

**ORGANIZATIONAL LEARNING AND CONTINUOUS  
IMPROVEMENT AMONG CEREAL MILLING FIRMS IN  
KENYA**

**Enoch K. Musyoka – D61/63034/2011**

**A Research Project Submitted in Partial Fulfilment of the Requirements for Award  
of the Degree of Master of Business Administration (MBA), School of Business,  
University of Nairobi**

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## DECLARATION

I declare to the best of my knowledge that this is my original work and has not been submitted for a degree in any other university.

Student Name: Musyoka, Enoch Kimanzi

Registration No. D61/63034/2011

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

This research project has been submitted for examination with my approval as the university supervisor.

Tom Kongere

Lecturer, Department of Management Science

School of Business

University of Nairobi

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

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## **DEDICATION**

I dedicate this project to my family.

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## LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CI	Continuous Improvement
COYA	Company of Year Award
CSF	Critical Success Factor
FAO	Food and Agriculture Organization of the United Nations
FMEA	Failure Mode and Effects Analysis
ISO	International Organization for Standardization
KAM	Kenya Association of Manufacturers
KMS	Knowledge Management System
OLM	Organizational Learning Mechanism
PDCA	Plan-Do-Check-Action
PM	Performance Measure
PMS	Performance Measurement System
QC	Quality Circle
QFD	Quality Function Deployment
RIG	Regionalna Izba Gospodarcza
SD	Standard Deviation
SME	Small and Medium Enterprises
USAID	United States Agency for International Development

## **ABSTRACT**

This study sought to ascertain what organizational learning mechanisms cereal millings firms in Kenya use to achieve their learning, the challenges in implementing these organizational learning mechanisms, and whether the relationship between organizational learning and continuous improvement holds in this industry. Survey research design was used on the population of 102 milling firms. Data was collected using both electronic and self-administered questionnaires.

The findings indicated that performance management systems and regular meetings are the most preferred organizational learning mechanisms at frequencies of 71% and 58.1% respectively. Quality circles and experimentation are not commonly used, and were reported by 9.7% and 6.5% of the respondents respectively. The findings also showed that 4 out of the 7 constructs of organizational learning had a significant relationship with the collective variables used to measure continuous improvement.

Several challenges that cereal millers encounter in the implementation of organizational learning mechanisms were reported. These include lack of proper infrastructure to support learning activities, ineffective employee reward schemes to reward new innovative ideas and lack of continuity in the learning process.

The researcher recommends that cereal millers should adopt other organizational learning mechanisms such as quality circles that enhance organizational learning from a quality perspective. Cereal milling firms should also seek ways to acquire and appropriately deploy the necessary infrastructure to aid their learning needs. This can be achieved through collaboration with continuous improvement professionals.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Stiff competition in the global market has necessitated sustained innovation for businesses to survive (Hamel, 2000; Jabnoun, 2001). This requires that businesses change what they offer and the ways in which they create and deliver that offering in order to avoid business failure (Francis, Jager, Jager, Minnie, Bessant and Welgemoed, 2004). Continuous improvement is one of the approaches to achieving this objective. It unceasingly strives to improve the performance of production and service firms (Zangwill and Kantor, 1998) as witnessed at Motorola, General Electric, Honda, Honeywell and Sony among others (Bhuiyan and Baghel, 2005).

The operational practices of continuous improvement contribute to improved company performance in terms of productivity, quality, lead time, cost, customer satisfaction and development of employees' skills to solve problems (Oprime, Sousa Mendes and Pimenta, 2012). However, the complexity of the factors that influence the success of continuous improvement can make it a difficult approach to implement (Oprime *et al.*, 2012). These success factors of continuous improvement include leadership, employees' involvement, communication systems, problem solution models and skills, motivation, management support, rewards, cooperation and integration (Caffyn, 1999; Bessant, Caffyn and Gallagher, 2001; Hyland, Soosay and Sloan, 2003; Bessant and Caffyn, 1997; & Bessant, Caffyn, Gilbert, Harding and Webb, 1994).

As outlined by Francis *et al.* (2004), an organization's ability to improve depends on the following four broad elements: organizations need to know, understand and agree on what improvement is; should have the competence and skills to enable them make improvement; should have the needed support to improve; and must be committed and willing to improve. Organizations must therefore evaluate their products and processes continuously to enable them improve.

### **1.1.1 Organizational Learning**

According to Senge (2004), organizations can improve in their operations when they discover how to tap people's commitment and capacity to learn at all levels in the organization. Murray (2002) defined organizational learning as a renewal process of changing behaviours to enable a firm achieve both change and growth simultaneously. A learning organization is characterized by a culture of knowledge generation, elicitation, transfer and utilization (Bessant and Francis, 1999).

Organizational learning leads to accumulation of new knowledge which leads to improved processes and products. It involves training in basic problem finding and solving process and tools, enabling of and rewarding the workforce to enact improvement efforts (Rickards, 1998). A learning organization innovates strategically and has the ability to deploy competence base to competitive advantage (Murray and Chapman, 2003).

Murray and Chapman (2003) presented two types of organizational learning: adaptive and generative learning. Adaptive learning is a form of gradual learning where companies improve past decisions through small-scale adjustments. Generative learning requires new ways of looking at the world and encourages learners to challenge, question, and repudiate decision making assumptions.

Of great importance to operationalizing organizational learning are organizational learning mechanisms (OLMs) (Oliver, 2009). OLMs are the institutionalized structural and procedural arrangements that aid the learning process (Lipshitz and Oz, 1996) as cited by Oliver (2009). These mechanisms allow the organization to collect, analyze and use information relevant to the organization.

### **1.1.2 Continuous Improvement**

Continuous improvement (CI) is the planned, organized, and systematic incremental change of existing practices aimed at improving company competitiveness (Boer, Berger, Chapman and Gertsen, 2000). The competitive potential of CI results from a cluster of

behavioural routines which take time to learn and institutionalize and thus hard to copy and transfer (Bessant and Francis, 1999). CI involves every employee working together to make improvements (Bhuiyan and Baghel, 2005; Oprime *et al.*, 2012; & Kossoff, 1993). The motives of implementing CI are numerous. Among these are to improve productivity and efficiency (Grütter, Field and Faull, 2002), quality (Grütter *et al.*, 2002), the reduction of production costs (Bond, 1999; & Terziovski and Sohal, 2000), reduction of cycle time (Grütter *et al.*, 2002) and customer satisfaction (Jabnoun, 2001).

There are different approaches to CI that have been developed based on the basic concept of quality and/ or process improvement (Bhuiyan and Baghel, 2005). They include: lean manufacturing, six sigma, the balanced scorecard and the lean six sigma. The four approaches employ different tools to identify and find solutions to problems. The tools include the seven basic quality tools, that is, check sheets, flow charts, pareto diagram, histogram, cause-and-effect diagram, scatter diagram and control charts (Ishikawa, 1985); quality function deployment (QFD) and failure mode and effects analysis (FMEA) (He, Qi and Liu, 2003).

