firms. Organizational dynamic capabilities entail the capability of the tea processing efficiently utilize resources for the purpose of achieving its firm strategic goals that include improved productivity and quality of tea.

**c) Regression coefficients analysis for the moderating effect of organizational dynamic capability**

The results in Table 41 show the regression coefficients after moderating the relationship between Kaizen Systems and performance of tea processing firms using organizational dynamic capability.

**Table 41: Moderating effect of organizational dynamic capability**

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	.063	.652		.097	.923
Teamwork	.329	.138	.249	2.378	.021
Personal discipline	.332	.158	.239	2.097	.041
total productive maintenance systems	.305	.111	.293	2.753	.008
1 Quality cycles	.430	.186	.260	2.308	.025
Teamwork*M	.274	.136	.207	2.011	.049
Personal discipline*M	.311	.153	.225	2.030	.047
Total productive maintenance*M	.270	.108	.259	2.494	.016
Quality cycles*M	.336	.185	.203	1.814	.075

a. Dependent Variable: performance of tea processing firms

**Source: Researcher (2021)**

Based on the results in Table 41, teamwork was positive and statistically significant after moderation with (P-value =.049<0.05). This implies that organizational dynamic capability moderates the relationship between teamwork and performance of tea processing firms. The results also show that personal discipline was statistically significant after moderation with (P-value = .047<0.05). The results imply that organizational dynamic capability moderates the relationship between personal discipline and performance of tea processing firms.

The results further show that total productive maintenance was statistically significant after moderating it with organizational dynamic capability with (P =value=.016<0.05). This implies that organizational dynamic capability moderates the relationship between the total productive maintenance and performance of tea processing firms. Finally, the results show that quality cycles variable was not significant after moderation with organizational dynamic capability with (P-value =.075>0.05). This implies that organizational dynamic capability does not moderate the relationship between quality cycles and performance of tea processing firms. Based on the results, the conclusion is that, organizational dynamic capability moderates the relationship between teamwork and performance of tea processing firms, personal discipline and performance of tea processing firms and total productive maintenance and performance of tea processing firms. However, it does not moderate the relationship between quality cycles and performance of tea processing firms.

#### **4.6 Results of Hypotheses Testing**

Each of the five hypotheses that were derived from the specific objectives that guided the study was tested by use of multiple linear regression analysis.

The first hypothesis tested was:

**H<sub>01</sub>: There is no significant relationship between quality cycles and performance of tea processing firms in Kenya.**

The hypothesis was tested using multiple linear regressions. The decision to either approve or reject the null hypothesis was based upon the t statistics value. If the calculated t value is greater than the vital t stats value of 1.96 after that H<sub>01</sub> is rejected however if it is less than 1.96 after that H<sub>01</sub> is not turned down. As a result, the null hypothesis was that there is no substantial partnership between high-quality cycles and the performance of tea handling firms in Kenya. Results suggested the t statistical value was  $2.308 > 1.96$ . The null hypothesis was as a result rejected. The study took on the alternative hypothesis that there is a statistically substantial positive partnership between top quality cycles as well as the performance of tea handling companies in Kenya.

The second hypothesis tested was:

**H<sub>02</sub>: There is no significant relationship between teamwork and performance of tea processing firms in Kenya.**

The hypothesis was examined by means of several straight regressions. The decision to either approve or deny the null hypothesis was based on the t-statistic value. If the computed t-statistic worth is above the critical t-statistic worth of 1.96, then H<sub>02</sub> is declined but if it is less than 1.96, after that H<sub>02</sub> is not rejected. Therefore, the null hypothesis was that there is no significant connection in between team effort and performance of tea processing companies in Kenya. The results reveal that the t-statistic worth was  $2.378 > 1.96$ . The void hypothesis was for that reason rejected; and also different hypothesis embraced that there is considerable partnership between synergy and efficiency of tea processing companies in Kenya.

The third hypothesis tested was:

**H<sub>03</sub>: Personal discipline does not significantly influence performance of tea processing firms in Kenya.**

The hypothesis was tested through numerous straight regressions. The choice to either accept or deny the void hypothesis was based on the t-statistic worth. If the computed t-statistic value is more than the vital t-statistic value of 1.96, after that H<sub>03</sub> is rejected but if it is less than 1.96, after that H<sub>03</sub> is not turned down. The null hypothesis was that personal self-control does not significantly affect performance of tea processing companies in Kenya. The results reveal that the t-statistic value was  $2.097 > 1.96$ . The null hypothesis was for that reason rejected. The research study for this reason adopted the alternate theory that there is individual technique significantly affect efficiency of tea processing firms in Kenya.

The fourth hypothesis tested was:

**H<sub>04</sub>: Total productive maintenance systems do not significantly influence performance of tea processing firms in Kenya.**

The hypothesis was examined through multiple linear regressions. The choice to either approves or decline the null hypothesis was based on the t-statistic value. If the computed t-statistic value is greater than the important t-statistic value of 1.96, then H<sub>04</sub> is denied yet if it is less than 1.96, that H<sub>04</sub> is not denied. Therefore, the null hypothesis was that overall efficient maintenance systems do not considerably influence the performance of tea processing companies in Kenya. The outcomes reveal that the t-statistic value was  $2.753 > 1.96$ . The null hypothesis was consequently rejected. The research study, therefore, took on the alternative hypothesis that overall effective upkeep systems significantly affect the performance of tea processing companies in Kenya.

The fifth hypothesis tested was:

**H<sub>05</sub>: Organization dynamic capability does not significantly moderate the relationship between Kaizen Systems and Performance of tea processing firms in Kenya.**

The hypothesis was tested to assess whether organization dynamic capability had significant moderating effect on the relationship between relationship between Kaizen Systems and Performance of tea processing firms in Kenya or not. The interpretation was based on the thumb rule of hypothesis testing which indicated that, if at least one variable is significant, then the conclusion is that there is an overall significant effect. The hypothesis was tested by using multiple regressions and determined using p-value. The decision to either accept or reject the null hypothesis was based on the t-statistic value. If the computed t-statistic value is greater than the critical t-statistic value of 1.96, then H<sub>05</sub> is rejected but if it is less than 1.96, then H<sub>05</sub> is not rejected. Based on the results, organizational dynamic capability moderates the relationship between teamwork and performance of tea processing firms, personal discipline and performance of tea processing firms and total productive maintenance and performance of tea processing firms. However, it does not moderate the relationship between quality cycles and performance of tea processing firms. Therefore, the null hypothesis that organization dynamic capability does not significantly moderate the relationship between Kaizen Systems and performance of tea processing firms in Kenya therefore rejected. The alternative hypothesis was adopted that organization dynamic capability significantly moderate the relationship between Kaizen Systems and performance of tea processing firms in Kenya.