The CI concept seeks to incrementally improve a path, position and/ or a process by continuously solving problems in small steps and having short cycles of change (Bessant *et al.*, 1994). This requires an understanding of what problems need to be solved through the gathering of data, coming up with alternative solutions, implementing solutions in phases and monitoring results to improve where necessary (Marin-Garcia, Val and Martín, 2008; & Escrig-Tena, 2004).

From the above, we learn that organizational learning aids continuous improvement through acquisition, assimilation and interpretation of new knowledge to assist in making improvements. Knowledge of this relationship will assist in the review of literature to identify the nature, direction and strength of the relationship.

### **1.1.3 Cereal Milling Firms In Kenya**

Cereal milling firms are companies that grind grain to produce flour either using semi- or fully-automatic type mills. According to Food and Agriculture Organization of the United

Nations (FAO) (1996), the purpose of grain milling is to improve the digestibility of the grain for human or animal consumption. For human consumption, the milling process aims to produce a palatable meal or flour. The objective here is to mill the grain to a point of coarseness that is acceptable to the consumer. For animal consumption, the milling process aims to prevent the grain passing straight through the animal digestive system without being fully digested. Examples of these cereals include wheat, rice, barley, maize, oats, millets, sorghum and mixed grain among other dry grains.

The history of cereal milling firms in Kenya dates back to early 1920s with the introduction of the hammer mill (Smale and Jayne, 2003). The sector continued to grow with the introduction of new technology due to the need of hulling mechanism on grains such as wheat, a process that the hammer mill could not achieve. The number of commercial cereal milling firms has grown over the decades. Kenya now has 30 medium-to-large scale milling firms (90-610 metric tonnes per 24hrs) and 75 small scale millers with an estimated pool capacity of 83 metric tonnes per day (United States Agency for International Development [USAID], 2010).

The three key issues facing the milling industry are counterparty risk, price volatility, and margin profitability (Rabobank Group, 2012). Counterparty risk is prevalent where millers rely on grain imports for raw materials. According to Rabobank Group, price volatility is an issue that requires both operational and strategic responses, which are necessary to maintain margins as well as competitive position. In Kenya, the major challenges facing the industry include high cost of electricity and labour, fuel and maintenance costs, and transportation due to poor state of roads (Gitau, Mburu, Mathenge and Smale, 2010).

If milling firms adopt CI concept, they can greatly improve efficiency and productivity. This will also enable these firms deploy their core competences to a competitive advantage. With this, cereal milling firms can respond more strategically to price volatility and maintenance costs. They can then maintain their margin profitability without having to charge higher prices to the end customer.

## 1.2 Statement Of The Problem

Continuous improvement as a focused and sustained incremental innovation on products and processes can greatly improve the productivity and efficiency in a production or service firm (Bhuiyan and Baghel, 2005). The approach requires a continued study on the existing products and processes with an aim to finding areas of improvement such as bottlenecks, packaging, supply chain, cycle time, cost and quality. A culture of continuous learning is important to ensure past mistakes are not repeated and the organization is better positioned to adapt to changing environment.

Studies show the importance of staff training in problem solution tools, and that CI practices improved company performance (Oprime *et al.*, 2012). They also show that organizations with successful quality programs have developed PMSs as an OLM to support CI initiatives (Oliver, 2009), and that organizational learning leads to highly efficient and predictable performance in organizations (Mitki, Shani and Meiri, 1997; Michna, 2009; and Yueh, 2012).

The cereal milling industry is characterized by stiff competition, high volumes and price sensitive demand (Adewole, 2008). Other three key issues facing the milling industry are counterparty risk, price volatility, and margin profitability (Rabobank Group, 2012). Capacity, marketing strategy, good distribution, management and pricing are the main critical success factors (CSFs) in the industry (Adewole, 2008).

In Kenya, studies conducted in the milling industry are mostly on the challenges facing the sector (Tegemeo Institute, 2009; & Gitau *et al.*, 2010). There is a recommendation (Tegemeo Institute, 2009) that future research should seek to find out how firms in the milling sector can use lessons from previous experiences to improve on their operations. Moreover, under the Kenya Vision 2030 economic pillar, increasing value in agriculture products through processing (Ministry of State for Planning, National Development and Vision 2030, 2013) is one of the ways that will help drive the economic stability of Kenya.

The above findings and recommendations in the area of organizational learning and how it drives CI practices indicated a need to study how those findings affect business in Kenya's cereal milling sector. Despite the fact that similar studies had been carried out in countries such as Brazil, Australia and Nigeria, the contextual background was different. The economic status of these countries is different from that of Kenya as is the supply of cereals to the milling industry due to much more developed food production activities in those countries, such as Australia.

This study sought to answer the following research questions: a) Which organizational learning mechanisms (OLMs) do cereal milling firms in Kenya use to support CI activities?, b) What is the relationship between organizational learning and continuous improvement?, and c) What are the challenges in implementing successful OLMs to support CI activities?

### **1.3 Research Objectives**

The general objective of this research was to establish the role of organizational learning in the practice of continuous improvement.

Specific objectives were:

- 1) To establish the organizational learning mechanisms (OLMs) that cereal milling firms in Kenya use to support CI activities.
- 2) To establish the relationship between organizational learning and continuous improvement among cereal milling firms in Kenya.
- 3) To determine the challenges facing the implementation of Organizational Learning Mechanisms to support continuous improvement programs among cereal milling firms in Kenya.

### **1.4 Value of The Study**

This study benefits the cereal millers by helping them learn how to establish more efficient ways of eliminating waste. Such waste includes spoilt grains, extended shutdown times, maintenance hours, labour hours and lost management hours. This



would lead to improved productivity and efficiency. Past research has shown that when firms implement continuous improvement through appropriate techniques, and continually learn how to improve, they will compete better in the marketplace. The tea and coffee processing industry is not very different from the cereal milling industry. It is therefore expected that the results of this study would be applicable to the tea and coffee processing industry with an aim of raising efficiency, productivity and reducing production wastes.

This research revealed training opportunities in continuous improvement practices of cereal milling firms to the firm management and training consultants. This information would assist in design of relevant training schemes to help realize attractive results. The study also revealed other areas of research in the field of organizational learning and continuous improvement in this sector. This provides background knowledge to academics who want to carry out further research in this field in future.

CI practices enable firms to deploy their core competences to a competitive advantage. This helps firms maintain their margin profitability without having to charge higher prices on their products. Stable product prices improve the living standards of the public.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

Organizations exist to provide products and/ or services to their customers. These customers demand high quality goods and services for the price paid. Organizations want to remain competitive while making financial gains for their shareholders. This usually leads to a dilemma on how to minimize operational costs without compromising on the quality of the products and services offered. Several concepts have been developed in the quest for promoting sustainable operations. They include benchmarking, world class manufacturing, continuous improvement, business process re-engineering, and project management.

In order for organizations to improve their operations, it is usually necessary for them to have knowledge of their products and processes, and their strengths and inadequacies as well. This knowledge occurs through organizational learning. Organizational learning is the renewal process of changing behaviours to enable a firm to achieve both change and growth simultaneously (Murray, 2002). It also enhances the assimilative capacity of an organization. It enables organizations to strategically innovate their products (Raquel, Julia, Daniel and Laureano, 2011) and thus "... coordinate themselves with the changes of the environment, market and customer demand" (Tohidi *et al.*, 2011, p. 219).