#### **4.7 Discussions**

The study sought to determine the influence of Kaizen Systems on firm performance of tea processing firms in Kenya under the moderating effect of organizational dynamic capability. A total of 60 tea processing firms participated in the study out of aggregate total 66 of tea

processing firms representing a response rate of 90.1%. Most of the tea processing firms (48.3%) had been in existence for 31-45 years, 25.0% for 46 years and over and 20.0% of the of the tea processing firms for 16-30 years. The age of the firm may define firms' capabilities in terms of resources and innovation capacity in the efficient production of tea. The results concur with Mallinguh, Wasike and Zoltan (2020) in a study on business sector, firm age, and firm performance and indicated that firm age significantly influence performance. However, Coad, Segarra, and Teruel (2013) in a study on if firm performance improves with age indicated that firm performance declines with age.

It was also established that majority 56.7% of the tea processing firms acquired the Kaizen system 3-5 years ago. This is an implication that the application of Kaizen process is a relatively new concept in tea production in Kenya. It was also indicated that the Kaizen systems was functioning properly as indicated by 68% of the tea processing firms. It is argued that use of Kaizen system during tea production enhances production efficiency. Under the concept of continuous improvement, tea produce can be regenerated through value addition to produce many other blends as per customers' desires. The results concur with Nath, and Dutta (2016) who indicated that Kaizen culture improves the production of black tea.

Descriptive results indicated that quality cycles form significant part of Kaizen and are crucial in enhancing productivity of tea. The regression coefficient results indicated that quality cycles positively and significantly affects performance of tea processing firms in Kenya implying that a unit change in quality cycles results to an increase in performance of tea processing firms in Kenya by equivalent units. Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality. Quality cycles emphasis

for precise tea plucking to ensure that quality tea is harvested for final processing. In addition, quality cycles during tea production advocates for keen observance of conditions in which tea is planted, the kind of input used, transportation, processing and subsequent packaging to ensure that tea quality is maintained for enhanced market competitiveness. A declining quality of tea results to low returns to producers and other industry players.

Quality cycles include forms arranging, item configuration, process structure, creation and administration, appraisal and activity, and asset obtainment. Activity is the input component for assessment of consistence for outer and inward fulfillment. The results agree with Nath and Ajoy (2016) who conducted a study on productivity improvement of black tea production and indicted that quality factor is critical in the production of tea. Likewise, Kemunto (2015) in a study to see to what extent operations management practices are being undertaken focusing Kenya's tea industry revealed that continuous improvement positively influences performance of tea processing firms.

As indicated by Terziovski (2011), ceaseless improvement involves assortment of exercises that establish a procedure expected to accomplish execution improvement. Underway businesses the exercises basically include rearrangements of generation forms. The supporting guideline ceaseless improvement is the utilization of different critical thinking instruments for the recognizable proof and arrangement of work-based issues (Kemunto, 2015). The point is for development by benchmarking systems. To combine the new benchmark, the improvement must be institutionalized. Constant improvement process creates process-arranged intuition since forms must be improved before improved outcomes can be acquired (Hall, 2015). Persistent improvement connotes little enhancements made in the norm because of progressing endeavors. As indicated by Singh and Singh (2015) quality cycles is the significant main impetus behind any improvement exertion and improved nature of items.

Teamwork was acknowledged by participants to be essential in enhancing tea production. Regression coefficient results also revealed that teamwork has positive and significant effect performance of tea processing firms. The results thus imply that a unit change in teamwork leads to a positive change in performance of tea processing firms. The null hypothesis that there is no significant relationship between teamwork and performance of tea processing firms in Kenya was therefore rejected; and alternative hypothesis adopted that there is significant relationship between teamwork and performance of tea processing firms in Kenya. Team work is the ability to work together towards a common vision. Teamwork results to task efficiency. Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker. On the other hand, the absence of teamwork's may lead to occupational failure, disappointment, low employee morale and low firm productivity which threaten the sustainability of tea processing firms. The aspect of teamwork is also viewed as necessity in the implementation of Kaizen system in the tea industry. The results concur with Golas, *et al.* (2016) who did a study on the influence of teamwork on firm production and found that team work is important ingredient among workers as it promotes joint focus on the goals of the organization. Likewise, Ranaweera (2015) researching on the viability of 5S utilization in tea sector found that teamwork has positive impact on overall productivity of tea producing firms.

Teamwork results to task efficiency (Sanyal & Hisam, 2018). Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker (Ooko, 2013). At the point when a group functions admirably all together they can achieve beyond what the individual individuals can do alone. Teamwork has been extensively received as a methodology in authoritative improvement. This is on the grounds that a great many people accept that participative administration not just urges laborers to relate to their obligations, yet additionally improves their own presentation just as hierarchical execution (Mutai,

Cheruiyot & Kirui, 2015). Participative administration help improve task improvement in a firm (Wensveen, 2016). Examples of participative administration differ; they may incorporate exercises, for example, objective setting and critical thinking.

Results from descriptive statistics indicated that supply of tea to the market in time, due care during transportation of tea, task scheduling and employee cross training are essential elements of personal discipline that influence tea production. The regression coefficient results revealed that personal discipline positively and significantly influences performance of tea processing firms. The results imply that a unit change in personal discipline leads to a subsequent positive change in performance of tea processing firms. The null hypothesis that there is no significant relationship between personal discipline and performance of tea processing firms in Kenya was therefore rejected; and alternative hypothesis adopted that there is significant relationship between personal discipline and performance of tea processing firms in Kenya.

Personal discipline refers to an incorporated, problem-solving management method directed towards improvement of quality and suitable supply, manufacture and distribution processes. Because of personal discipline, persons within the firm involved are committed to their work and resources, processes are fully exploited for maximum yield and efficiency. Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations.

The results agree with the findings by Belekoukias, *et al.* (2014) who did an investigation on role of lean techniques and devices on execution exhibition of assembling associations and established that just in time has great influence on task execution in a firm. In the same line, Ali (2017) in a study on effect of management commitment on the relationship between

kaizen and competitive advantage found that employee decline in terms of time and task accomplishment positively impacts firm's productivity and competitiveness advantage.

Personal discipline is both way of thinking and controlling arrangement of rules that incorporates the essential administration procedures, existing improvement endeavors, and specialized devices (Mackelprang & Nair, 2010). The methodology weighs on long haul benefits coming about because of waste disposal, and ceaseless enhancements to frameworks, projects, items and individuals (Golas *et al.*, 2016). It has noteworthy effect on quality control, buying capacities, and work culture with a way of thinking that includes price, meeting conveyance plans, representative's strengthening and expertise advancement, provider relations and improvement of new items (Davy *et al.*, 1992).

Maintenance of tea production and processing machines/equipment is important in overall productivity of tea. The regression coefficient results indicated that total productive maintenance systems positively and significantly affects performance of tea processing firms. The coefficient results denote that a unit change in total productive maintenance systems results to subsequent increase in performance of tea processing firms in the same units. The null hypothesis that there is no significant relationship between total productive maintenance systems and performance of tea processing firms in Kenya was therefore rejected; and alternative hypothesis adopted that there is significant relationship between total productive maintenance systems and performance of tea processing firms in Kenya.

Total Productive Maintenance is a comprehensive method which guarantees that gear support is forward-thinking so as to accomplish immaculate generation. Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and

generation plan. Total productive maintenance systems tries to boost gear productivity through an absolute arrangement of preventive upkeep crossing the lifetime of the hardware.

This guarantees minimal breakdowns enhancing efficiency. The results concur with the study by Mesfin (2013) who undertook a research on practice and challenges of quality management system in Chewaka Tea Estate and found that total productive maintenance systems ensures that the machines and other equipment are operating optimally for optimum tea production. Also, Ondego (2016) investigating the linkage between lean assembling practices and task execution indicated that total productive maintenance systems led to increased tea production via enhanced working hours and reduced machine breakdowns.

Organizational dynamic capabilities in terms of configuration of firm financial resources and human resources forms important ingredient in enhanced firm production and competitiveness. In a study to determine the moderating role of organizational dynamic capability between Kaizen Systems and performance of tea processing firms in Kenya, indicated that before introducing organizational dynamic capability into the equation, quality cycles, teamwork, personal discipline and total productive maintenance systems explained 42.1% of the performance of tea processing firms, Kenya.

However, after introducing organizational dynamic capability into the model, the explanatory power of quality cycles, teamwork, personal discipline, total productive maintenance systems and organizational dynamic capability as moderator improved to 46.6% of the performance of tea processing firms. The null hypothesis that organization dynamic capability does not significantly moderate the relationship between Kaizen Systems and performance of tea processing firms in Kenya therefore rejected. The alternative hypothesis was adopted that organization dynamic capability significantly moderate the relationship between Kaizen Systems and performance of tea processing firms in Kenya.

Dynamic capability refers to firm's learned and stable pattern of collective activity through which the firm systematically generates and modifies its operating routines in pursuit of improved effectiveness. The implementation of dynamic capabilities involves repeated cycles of organizational learning. In the context of the study, organizational dynamic capabilities entail the capability of the tea processing efficiently utilize resources for the purpose of achieving its firm strategic goals that include improved productivity and quality of tea.

The results concur with Rehman and Saeed (2015) studied dynamic abilities and firm execution and found that employee competence have positive effect on the relationship of authoritative execution and dynamic capacities. Nyangi, Wanjere, Egessa and Wekesa (2015) in a study on organizational capabilities and performance of sugar companies in Kenya established that resource configuration influences firm productivity. However, the study by Sungyuan and Ussahawanitchakit (2015) on dynamic organizational capability and firm success in Thailand indicated that the relationships were significant with its consequences and antecedents, but the moderating effects were not significant with dynamic organizational capability.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter provides a summary of findings, conclusions, and recommendations based on a review of the literature, study objectives, and the results of the hypotheses that were tested.

#### 5.2 Summary of Findings

The study's goal was to determine the Analysis of Kaizen Systems on the Performance of tea Processing firms in Kenya. The specific objectives were to determine the influence of quality cycles on the performance of tea processing firms in Kenya, assess the influence of teamwork on the performance of tea processing firms in Kenya, establish the influence of personal discipline on the performance of tea processing firms in Kenya, investigate the influence of total productive maintenance systems on the performance of tea processing firms in Kenya, and establish the moderating role of organizational dynamic capability, Data analysis included both descriptive and inferential results.

##### 5.2.1 Quality cycles and performance of tea processing firms

Descriptive results indicated that quality cycles form significant part of Kaizen and are crucial in enhancing productivity of tea. Quality cycles have a positive and significant effect on performance of tea processing firms in Kenya. Further, the hypothesis that there is no significant relationship between quality cycles and performance of tea processing firms in Kenya was tested and based on the results, the null hypothesis was rejected; and alternative hypothesis adopted that there is significant relationship between quality cycles and performance of tea processing firms in Kenya. Quality cycle's emphasis for precise tea plucking to ensure that quality tea is harvested for final processing. Quality of tea is a critical

determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles in Kaizen systems gears toward enhancing the efficiency of tea production and competitiveness of Kenya's tea in terms of quality.

### **5.2.2 Teamwork and performance of tea processing firms**

From detailed results, teamwork was discovered to be important in improving tea production. Regression results showed that team effort has favorable and also significant result performance of tea handling firms. The hypothesis testing was carried out utilizing calculated p-value in the regression coefficient results. The null hypothesis was that there is no considerable relationship between team effort and the performance of tea handling firms in Kenya. Based on the outcomes, the null hypothesis was denied; and the alternative hypothesis took on that there is a substantial partnership between teamwork and performance of tea handling firms in Kenya. Group work is the capability to work together towards a typical vision resulting in job effectiveness.