Research findings have shown that there exists a positive association between organizational learning and continuous improvement (Mitki *et al.*, 1997; Oliver 2009; Sinkula, 2002; and Smith, 2012). Therefore, as organizations learn through different mechanisms, they are able to implement continuous improvement more efficiently.

### 2.2 Organizational Learning, Aims and Mechanisms

Firms continually face rapid environmental changes in their daily operations. These rapid changes in the environment render the firms' knowledge obsolete and have to do away with existing competences. To remain competitive, firms must therefore renew their knowledge and competences continually (Raquel *et al.*, 2011). Learning can be viewed as

the foundation of improvement of activities (Oliver, 2009). Organizational learning therefore aims to facilitate the development of new products and processes (Baker and Sinkula, 2002), and enable firms to become better at knowledge transfer and generation of new knowledge to solve problems (Goh and Ryan, 2008).

In order to operationalize organizational learning, firms can adopt generic organizational learning mechanisms (OLMs) or craft their own mechanisms suited to the operations of the firm. Generic OLMs include Knowledge Management Systems (KMSs), Performance Measurement Systems (PMS) (Oliver, 2009), quality circles (QCs) (Hill, 1996), outsourcing (Yakhlef, 2009) and basic ones such as experimentation (Thomke, 2001). Situation-based OLMs can range from daily to monthly general staff meetings (Schechter and Feldman, 2010) and conference calls.

According to Barber, Munive-Hernandez and Keane (2006), a knowledge management system (KMS) utilizes organization's databases to provide support for CI activities. It does this through provision of a formal structure to "collect relevant information, access key performance indicators, review processes; and plan, implement and evaluate improvement initiatives systematically" (pp. 1003-1004). They further argue that this triggers effective and systematic knowledge use, creation and sharing. Kluge, Stein and Licht (2001) observe that for a KMS to be successful, it must create an environment where users are encouraged to seek knowledge for themselves and pull it out from sources within and beyond the organization's boundaries.

Generally management are faced with too many, not too few data. To filter out extraneous data and report objectively, identifying key performance variables is critical (Bond, 1999). These key performance variables become the metrics that can be integrated into a single performance measurement system. Srimai, Damsaman and Bangchokdee (2011) argue that a performance measurement system (PMS) provides a basis for sharing necessary information, knowledge and attitude that fosters gaining, distributing, and interpreting information. This is achieved through employment of relevant performance measures (PMs) derived from the key performance variables. PMs can then be compared over time to determine if the management objectives are being achieved at the shop floor.

Quality Circles (QCs) have been defined by Goh (2000, p. 784) as the “meeting of minds during a quality journey to attain customer satisfaction through continuous improvement and teamwork.” According to Deming (1982), QCs were first developed and formalized in Japan in the 1960s. Although a big success in Japan, they became a failure in UK (Goulden, 1995; & Hill, 1996) due to the setting of inappropriate objectives and faulty implementation. In a UK study done by Hill (1996), he noted that QCs contributed to organizational learning from a quality perspective. Hill (1997) argues that participation in QCs exposes employees to new ideas, expands their knowledge of quality issues and encourages them to think differently about the nature of their jobs. This facilitates organizational learning.

Outsourcing and experimentation have been noted as other OLMs. Outsourcing is seen as an OLM since it supports learning from external sources. In a study of six firms that had outsourced their IT services, Yakhlef (2009) found that when firms outsource such activities, they are forced to codify and transform the knowledge underlying those activities into explicitly communicable specifications. As the firms deal with their suppliers, there is intense interaction and exchange of information from different sources. This leads to organizational learning as firms internalize the knowledge from their suppliers. Experimentation, according to Thomke (2001), is a basic learning mechanism for a company to innovate. In this case, experiments are used to test the suitability of particular alternatives to solving problems in an organization.

### **2.3 Challenges of Implementing Organizational Learning Mechanisms**

Challenges can face an organization during the implementation of organizational learning mechanisms. These challenges can be cultural or structural in nature. Kaziliūnas (2011) identifies some of these challenges as: lack of appropriate infrastructure to enable the implementation of organizational learning, failure to appreciate the importance of learning in small steps, over reliance on specific techniques as the primary means of achieving the learning organization, and the necessity to provide training at the time it will be used.

Other challenges include sustaining continuity of learning, meeting the learner's expectations, and delivering the appropriate learning spaces (Clarke, 2009). Learning spaces can be through the involvement of employees in the decision making process and rewarding employees for innovative ideas. Augustsson, Törnquist and Hasson (2013) have also identified manager's uncertainty about their role in organizational learning and lack of ownership and responsibility among staff and managers for learning and development as other challenges in organizational learning.

## **2.4 Continuous Improvement**

CI is an incremental approach to product and process improvement. It occurs through a systematic data collection and analysis, formulation and implementation of alternatives and evaluation of those alternatives to determine their effectiveness. This process is simplified by the Deming Plan-Do-Check-Action (PDCA) virtuous cycle (Deming, 1982). Simply stated, it means *Plan* by studying the current situation and developing changes for improvement, implement (*Do*) the measures so developed on a trial basis, examine effect of changes (*Check*) to see if desired result is achieved, then standardize (*Action*) on a permanent basis.

The motives of implementing CI are numerous. Among these are to improve productivity and efficiency (Grütter, Field and Faull, 2002), quality (Grütter *et al.*, 2002), the reduction of production costs (Bond, 1999; & Terziovski and Sohal, 2000) and reduction of cycle time (Grütter *et al.*, 2002). These are also the indicators of CI in any manufacturing firm. CI is important simply because an organization cannot win today's market using yesterday's performance (Harrington, 1995).

## **2.5 Theoretical and Empirical Literature**

CI targets the elimination of waste in all systems and processes of an organization (Bhuiyan and Baghel, 2005). Often, this involves adoption of one or more than one of CI methodologies (Nilsson-Witell, Antoni and Dahlgaard, 2005), *viz.*: lean manufacturing, six sigma, the balanced scorecard, and the lean six sigma. However, for organizations to

improve in their operations there must be some learning to identify those aspects of the organization that need to be improved (Mitki *et al.*, 1997; Zangwill and Kantor, 1998; & Oliver, 2009).

Several studies have been carried out on the role played by organizational learning in enabling continuous improvement. Most of these studies have shown a positive association between organizational learning and continuous improvement (Mitki *et al.*, 1997; Daniel, Raquel and Miguel, 2008; Oliver, 2009; Raquel *et al.*, 2011; Oprime *et al.*, 2012; & Smith, 2012).

Oprime *et al.* (2012) conducted a survey in 46 industrial companies in Brazil to identify critical factors in the success of CI activities. This sample was drawn from a population of 1,221 ISO 9001 certified companies from various states in Brazil. An invitation email was sent to all 1,221 companies inviting professionals responsible for CI activities in their companies to participate in the survey. The 46 that showed interest were further conducted by telephone to clarify any possible doubts. Their findings showed that staff training in problem solution tools and high level of commitment were critical for success of CI, and that developing CI was gradually achieved through organizational learning.