The team effort can make it possible for the participants of the group to have a greater level of emotional security, positive self-image, and the capacity to plan as well as choose with others positively. Similarly, it aids in developing a healthy work environment with convenient programs, imaginative tasks, favorable techniques and values. On the other hand, the lack of team effort might result in occupational failure, frustration, reduced employee as well as reduced firm efficiency which endanger the sustainability of tea processing companies.

### **5.2.3 Personal discipline and performance of tea processing firms**

Descriptive results indicated that supply of tea to the market in time, due care during transportation of tea, task scheduling and employee cross training are essential elements of personal discipline that influence tea production. The regression coefficient results revealed

that personal discipline has a positive and significant influence on performance of tea processing firms. The null hypothesis was that personal discipline does not significantly influence performance of tea processing firms in Kenya. Since the computed t statistics value was greater than 1.96, the null hypothesis was rejected leading to the adoption of the alternative hypothesis that there is personal discipline significantly influence performance of tea processing firms in Kenya. Personal discipline refers to an incorporated, problem-solving management method directed towards improvement of quality and suitable supply, manufacture and distribution processes. Discipline is essential for task efficiency and accomplishment in an organization.

#### **5.2.4 Total productive maintenance systems and performance of tea processing firms**

The forth objective was to examine the influence of total productive maintenance systems on performance of tea processing firms in Kenya. Maintenance of tea production and processing machines/equipment is important in overall productivity of tea. The coefficient of total productive maintenance systems has a positive and significant effect on performance of tea processing firms. The null hypothesis was that total productive maintenance systems do not significantly influence performance of tea processing firms in Kenya. Since the computed t-statistics value was greater than 1.96, the null hypothesis was rejected and alternative hypothesis accepted that total productive maintenance systems significantly influence performance of tea processing firms in Kenya. Total productive maintenance systems assist with improving quality, conveyance calendar, and creation amount. Gear issues and breakdowns directly affect creation cost, generation quality and generation plan. Total productive maintenance systems tries to boost tea production by taking into consideration the downtime losses, equipment failures, setup and adjustments, speed losses, idling and minor stoppages and defect losses. This guarantees minimal breakdowns enhancing efficiency.

### **5.2.5 Organization dynamic capability, Kaizen Systems and Performance of tea processing firm**

The fourth objective was to establish the moderating role of organizational dynamic capability between Kaizen Systems and performance of tea processing firms in Kenya. The implementation of dynamic capabilities involves repeated cycles of organizational learning. In the context of the study, organizational dynamic capabilities entail the capability of the tea processing firms to efficiently utilize resources for the purpose of achieving its firm strategic goals that include improved productivity and quality of tea. The results indicated that quality cycles, teamwork, personal discipline and total productive maintenance systems explained 42.1% of the performance of tea processing firms, Kenya before the introduction of organizational dynamic capability. However, after introducing organizational dynamic capability into the model, the explanatory power of quality cycles, teamwork, personal discipline, total productive maintenance systems and organizational dynamic capability as moderator improved to 46.6% of the performance of tea processing firms. Based on the results, organizational dynamic capability moderates the relationship between teamwork and performance of tea processing firms, personal discipline and performance of tea processing firms and total productive maintenance and performance of tea processing firms. However, it does not moderate the relationship between quality cycles and performance of tea processing firms. Therefore, the null hypothesis that organization dynamic capability does not significantly moderate the relationship between Kaizen Systems and performance of tea processing firms was rejected and alternative hypothesis accepted that organization dynamic capability significantly moderates the relationship between Kaizen Systems and performance of tea processing firms.

### 5.3 Conclusion

Based on the findings, the study concludes that quality cycles are critically important in the production of tea. The optimal production and competitiveness of the tea crop depends on the aspect of quality. Quality of tea is a critical determinant of tea prices in the international market, where quality tea attracts good prices compared to low quality tea. Quality cycles generate process-oriented thinking since all practices must be improved to obtain better results and is a major driving force that fosters growth and better quality of products. Quality cycles thus are geared towards minimizing cost of tea production by improving efficiency and enhancing quality of tea. Quality cycle's emphasis for precise tea plucking to ensure that quality tea is harvested for final processing. A declining quality of tea results to low returns to producers and other industry players.

The study found that teamwork has a positive and significant effect on performance of tea processing firms. The study thus makes a conclusion that teamwork culture among workers in tea processing firms stimulates performance. Under the culture of teamwork, employees work towards common goal of supporting the strategic goals of the organization. The goals include increasing tea production output through improved employee efficiency. Team work is the ability to work together towards a common vision. Teamwork results to task efficiency. Collaboration makes more excellent results that are increasingly productive, astute and powerful just as quicker.

Personal discipline has a positive and significant influence on performance of tea processing firms. The results thus concludes that personal discipline is related to how workers in tea processing firm plan their work and deliver it as per the requirements of the firm. It also entails attention to how tea is picked, packaged and processed to enhance its market competitiveness. Discipline is essential for task efficiency and accomplishment in an

organization. Because of personal discipline, persons within the firm involved are committed to their work and resources, processes are fully exploited for maximum yield and efficiency.

Maintenance of tea production and processing equipment is important in overall productivity of tea. The study found that coefficient of total productive maintenance systems has a positive and significant effect on performance of tea processing firms. It is thus concluded that total productive maintenance systems is significant component of Kaizen systems that influence tea production. Total productive maintenance systems define the efficiency of equipment and machine in tea production. The key areas include equipment used in harvesting tea, transporting, tea, fermentations machines and other tea processing machines. The ability of the tea processing firm to minimize cases of machine breakdowns minimizes costs of maintenance and time wasted when machines are not functioning as required, improving tea production.

The study found that organizational dynamic capability moderates the relationship between Kaizen Systems and performance of tea processing firms. The results conclude that organizational dynamic capability influences the relationship between Kaizen Systems and performance of tea processing firms. Organizational dynamic capability defines the ability of a firm to reconfigure its resources that include both financial and human resources in achieving the strategic goals of the firm. The implementation of dynamic capabilities necessitates repeated cycles of organizational learning. In the context of the study, organizational dynamic capabilities refer to the tea processing company's ability to use resources efficiently in order to achieve firm strategic goals such as increased productivity and tea quality.