Another survey was conducted in Australian organizations certified to quality standard ISO 9000. In that study, Oliver (2009) sought to explore the use of PMS as an OLM to support CI. The survey involved a sample of 500 ISO 9000 certified companies from various states in Australia. Surveys were then posted to both Finance Manager and Quality Manager in each sampled company. A response rate of 30.6 percent representing three hundred and three responses was recorded. From her findings, it was clear that in those organizations where quality programs were successful, they had developed PMS as an OLM to support their CI activities. She found out that the PMS assisted in building the shared vision that was necessary for the organizational learning process.

Mitki *et al.* (1997) did a case study on the American-Israeli Paper Mills Corporation Ltd located in Israel with the objective of identifying the role that OLMs played in CI activities. This case study involved an eight-year follow-up at the company. Their

findings showed that parallel OLMs could provide the vital engine required to make CI an integral part of organizational life. Similar studies by Michna (2009) in Polish SME sector, Tohidi *et al.* (2011) in Iranian ceramic tile manufacturers all point out that organizational learning is critical in enabling success in CI activities.

The learning journey however depends on several factors. In a study on French military crews, Godé and Barbaroux (2012) noted that learning during debriefing sessions ultimately depended on the capacity of the learning agents to integrate individual and collective functions. Also noted as important in organizational learning is the organizational culture (Tran, 2008; & Hurley and Hult, 1998). Raquel *et al.* (2011) point out that organizational culture can either facilitate organizational learning or act as a barrier to learning. Equally important to organizational learning is teamwork (Tjosvold, 1991; & Senge, 1990), level of communication, desire to learn and innovate, creativity and openness (Nonaka and Takeuchi, 1995), organizational structure, and the intellectual capital that the organization has.

An examination is also made on the research approach, methods, instruments and data analysis tools used in similar studies. Oprime *et al.* (2012) used a survey to investigate the critical factors necessary for success of CI activities. A sample of 46 companies was drawn from a population of 1,221 industrial companies in Brazil. Online questionnaires were then used to collect data from the sample. The questionnaire was first assessed using Cronbach's alpha; to measure the global correlation between the variables used in the questionnaire, and the 3:1 ratio between the number of cases and the number of variables investigated. Both tools showed that the data collection tool was satisfactory. Data was then analysed using descriptive statistical techniques, a correlation test and a significance test. Statistical techniques used included the non-parametric Spearman correlation; usually recommended for ordinal qualitative variables, and factor analysis.

The survey technique was also employed by Oliver (2009) to investigate the role of organizational learning to support CI. A random sample consisting of 500 ISO 9000 certified Australian companies was picked from each state. A survey questionnaire was then posted to a total of 1,000 Finance Managers and Quality Managers of the sampled

500 companies. The two management positions were selected as their work responsibilities would expose them to their organization's quality programs. Three hundred and three of those surveys were returned duly filled. To answer a set of three research questions, profile analysis was used to analyze the data.

A longitudinal, eight-year follow-up case study done by Mitki *et al.* (1997) in an American-Israeli Paper Mills Corporation Ltd sought to establish the role of OLMs in CI activities. Data on different variables such labour hours, machine output per hour, and water consumption was then collected over the years. Statistical analysis using bar graphs was then used to analyse the data.

Tohidi *et al.* (2011) did a survey in Iranian ceramic tile manufacturers with the aim of examining how organizational learning affects innovation. A random sample of 18 tile manufacturing companies was used. The survey questionnaire was then sent to the employees of the business section in each company. A total of 173 valid questionnaires were obtained. To test the reliability of the questionnaire, both the composite reliability values and the Cronbach's alpha coefficient were computed and were found satisfactory. Validity was assessed using extensiveness of literature reviewed, specialist opinion, and the correlation among the subscales. Confirmatory factor analysis was used to test a hypothesized model.

Michna's (2009) empirical study of the Polish SME sector sought to establish the relationship between organizational learning and SME performance. A sample of 211 enterprises was randomly selected from 400 member enterprises of the Regional Chambers of Commerce in Katowice (RIG). Initially, a questionnaire was sent by email targeting the top managers of the companies. The method failed, with a response rate of 1 percent. The method was abandoned. Finally the forms were personally delivered and collected from the premises. The actual survey was preceded by a pilot study. A total of 107 valid questionnaires were received. Profile analysis, Kruskal-Wallis analysis of variance (ANOVA) and profitability index were used to analyze the data.



## **2.6 Summary of Research Gaps**

The literature gives clear evidence that organizational learning has a positive impact on CI programs. As organizations face new challenges on a daily basis, it is important to handle those challenges as they occur in order to remain competitive in the face of intense competition. To understand these challenges fully and objectively, an environment that fosters learning, creativity, communication and openness is important, otherwise firms will face worse drawbacks from their solutions in terms of what Senge (1990) refers to as “compensating feedback” from the system. Compensating feedback refers to when the system responds in a manner that offsets the benefits of a well-intentioned intervention.

An online search of articles on the subject as studied in Kenyan firms yielded zero results. It is true that award initiatives such as Company of Year Award (COYA) have been in place for a couple of years now. The awarding criterion has been business performance; although the auditing agents do not detail how these companies achieve this business excellence. This leaves many questions in the minds of those firms that would want to achieve similar excellence in their operations.

The food sector is critical to the overall welfare of the nation – for feeding the nation. A systematic study into how firms in this sector go about their CI activities is important, as is the organizational learning in those firms that drives the CI activities. The sector is wide; the government agencies tasked with agricultural matters, grain growing and care entities, grain handling firms, grain milling firms, and the distribution chain that ensures the grains and the associated products reach the desired customer. The cereal milling sector is chosen due to the strategic role it plays in converting the grains into other products, more so flour. This conversion process brings about value addition as envisaged by Kenya Vision 2030 economic pillar.

Furthermore, cereal milling companies usually find themselves on the receiving end whenever there’s grain shortage as their product prices shoot high to cover rising raw grain cost. Customers complain of high flour prices oblivious of the actual happenings on

the ground. It is therefore imperative that a study be done to find out how organizational learning can aid in promoting CI activities in these cereal milling firms.

## 2.7 Conceptual Framework of the Study

Organizational learning aids continuous improvement. This implies that success of continuous improvement activities depends mostly on the organizational learning process. This study used seven constructs to measure organizational learning. These constructs have been used by Yang, Watkins and Marsick (2004) and Ni and Sun (2009). Continuous improvement was measured using five indicators as shown in the conceptual framework diagram.

To test whether the relationship between organizational learning and continuous improvement is significant, hypothesis testing was employed. Figure 2.1 shows the conceptual framework of this study.