## **5.4 Recommendations**

The study offers several recommendations for practice, policy, and future research.

### **5.4.1 Recommendations to Practice**

The study found that quality cycles influence the quality of tea and hence its competitiveness in the market. There is need for introduction of useful standards in the tea industry is necessary. Standards should be jointly agreed between factories/farmers and be locally appropriate covering issues of tea quality and productivity. These tea quality standards need to be reviewed periodically to ensure that they are consistent with the market level of quality standards. In addition, the tea processing firms should continuously train quality standards personnel to ensure that they are acquainted with market desires. Moreover, tea processing firms should work in coordination with quality standards bodies including Kenya Bureau of Standards, food Safety management systems among others to enhance production of quality tea.

It was also established that teamwork is the least significant sub component of Kaizen systems that influence performance of tea processing firms. Under the culture of teamwork, employees work towards common goal of supporting the strategic goals of the organization. The goals include increasing tea production output through improved employee efficiency. The study recommends that tea processing firms need to cultivate culture of team work among their workers by emphasizing virtues of unity and togetherness. There is also need for team participatory management and feedback systems to support employee to management communication and suggestions system aimed at ensuring that employees' opinions and suggestions count in the management of the tea processing firms.

It was established that personal discipline positively and significantly influences performance of tea processing firms. Personal discipline guides how tea is cultivated, picked, packaged

and processed to enhance its market competitiveness. Personal discipline plays a significant role since an organization can deliver high quality products and services with minimal environmental situations. The study recommends for the need to cultivate virtue of timeliness in task accomplishment among workers of tea processing firms. This can be conducted through workshops, close mentorship programs and support for employees' growth and welfare programmes.

Maintenance of tea production and processing equipment is important in overall productivity of tea. The study found that total productive maintenance systems is the most significant component of Kaizen systems that influence tea production. Total productive maintenance systems define the efficiency of equipment and machine in tea production. The key areas include equipment used in harvesting tea, transporting, tea, fermentations machines and other tea processing machines. The ability of the tea processing firm to minimize cases of machine breakdowns minimizes costs of maintenance and time wasted when machines are not functioning as required, improving tea production. The study recommends for periodic diagnostic and maintenance of firm machines and equipment through well trained firm personnel. Thus, training of personnel on the maintenance of tea production equipment is essentially important in ensuring that costs arising from breakdowns are minimized.

The study found that organizational dynamic capability moderates the relationship between Kaizen Systems and performance of tea processing firms. Organizational dynamic capability defines the ability of a firm to reconfigure its resources that include both financial and human resources in achieving the strategic goals of the firm. The study recommends that tea processing companies ought to buy research and development, training, networking capability, and additionally innovation taking into consideration that it impacts efficiency positively. Dynamic abilities being the ability to incorporate, establish, and also reconfigure

internal as well as exterior experts to deal with rapidly-changing environments, can also take the kind of different methods besides the ones talked about in the existing research in addition to thus the future scholars can look for to find other actions of this aspect.

#### **5.4.2 Recommendations to Policy**

The introduction of Kaizen in the tea sector increased productivity and efficiency in tea farming and processing. However, Kaizen technology is still at infancy and many workers in the tea processing firms are not well acquainted with. The policy implication of these scenarios toward Kenya Tea Development Agency, Ministry of Education Through technical training and vocational institutes, Ministry of Science and technology and workers union in the tea sector need to formulate continuous educational and training programmes to ensure that workers are trained on Kaizen use. The Kenyan Government also needs to offer incentives for tea industries to be able to acquire technological equipment at affordable costs by creating subsidies on equipment and machine targeting tea production. Technological innovation is aimed at improving the tea quality leading to better prices.

#### **5.4.3 Recommendations to Researchers**

While Kaizen system has proved to be significant in promoting organizational performance, the Kaizen system requires continuous improvement to meet with dynamics of the business environment. Moreover, the concept remains a relatively new concept among workers in the tea sector. Future researchers and scholars may consider investigating the organizations' mechanisms to continuously improve on the Kaizen system to suit the dynamics of the tea sector and global market. The dynamics include change in taste and preference, emergence of supplementary goods, the desire for value addition, quality variability and price volatility of tea product in the global markets.

## 5.5 Contribution to Knowledge

Kaizen system, a firm production concept that is traced to Toyota Company, Japan, was first viewed as a concept applicable only in automotive industry. However, with changing dynamics, the concept is being applied in other sectors of the economy. The introduction of Kaizen System into the other sectors of economy like agriculture sector has prompted further conceptualization of the original Kaizen concepts into various other concepts deemed important in the agricultural sector. The concepts consist of efficiency and performance in the operational processes, boosted aesthetic administration of the procedure, enhanced security and spirits of the workers, waste removal and standardization. Further, basing on the fact that Kaizen is a new concept among practitioners and scholars, the amount of empirical studies remains low. As such, the Kaizen System is being extended to other sectors of the economy across the globe. The outcome findings arising from the application of Kaizen System in different sectors of the economy shall expand the body of knowledge about Kaizen and firm performance.

The Kaizen Concept further makes significant contribution to theoretical framework particularly the Deming's Quality Improvement Theory and Dynamic Capabilities Theory. The Kaizen system advocates for continuous improvement of production, supported by innovation, employee discipline, suggestion and training. The results align with the postulations of the Deming's Quality Improvement Theory by Deming in 1982 who argued that quality production and efficiency in a firm is an output of fourteen concepts that include reliability of purpose, adoption of the new theory, stopping reliance on mass checks, failure to reward businesses based on prices, constant production, and better service quality. It also involves introducing a cutting-edge on job training, employing advanced leadership, eradicating fear among employees, reviewing departmental barriers, abolishing quantity-

based work goals, eliminating quotas, enhancing craftsmanship, and ensuring that the top management structure backs up the previous thirteen points. By observing and implementing these aspects of Deming's Theory, the production of quality tea will be attained. Likewise, efficiency in the production of tea will be realized expanding total output.