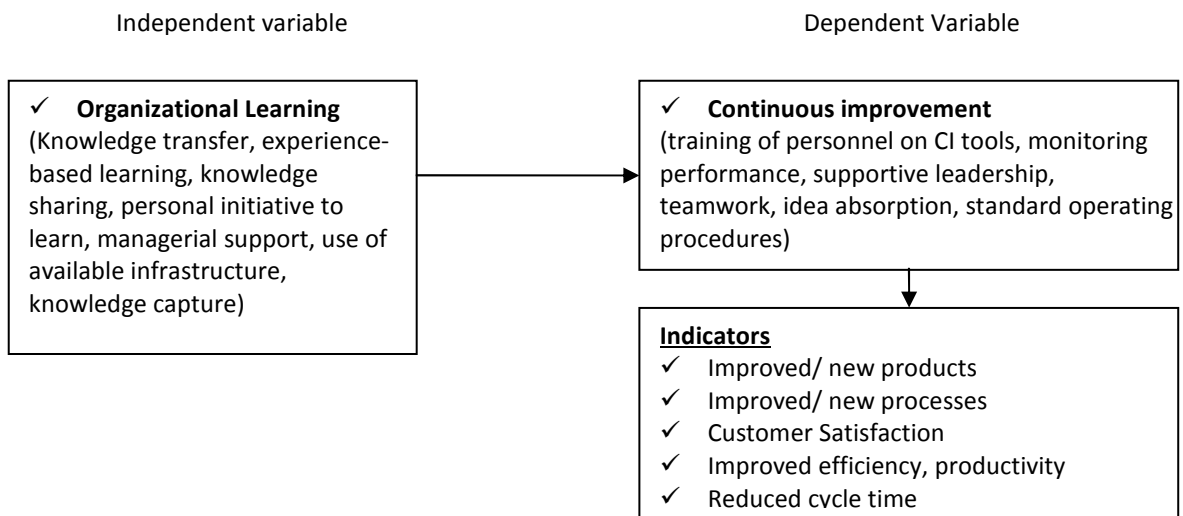


Figure 2.1: Conceptual Framework

**Null Hypothesis:** There is no relationship between organizational learning and continuous improvement.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Research design**

The study adopted a census survey due to the small size of the population. This research design was chosen because it was suitable and appropriate to describe and analyze the concerned population in terms of its activities on organizational learning and continuous improvement.

### **3.2 Study population**

A total of one hundred and two cereal milling firms in Kenya who are members of the Cereal Millers Association (CMA) (USAID, 2010) formed the population. The list of these cereal milling firms is shown in Appendix 2.

### **3.3 Data collection**

Data was collected using a combination of electronic and self-administered hardcopy questionnaires. The questionnaires consisted of both open-ended and closed-ended questions. A total of 8 questionnaires were collected using the electronic method, and the rest, 23 in number, were in hardcopy. A sample of the questionnaire that was used is shown as Appendix 1.

### **3.4 Data Analysis**

The responses to the questionnaires were coded and entered into SPSS. The results were presented by way of frequency tables for interpretation purposes. Measures of central tendency (mode, frequencies and percentages) were used to describe part of the findings. For the relationship between organizational learning and continuous improvement, a cross-tabulation was obtained, and chi-square values and their corresponding exact p-values were calculated. These p-values were then used to test the hypothesis that there is no relationship between organizational learning and continuous improvement.

## **CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION**

### **4.1 Introduction**

This chapter gives a detailed analysis of the data collected and presents the findings of the study and interpretation of the results. The data has been analysed and presented in form of frequency tables and descriptive statistics obtained from cross-tabulation analysis.

### **4.2 Response rate**

A total of 110 questionnaires were distributed to 102 cereal milling firms, out of which 31 valid questionnaires were collected from 26 organizations. This represents a response rate of 28.18%. Out of the 31 questionnaires, only 1 had incomplete background information of the respondent. However, the questionnaire was included in the analysis since the filled sections provided adequate information to answer the three research questions.

### **4.3 Reliability Analysis**

The questionnaire used was tested for reliability, with specific emphasis on the questions on organizational learning and continuous improvement. The Cronbach's alpha coefficient for organizational learning was found to be 0.631, implying acceptable internal consistency as a data collection tool. The Cronbach's alpha coefficient for continuous improvement outcomes was found to be 0.886, implying relatively high internal consistency of the tool. The overall Cronbach's alpha coefficient for the whole questionnaire was 0.849. This high value implies that responses vary due to difference in opinion among respondents and not due to difference in interpretation of the questions.

### **4.4 Characteristics of Respondents**

This section discusses the characteristics of the respondents which include: their academic qualifications, product portfolio of firms they represent, the length of their service to their organization, and the positions they hold within those organizations.

#### 4.4.1 Academic Qualifications of the Respondents

In any study, academic qualifications of the respondents will have a bearing on the degree of confidence with which a generalization can be held. The summary of academic qualifications of the respondents is shown in table 4.1 below.

Academic Qualifications		Frequency	Percent
Valid	Masters	6	19.4
	Bachelors Degree	9	29.0
	Advanced Diploma	10	32.3
	Ordinary Diploma	4	12.9
	Other	1	3.2
	Total	30	96.8
Missing	System	1	3.2
Total		31	100.0

Table 4.1: Respondents by academic qualifications

In this study, 19.4% of the respondents had a Masters degree, 29% had a Bachelors degree while 32.3% had an advanced diploma. It is also evident that at least 93.6% of the respondents had good level of education, which gives good credence to the results of this study since they are coming from highly qualified respondents.

#### 4.4.2 Respondents by Product portfolio

Data on the product portfolio of the firms represented by the respondents is also presented in figure 4.1. The findings show that 39% of the respondents reported their firms as having maize flour in their product portfolio, while wheat flour is milled by 21.6% of the respondent' firms. Only 5.9% reported their main product as breakfast cereals.

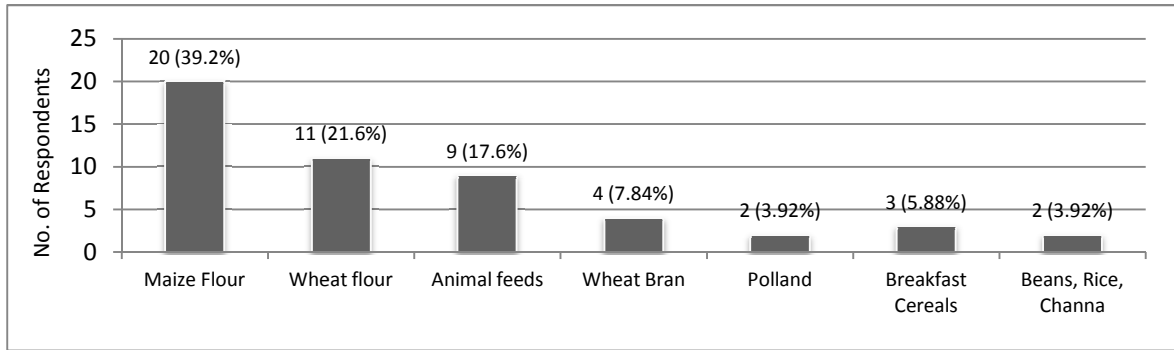


Figure 4.1: Product portfolio

#### 4.4.3 Respondents by Length of Service in the Organization

The results on how long the respondents had worked in the organization show that 77.4% of the respondents had worked in their firms for at least 2 years. This was important since the subject under study required that the respondents be relatively familiar with the operations of their firms. A summary of the duration in years worked in the firms is shown in table 4.2.

Duration in years while working in the organization					
	No. of Years	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	19.4	20.0	20.0
	2	6	19.4	20.0	40.0
	4	4	12.9	13.3	53.3
	5	4	12.9	13.3	66.7
	3	3	9.7	10.0	76.7
	8	2	6.5	6.7	83.3
	11	2	6.5	6.7	90.0
	6	1	3.2	3.3	93.3
	7	1	3.2	3.3	96.7
	22	1	3.2	3.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.2: Respondents by length of service within the organization

#### 4.4.4 Respondents by Position Within Organization

The initial targeted position within the organizations was the Production/ Operation Managers or any other persons holding a similar position in the selected sample. In some organizations, this position did not exist and therefore other persons were chosen to fill

out the questionnaire. Figure 4.2 below shows the distribution of the respondents in terms of the positions they hold within their firm.

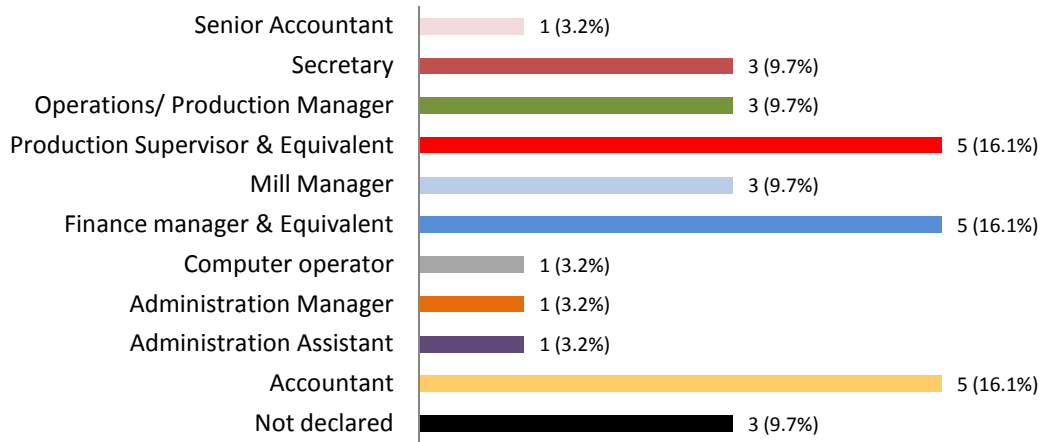


Figure 4.2: Respondents by position within organization

Figure 4.2 shows that 35.5% of the respondents were in production department, i.e, the operations manager, production supervisors and mill managers; 35.5% were from finance and accounts departments and the others who declared their positions were in general administration. Only 9.7% did not reveal their positions.

## 4.5 Product Quality

Respondents were asked to rate the quality of their products as compared to those of competitors. Three comparative options were given from which to choose from: superior, similar and below competition. A summary table is shown below as table 4.3.

Product quality versus competition					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Superior	9	29.0	30.0	30.0
	Similar	20	64.5	66.7	96.7
	Below competition	1	3.2	3.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.3: Product quality versus competition

Table 4.3 shows that 64.5% of the respondents reported their products as being of similar quality as compared to the products of their competition, 29% reported their products were of superior quality and only 3.2% reported their products as of inferior quality compared to that of competition.

#### 4.6 Organizational Learning Mechanisms Used by Cereal Milling Firms

Six organizational learning mechanisms (OLMs) were established from literature and respondents were asked to tick all OLMs that their organizations use in the learning process. A frequency table of the OLMs selected by the respondents is shown below as in table 4.4. The percentage of each OLM is based on the 31 responses received since it was a multiple selection question.

OLMs Frequencies (Total N = 31)			
		Responses	
		N	Percent
Organizational Learning Mechanisms	Knowledge Management System	5	16.1%
	Performance Measurement System	22	71.0%
	Quality Circles	3	9.7%
	Outsourcing	5	16.1%
	Experimentation	2	6.5%
	Regular Meetings	18	58.1%

Table 4.4: Organizational learning mechanisms used by cereal milling firms

From table 4.4 it is evident that the most preferred organizational learning mechanisms are Performance Management System at 71% and regular meetings at 58.1%. Quality circles and experimentation are not commonly used as OLMs and were only reported by 9.7% and 6.5% of the respondents respectively. The results also show an average use of Knowledge Management Systems and outsourcing as OLMs, each at 16.1%.

Further analysis was carried out to determine how many firms use more than one organizational learning mechanism. The summary of the results is shown in table 4.5.



Case Summaries – Organizational Learning Mechanisms			
Number of OLMs used	Number of Respondents	Percentage	Cumulative
0	3	9.7	9.7
1	11	35.5	45.2
2	9	29.0	74.2
3	7	22.6	96.8
5	1	3.2	100
Total	N	31	100

Table 4.5: Case summaries of organizational learning mechanisms

Table 4.5 shows that only 9.7% of the respondents reported their firms as not using any OLM. Another 35.5% of the respondents reported that their firms used only 1 OLM, while 29% reported use of 2 OLMs in their firms. 22.6% of the respondents reported use of 3 OLMs and only 3.2% use 5 out of the 6 listed OLMs. Thus 92.3% of the respondents reported the use of at least 1 OLM in their firm to advance organizational learning. This implies that cereal milling firms in Kenya are engaged in meaningful activities that contribute to learning within their organization.

#### **4.7 The Relationship Between Organizational Learning and Continuous Improvement**

The relationship between organizational learning and continuous improvement in this sector was determined by cross-tabulating the different responses on organizational learning, the independent variable, and the different responses on continuous improvement, the dependent variable. A chi-square test of association was computed and corresponding exact probability values (p-values) at 95% confidence level were obtained. The p-values are shown in table 4.6.

For tabulation purposes, the constructs of organizational learning were coded as follows:

OL1 – Appropriate organizational mechanisms are used to deploy what has been learned across the organization.

OL2 – Everyone learns from their experiences, both good and bad.

OL3 – Individuals and groups at all levels share (make available) their learning from all work and improvement experiences.

OL4 – Individuals seek out opportunities for learning/ personal development.

OL5 – Managers accept and, where necessary, act on all the learning that takes place.

OL6 – People and teams ensure that their learning is incorporated into the organization by making use of the mechanisms provided for that.

OL7 – The organization articulates and consolidates (captures and shares) the learning of individual and groups.

The indicators of continuous improvement were also coded as follows:

CI1 – There is increased production volume.

CI2 – There is increased productivity.

CI3 – The cycle times have been reducing.

CI4 – The production cost is going down.

CI5 – The efficiency of our processes has increased.

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p-values for Pearson Chi-Square (2-sided Exact Significance)

	CI1	CI2	CI3	CI4	CI5
OL1	<b>0.002</b>	<b>0.013</b>	<b>0.058</b>	0.757	<b>0.020</b>
OL2	0.281	0.357	0.353	0.628	0.271
OL3	0.271	0.310	0.287	0.129	0.478
OL4	0.194	0.364	0.449	0.324	<b>0.013</b>
OL5	<b>0.014</b>	<b>0.001</b>	0.095	<b>0.020</b>	<b>0.007</b>
OL6	0.635	0.613	0.102	0.945	0.358
OL7	0.178	0.072	<b>0.024</b>	0.730	0.249
N of Valid Cases	31	31	31	31	31

Table 4.6: p-values for Pearson Chi-Square (2-sided exact significance)

The p-values shown in table 4.6 above suggest a significant relationship between having appropriate organizational mechanisms to deploy what has been learned across the organization (OL1) and 3 of the indicators of continuous improvement (CI1, CI2, CI5) with chi-square p-values of {0.002;0.013;0.020}<0.05 respectively.