Under Dynamic Capabilities Theory, the reconfiguration of firm resources is critically important for organization performance. Key firm resources include financial resources and human resources. Continuous training is one of the concept of Kaizen and thus align to the human resource concept of human resource by the Dynamic Capabilities Theory. Competent, innovative and resilient human resource is requirement in the implementation of Kaizen systems. In addition, the adoption and subsequent use of Kaizen to improve on firm productivity and efficiency require adequate financial resources to acquire, operate and maintain firm equipment and train human resources. As a result, the Kaizen system makes noble contribution to the Dynamic Capabilities Theory that advocates for proper reconfiguration of firm financial resources for firm competitive advantage.

### **5.6 Suggestion for Further Studies**

The current study has added to the body of knowledge about Kaizen innovation and tea processing firm performance. It is clear that investing in Kaizen innovation has both positive implications for the tea sector's growth. The effects of investing in Kaizen innovations in the tea sector were not exhaustive. The study recommends that the academicians and scholars may further investigate the implication of Kaizen in the sustainability of tea sector. Performance concept used in the current study is a narrow concept that only focuses on economic aspect of a firm ignoring social and environmental aspect. Further research should focus on the application of Kaizen system on the sustainability of tea sector in Kenya with key focus on economic aspect, environmental and social aspect of firm sustainability.



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## APPENDICES

### Appendix I: Consent Form

#### Analysis of Kaizen Systems on the Performance of Tea Processing Firms in Kenya.

You are kindly requested to participate in a study titled: **Analysis of Kaizen Systems on Performance of Tea Processing Firms in Kenya**. You have been selected as respondent and your consent to this is key to the success of this study. Please read the statements below, if you agree, acknowledge and willing to participate, please sign at the end of the form.

1. I voluntarily agree to participate in this study.
2. Even after you agree to participate, you can withdraw at any stage or decide not to answer some or all questions and be assured of no consequence whatsoever.
3. The purpose for this data collection has been clarified to be exclusively for academic purpose on the subject matter: **Analysis of Kaizen Systems on Performance of Tea Processing Firms in Kenya** and you have the opportunity to get more details for further understanding.
4. Any use of the collected data for other purpose other than the one stated, a consent has to be sorted from you and you have the right to willingly grant or reject.
5. There are no benefits pledged or attached to this data collection that influenced your acceptance to participate in this study.
6. The collected data will be treated with utmost confidentiality, data protection and protect your rights as participant.
7. Personal details and identity will be anonymously used in the research report by applying codes that will not reveal any personal details or opinions that can personally identify you.
8. The opinions and answers to you provide the question without concealing your identity will be cited in various platforms such as conferences, journal publication, thesis reports in soft and hardcopies.
9. Any potential risks affecting you or any other respondent shared with the researcher can be reported to the relevant authorities.
10. This consent form when it is duly filled and signed will be sole property of Mount Kenya University and you have the right to access by request to the Directorate of Graduate studies.
11. Once the findings are published, you have the right to access like any other persons as part of knowledge dissemination through the right to information.
12. You are provided with contact details of the researcher to seek any further clarifications needed: **George Muturi Wanjobi, +254718542293; Email: gmuturi34@gmail.com**

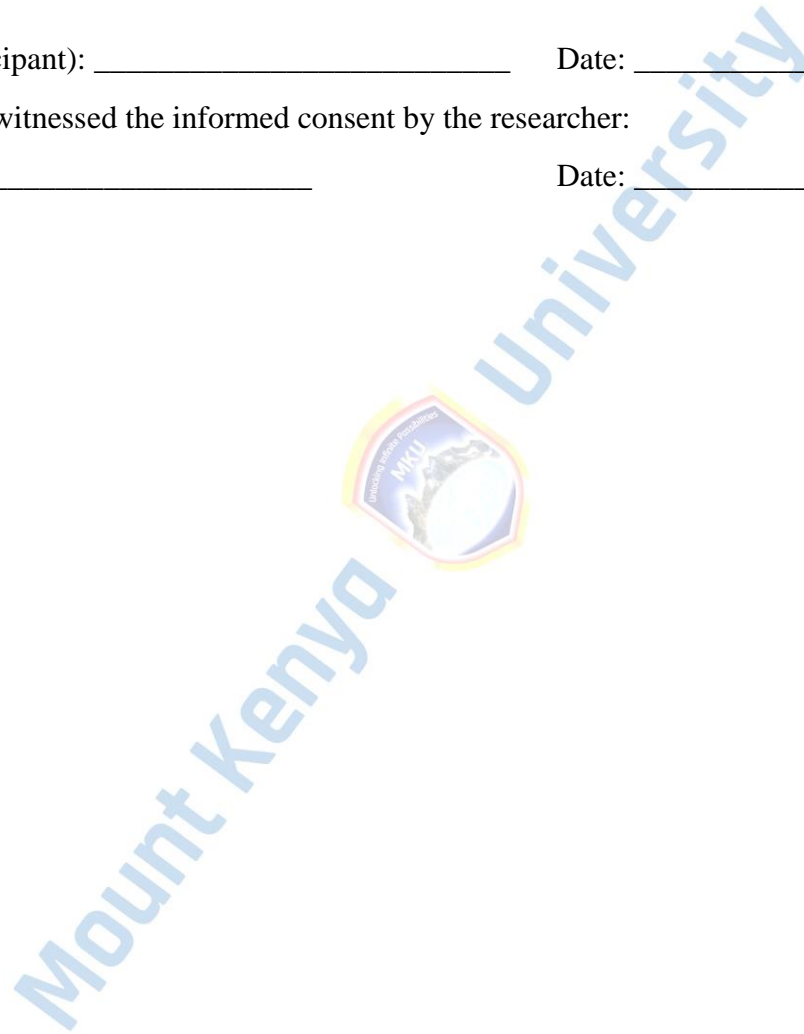
13. For any complaints or wish to share information, you can reach the university: **Ethics Review Committee (ERC), Mount Kenya University, P.o Box 342 – 0100 Thika, Kenya.**

I, \_\_\_\_\_, declare to have read the points above, understood, and accept to voluntarily without any persuasion participate to provide answers to the questionnaire for this study and hereby grant an informed consent.