The p-values also suggest a significant relationship between the initiative taken by employees to learn and develop themselves (OL4) and process efficiency (CI5), an

association which could be linked to learning of new ideas, concepts and ways of doing things at work. The ability of managers to accept responsibility and act on all form of learning that takes place within an organization (OL5) is significantly associated with improved performance in terms of production volumes (CI1), level of productivity (CI2), production costs (CI4) and process efficiency (CI5), with p-values of {0.014;0.001;0.020;0.007}<0.05 respectively.

The results in table 4.7 also suggest a significant relationship between the ability of an organization to articulate and consolidate learning of individuals and groups (OL7) and improved cycle times (CI3). Therefore, 4 out of the 7 constructs used to measure organizational learning have a significant relationship with all the 5 collective variables used to measure continuous improvement. We can therefore conclude that organizational learning is important in supporting of, and is significantly related to continuous improvement. Hence we reject the null hypothesis.

#### **4.8 Challenges in Implementing Successful OLMs to support CI Activities**

There are several challenges that firms encounter in the implementation of organizational learning mechanisms to support their continuous improvement activities. Some of these challenges were derived from literature and respondents were asked to indicate whether their firms encountered those challenges. A 5-point likert scale of “strongly disagree” to “strongly agree” was used for each challenge.

The data on challenges is analysed in two steps: using frequencies and then using measures of central tendency, that is, mean and standard deviation. For ease of analysis in the first step, the responses were also combined as “agree” for both “strongly agree” and “agree”, “neutral” for “nor disagree nor agree” and as “disagree” for both “disagree” and “strongly disagree”.

Table 4.7 below summarises the question on sufficient infrastructure available to support learning activities. 38.7% of the respondents reported that there was no sufficient

infrastructure. Combined with the neutral responses, a majority representing 51.6% did not feel that their firms had put in place sufficient infrastructure to support their learning activities. This implies that lack of infrastructure is a major challenge in implementing of organizational learning mechanisms.

There is sufficient infrastructure to support our learning activities					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	6	19.4	38.7	19.4
	Disagree	6	19.4		38.7
	Nor disagree nor agree	4	12.9	12.9	51.6
	Agree	11	35.5	48.4	87.1
	Strongly Agree	4	12.9		100.0
	Total	31		100.0	

Table 4.7: Sufficiency of infrastructure to support our learning activities

The next question was whether the infrastructure in place is updated frequently in order to accommodate new training needs such as new methods of measuring a particular outcome. The findings are shown in table 4.8.

We frequently update our infrastructure to accommodate new training needs					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	3	9.7	51.6	9.7
	Disagree	13	41.9		51.6
	Nor disagree nor agree	3	9.7	9.7	61.3
	Agree	11	35.5	38.7	96.8
	Strongly Agree	1	3.2		100.0
	Total	31		100.0	

Table 4.8: Updating of infrastructure to accommodate new training needs

The findings show that 51.6% of the respondents disagreed with the idea that the existing infrastructure is frequently updated to accommodate new training needs. 38.7% however pointed that their firm's infrastructure is frequently updated. These statistics confirm that another challenge in implementing organizational learning mechanisms is the lack of frequent updating of existing infrastructure.

The respondents were then asked to respond to whether there was continuity in the learning process within their firms. The findings indicate that a majority 42% disagreed that there was continuity in the learning process. These findings are shown in table 4.9. Continuity in the learning process enables steady collection, dissemination and use of new knowledge. When this becomes a seasonal activity, assessing the effectiveness of a particular OLM becomes difficult.

There is continuity in the learning process					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	3	9.7	42.0	9.7
	Disagree	10	32.3		41.9
	Nor disagree nor agree	4	12.9	12.9	54.8
	Agree	8	25.8	22.2	80.6
	Strongly Agree	6	19.4		100.0
	Total	31		100.0	

Table 4.9: Continuity in the learning process

On whether their organization meets the learning expectations of the employees, 38.7% felt that their organization did not meet the learning expectations the employees have. However, 35.5% of the respondents felt that their organizations meet their learning expectations, as shown in table 4.10.

The organization adequately meets the learning expectations of our employees					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	3	9.7	38.7	9.7
	Disagree	9	29.0		38.7
	Nor disagree nor agree	8	25.8	25.8	64.5
	Agree	9	29.0	35.5	93.5
	Strongly Agree	2	6.5		100.0
	Total	31		100.0	

Table 4.10: The organization meets the learning expectations of our employees

The respondents were also asked if the training of employees matches with the time periods when the knowledge is required for use in doing their jobs. 58.1% of the respondents reported that their firms offer training when it is required by the employees, and only 29% indicated that the training did not match the time periods when it is

required for use in their jobs. This implies that the timing of training is not a major challenge in the implementation of organizational learning mechanisms. The findings are shown in table 4.11 below.

We train employees depending on the timing when it is required					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	3	9.7	29.1	9.7
	Disagree	6	19.4		29.0
	Nor disagree nor agree	4	12.9	12.9	41.9
	Agree	14	45.2	58.1	87.1
	Strongly Agree	4	12.9		100.0
	Total	31	100.0		

Table 4.11: Matching training period to time of usage

The researcher also sought to know the level of awareness among the management team on their roles in implementing OLMs. This awareness would mean there is accountability in the learning process. The findings show that a majority 64.5% agree that the managers are aware of their roles in the learning process. This implies that there is clear accountability in the learning process. The findings are shown in table 4.12.

Managers are aware of their roles in the organizational learning process					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	2	6.5	35.5	6.5
	Disagree	9	29.0		35.5
	Agree	16	51.6	64.5	87.1
	Strongly Agree	4	12.9		100.0
	Total	31	100.0		

Table 4.12: Managers are aware of their roles in the organizational learning process

Ownership of a process by stakeholders is important since it implies each stakeholder is committed to contributing to the process from an individual level. The question of ownership of the learning process was posed to respondents, and 61.3% of the respondents reported that both managers and employees owned the organizational learning process. Another 29% of the respondents felt that the two groups did not own the

learning process. These findings agree with the findings on awareness of managers on their role in the organizational learning process. The findings are shown in table 4.13.

Ownership of the learning process by managers and employees					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	3	9.7	29.1	9.7
	Disagree	6	19.4		29.0
	Nor disagree nor agree	3	9.7	9.7	38.7
	Agree	16	51.6	61.3	90.3
	Strongly Agree	3	9.7		100.0
	Total	31			100.0

Table 4.13: Ownership of the learning process by managers and employees

The researcher also posed a question on whether employees were rewarded for new ideas that were found to be innovative in their jobs. This would act as a motivation to ensuring that new innovative ideas are frequently injected into the learning process and thus improved company performance. The findings are shown in table 4.14.