Signature (participant): \_\_\_\_\_ Date: \_\_\_\_\_

Acknowledged/witnessed the informed consent by the researcher:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## Appendix II: Letter of Introduction

Mount Kenya University

School of Business and Economics

P.O Box 342-0100

Thika – Kenya.

1<sup>st</sup> /April 2021

To whom it concerns,

### **REQUEST TO COLLECT DATA FOR ACADEMIC PURPOSE**

Dear Respondent,

I am undertaking a study on **Kaizen Systems and Performance of Tea Processing Firms in Kenya**. This is in partial fulfilment of the requirement for the award of Doctor of Philosophy in Business Administration Degree in Strategic Management of Mount Kenya University. This study intends to use data from operational managers of the tea processing firms from which you are part of the selected sample of respondents whose views we seek on the above-mentioned matter.

Attached is a questionnaire, of which you're kindly requested to answer all the questions as specified. The data in the questionnaire shall be treated with utmost confidentiality and utilized only for the purpose intended for, academic research only. A copy of the final report may be made available to participants or tea firms upon request. Thank you for accepting to participate in this study.

Yours sincerely

George Muturi Wanjobi

PHDBA/2017/75774

### Appendix III: Research Questionnaire

The tool is aimed at gathering information on **Kaizen Systems and Performance of Tea Processing Firms in Kenya** for a PhD research. Confidentiality and anonymity of responses shall be upheld. Fill the questions provided by ticking (√) appropriately.

#### SECTION A: PROFILE OF THE FIRM

1. Age of the firm

Below 15 years  16-30 years  31-45 years  over 46 years

2. When did your organization acquire Kaizen system?

Below 2 years  3-5 years  6-9 years  over 10 years

3. Is Kaizen system functioning as planned?

Yes  No

Explain.....

4. Rate the development of the following Kaizen practices in enhancing quality of tea produced? Use the scale where **1**= very low extent, **2**=low extent, **3** = moderate extent, **4**=great extent, **5**=very great extent.

<b>Kaizen functionalities</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Sorting tea</b>					
To what extent has Kaizen system helped in tea branding?					
To what extent has Kaizen system helped in grading tea basing on quality standard?					
To what extent has Kaizen system helped in separating raw tea from processed tea?					
<b>Standardization</b>					
To what extent has Kaizen system helped in enhancing and maintaining quality standard of tea produce					
To what extent does periodic monitoring and evaluation of tea processing plants by Kaizen systems enhanced tea quality					
<b>Task management</b>					
To what extent did task breakdown by use of Kaizen system enhanced efficiency of the tea processing company					
To what extent did Kaizen system helped in the separation of					

duties among employees in this tea processing company					
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**Section B: Teamwork and performance of tea processing companies**

Please tick (√) one cell for each statement on the influence of team work on performance of tea processing companies. Use the scale where **1**: Strongly Disagree; **2**: Disagree; **3**: Neutral; **4**: Agree; **5**: Strongly Agree.

	<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1	Employees are encouraged to work as a team so as to enhance tea production					
2	Workers actively participate in the management of the tea processing company					
3	Employees participate in suggesting ways on how to improve quality of tea produced					
4	This tea processing company promotes workers morale through rewards so as to enhance operational efficiency					
5	There is an elaborative process to enhance skill development through creative thinking in this company					
6	The firm encourages employees to discuss their suggestions with supervisors on how to improve quality of tea					
7	In this company, the exchange of ideas between the management and employees has helped promote a friendly working environment for working					

**Section C: Personal discipline and performance of tea processing companies**

Please tick (√) one cell for each statement on the influence of personal discipline on performance of tea processing companies. Use the scale where **1**: Strongly Disagree; **2**: Disagree; **3**: Neutral; **4**: Agree; **5**: Strongly Agree.

	<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1	This firm supplies tea products to the market in time					
2	Tea production process is keenly monitored by line managers and					

	employees					
3	Due care is undertaken by firm's workforce when transporting tea produce from farm to processing plants in order to minimize damage					
4	Personal discipline has helped enhanced task scheduling by minimizing time wastage in sorting raw and processed tea					
5	The application of the statistical process control to check system functionality of the tea processing machines has enhanced operational efficiency					
6	The use of Kaizen systems has enhanced employee cross-training where employees can perform certain tasks when required.					

**Section D: Total Productive Maintenance and Performance of Tea Processing companies**

Please tick (√) one cell for each statement on the influence of total productive maintenance systems and performance on performance of tea processing companies. Use the scale where **1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree.**

	<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1	The machines available in this company can effectively process tea					
2	Tea processing equipment are adequately maintained and thus experiences less breakdowns					
3	Senior management dedicates time and distributes sufficient resources for total productive maintenance purposes					
4	There is adequate illustration of TPM master plan that comprises objectives, action plan by the administration of this company					
5	The company production lines run uninterrupted through working hours					
6	There is adequate total productive maintenance training organized for all staff covering the summary of TPM concept, redefined roles of operators and maintenance people and expected benefits					
7	There are clear appliances for recording maintenance performance metrics including mean time to patch-up and mean time between failure so as to monitor production efficiency of machines and take action to prevent reoccurrence					
8	The company uses pareto charts that include why analysis so as to eliminate productivity losses					

**Section E: Quality Cycles and performance of tea processing companies**

Please tick (√) one cell for each statement on the influence of quality cycles on performance of tea processing companies. Use the scale where Use the scale where **1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree.**

	<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1	There is continuous knowledge sharing among employees to improve quality of tea produce					
2	Creativity in tea blending is encouraged in the firm					
3	Tea product design is continuously improved to meet customers desires					
4	Tea products are systematically implemented to the standards					
5	Process design is continuously improved in order to enhance quality of tea products					
6	Benchmarking is done to compare quality of tea products among firms					
7	Process-oriented thinking is conducted enhance process efficiency in producing tea products					

**Section F: Organizational Dynamic Capability, Kaizen System and Performance of Tea Processing companies**

Please tick (√) one cell on organizational dynamic capability and relationship between Kaizen Systems and performance of tea processing companies. Use the scale whereby **1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree.**

	<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
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1	The company often review tea development process to ensure they are in line with customers' taste					
2	The company has operational routines to pinpoint, assess and impart fresh knowledge on its employees					
3	The company is able to tap employees talents and use them to enhance its operations					
4	The firm is able to redeploy and reconfigure its resource to address customer desires and maintain competitive advantage in the sector					
5	The company has adequately invested in research and development so as to promote innovation that enhances firms' operations.					
6	Employees are assigned tasks that correspond to their task-relevant knowledge and skills.					
7	There is continuous renewal and modification of factory processes aimed at maintaining competitiveness of the company.					
8	The company sufficiently coordinates its activities so as to enhance aggregate operational efficiency					

### **Section G: Non-financial Performance of Tea Processing Firms**

Indicate the performance of this company based on the following non-financial indicators by ticking (√) appropriately. Use the scale where **1**: Greatly declined; **2**: declining; **3**: stagnated; **4**: Improved; **5**: Greatly improved.

	<b>Indicator</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1	Profitability of the company					
2	Annual sales volume of tea sold by the company					
3	Tea market prices at the auction market					
4	Quality of tea produced in this company					
5	The turnaround time in processing raw tea					

**END**

### **Appendix IV: Financial Performance tea processing firms**

#### **Financial Performance tea processing firms**

Please indicate the performance for the last years based on the indicators below.

<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Profit					
Percentage sales growth					




## Appendix V: List of Tea Processing Firms

Item	Aberdare Ranges
1	Kambaa Tea Factory Company Limited.
2	Mataara Tea Factory Limited.
3	Kagwe Tea Factory Company Limited.
4	<u>Theta</u> Tea Limited.
5	Ngere Tea Factory Company Limited.
6	Ikumbi Tea Factory Company Limited.
7	Ndarugu Limited.
8	Gachege Tea Factory Company Limited.
9	Njunu Tea Factory Company Limited.
10	Nduti Tea Factory Limited.
11	Makomboki Tea Factory Company Limited.
12	Gacharage Tea Factory Company Limited.
13	Githambo Tea Factory Company Limited
14	Kanyenyaini Tea Factory Company Limited
15	Kiru Tea Factory
16	Gatunguru Tea Factory Company Limited
17	Chinga Tea Factory Company Limited
18	Iriaini Tea Factory Limited
19	Gitugi Tea Factory Company Limited
20	Gathuthi Tea Factory Company Limited
21	Ragati Tea Factory Limited
	<b>Mt. Kenya Region And Nyambene Hills</b>
22	Ndimba Tea Factory Limited
23	Kangaita Tea Factory Company Limited
24	<u>Mununga</u> Tea Factory Limited
25	Kimunye Tea Factory
26	Thumaita Tea Factory
27	Kathangariri Tea Factory Company Limited
28	<u>Mungania</u> Tea Factory Company Limited
29	Rukuriri Tea Factory Company Limited
30	Weru Tea Factory Company Limited
31	Kinoro Tea Factory Company Limited
32	Kionyo Tea Factory
33	Imenti Tea Factory Company Limited
34	Githongo Tea Factory Company Limited
35	Igembe Tea Factory Company Limited
36	Michimikuru Tea Factory Company Limited
37	Kiegoi Tea Factory
	<b>Kericho Highlands</b>
38	Toror Tea Factory Company Limited
39	Tegat Tea Factory Company Limited

40	Momul Tea Factory Company Limited
41	Litein Tea Factory Company Limited
42	Chelal Tea Factory
43	Kapkatet Tea Company Limited
44	Mogogosiek Tea Company Limited
45	Kobel Tea Company Limited
46	Kapset Tea Factory Company Limited
47	Rorok Tea Factory Company Limited
48	Kapkoros Tea Factory Company Limited
49	Tirgaga Tea Factory Company Limited
50	Motigo Tea Factory Company Limited
	<b>Kisii Highlands</b>
51	<u>Sanganyi</u> Tea Factory Company Limited
52	Tombe Tea Factory Company Limited
53	Gianchore Tea Factory Company Limited
54	Nyansiongo Tea Factory Company Limited
55	Kebirigo Tea Factory Company Limited
56	Nyankoba Tea Factory Company Limited
57	<u>Rianyamwamu</u> Tea Factory Company Limited
58	Itumbe Nyamache Tea Factory Company Limited
59	Ogembo Tea Factory Company Limited
60	Eberege Tea Factory Company Limited
61	Kiamokama Tea Factory
62	Chebut Tea Factory
63	Kaptumo Tea Factory Company Limited
64	Mudete Tea Factory Company Limited
65	Kapsara Tea Factory Company Limited
66	Olenguruone Tea Factory Company Limited

Source: KTDA report, 2019

## Appendix VI: Approval Letter from the University



# Mount Kenya University

REF: MKU/ERC/1960  
TO: GEORGE MUTURI WANJOBI  
Date: 21 October 2021  
REG: PHDBA/2017/75774

Dear Sir/Madam,

**RE: KAIZEN SYSTEMS ON ORGANIZATIONAL PERFORMANCE OF TEA PROCESSING FIRMS IN KENYA.**

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1033**. The approval period is **21/10/2021 - 20/10/2022**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**


Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,  
  
**Dr. Peter G. Kirira**  
Chairman, Mount Kenya University IERC

- The Chairman  
Mount Kenya University  
Ethics Review Committee  
P. O. Box 342 - 0100, Thika


Main Campus, General Kago Road, P.O. Box 342-01000 Thika, Tel: +254 87 2020 000,  
Fax: +254 733 700 700, www.mku.ac.ke

**Appendix VII: NACOSTI Permit**



REPUBLIC OF KENYA


Ref No: **726875**



**NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY & INNOVATION**

Date of Issue: **03/November/2021**


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**This is to Certify that Mr. George Muturi Wanjohi of Mount Kenya University, has been licensed to conduct research in Embu, Kericho, Kisumu, Kirinyaga, Kisii, Meru, Murang'a, Nairobi, Nakuru, Naandi, Nyeri on the topic: Kalozin Systems on Organizational Performance of Tea Processing Firms in Kenya for the period ending : 03/November/2022.**

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**Appendix VIII: Plagiarism Report**