Employees are rewarded for new innovative ideas					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	7	22.6	58.1	22.6
	Disagree	11	35.5		58.1
	Nor disagree nor agree	7	22.6	22.6	80.6
	Agree	4	12.9	19.4	93.5
	Strongly Agree	2	6.5		100.0
	Total	31			100.0

Table 4.14: Employees are rewarded for new innovative ideas

The findings show that 58.1% of the respondents disagreed that employees are rewarded for new innovative ideas. Only 19.4% of the respondents said that their firms reward employees for new innovative ideas, with 22.6% being neutral on the issue. This implies that employee motivation is a major challenge in the implementation of successful OLMs to drive continuous improvement activities.

Lastly, the researcher sought to know if the firms frequently reviewed their training tools to meet the organizational learning needs. The need to review these tools is that it enables

organizations adequately address their learning needs. These could include new training software, subscriptions to relevant journals and revision of training materials to reflect new development in the particular sector. The findings are shown in table 4.15.

We frequently review our training tools to meet our learning needs					
	Frequency	Percent		Cumulative Percent	
Valid	Strongly disagree	6	19.4	54.9	19.4
	Disagree	11	35.5		54.8
	Nor disagree nor agree	1	3.2	3.2	58.1
	Agree	9	29.0	41.9	87.1
	Strongly Agree	4	12.9		100.0
	Total	31		100.0	

Table 4.15: Review frequency of training tools to meet organizational learning needs

The findings indicate that 54.9% of the respondents felt that their organizations did not review the training tools as frequently as necessary, while 41.9% agreed that their organizations review training tools as frequently as necessary to meet their new learning needs and requirements. These findings agree with the findings on the issue of updating existing infrastructure to accommodate new training needs.

Respondents were also asked to add any other challenges that their organizations may be encountering in implementing OLMs to support their CI activities. Only 1 respondent reported that there was other challenge besides the stated ones. The reported challenge was that there was lack of manager and employee relations. This would hinder a friendly environment that fosters good communication, sharing of ideas and promote fear of making mistakes.

Data on the 9 challenges was then analysed using mean and standard deviation (SD). This analysis would tell which challenge was more prevalent in this industry when it comes to implementation of OLMs to support CI activities. The likert-type questions were rated as: 1= strongly disagree; 2= disagree, 3= nor agree nor disagree, 4= agree, 5= strongly agree.

The findings are shown in table 4.16 below. The challenge of lack of reward schemes for innovative ideas from employees has the least mean of 2.45 and is therefore the most



prevalent in this industry. This is followed by lack of frequent review of training tools with a mean of 2.81. The findings also show that managers are aware of their role in the learning process (mean= 3.35), making it the least challenge encountered in this industry.

Challenge	Mean	SD
Managers are aware of their roles in the organizational learning process	3.35	1.226
We train employees depending on the timing when it is required	3.32	1.222
Managers and employees have ownership of the learning and development process	3.32	1.194
There is continuity in the learning process	3.13	1.335
There is sufficient infrastructure to support our learning activities	3.03	1.378
The organization adequately meets the learning expectations of our employees	2.94	1.124
We frequently update our infrastructure to accommodate new training needs	2.81	1.138
We frequently review our training tools to meet our learning needs	2.81	1.400
Employees are rewarded for new innovative ideas	2.45	1.179

Table 4.16: Summary of the challenges by means and standard deviations

These findings show a need to implement employee reward schemes for any innovative ideas they may come up with. Frequent updating of existing infrastructure as well as installing sufficient infrastructure is important if the goals of organizational learning are to be realised. When these challenges have been addressed, the firms will be able to sustain their continuous improvement activities and improve organizational performance.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Summary**

The overall objective of this study was to study organizational learning and continuous improvement among cereal millers in Kenya. The specific objectives sought to establish the organizational learning mechanisms used by cereal millers to support their continuous improvement activities and the challenges faced in implementing of those organizational learning mechanisms. The study also sought to establish if there exists any relationship between organizational learning and continuous improvement in this sector.

The approach used was the perception of firm employees who were surveyed using a formal structured questionnaire. The data collection exercise recorded a response rate of 28.18%. Findings from this study showed that the most preferred organizational learning mechanism among cereal millers in Kenya is Performance Management System (PMS) at 71%, followed by regular meetings at 58.1%. The findings also show that quality circles (QCs) and experimentation are not commonly used as OLMs and were only reported by 9.7% and 6.5% of the respondents respectively.

The preference given to PMS as an OLM can be attributed to the ease with which organizational performance can be appraised and communicated to stakeholders, and appropriate benchmarks then used to improve on performance. Regular meetings are also good source of information regarding departmental performance and ideas are usually shared across the organization in a fast and effective manner.

The findings of the study also showed that there exists a significant relationship between organizational learning and continuous improvement. Particularly of importance in this relationship is the role played by the management in promoting organizational learning to ensure sustained continuous improvement. It was also noted that having appropriate organizational mechanisms in place to support the activities of continuous improvement was critical in the relationship.

The challenges facing the implementation of successful organizational learning mechanisms to support continuous improvement activities are many. Some of these challenges include lack of sufficient infrastructure to support learning activities. Even where some infrastructure exists, it is not usually updated as frequently as would be necessary in order to accommodate new training needs. The other challenge reported was that the learning process does not meet the learning expectations of the employees. The implication of this challenge is that employees' productivity may be affected negatively.

It was also reported that the learning process is not continuous, meaning it is only done when the management feels it is necessary. This challenge is supported by the fact that training is only done when it is required, as reported by 58.1% of the respondents. Other challenges included lack of employee reward mechanisms for new innovative ideas, not reviewing training tools to meet new organizational learning needs, and lack of good manager and employee relations.

Overall, the most prevalent challenge in this industry in terms of implementation of organizational learning was found to be lack of reward schemes for innovative ideas from the employees (mean = 2.45). This is closely followed by lack of frequent review of training tools with a mean of 2.81. The least encountered challenge is lack of manager awareness in terms of their role in the learning process (mean = 3.35).

## **5.2 Challenges and Limitations of the study**

Two challenges were encountered during this study. The first challenge was lack of willingness by potential respondents to fill out the questionnaires. It took the effort of several follow up calls and visits for some to fill out the questionnaires. This brought about the second challenge, the availability of funds to make those several visits and calls for follow up. To minimize the effect of these challenges on the study, the researcher issued an extra questionnaire to those organizations that were willing to have two employees participate in the study. This explains why 31 questionnaires were collected from 26 organizations that agreed to participate in this study.

### **5.3 Conclusion**

From the study, it can be concluded that cereal milling firms in Kenya use different organizational learning mechanisms to support their organizational learning needs and promote continuous improvement activities. The most preferred OLMs are Performance Management Systems and Regular Meetings.

Preference of these two OLMs can be attributed to different factors. PMS lends itself easily to use for measuring organizational performance and communicating the results to stakeholders. Benchmarks derived from pre-determined objectives are then used to improve on performance. Regular meetings are a quick source of information regarding daily departmental performance. Important information is usually shared across the organization firsthand by senior management during these regular meetings making it easy to do subsequent follow ups.

There is significant relation between organizational learning and continuous improvement. This relationship explains the need for organizations to adequately attend to the learning needs of their employees if they're to remain competitive within their industry. Organizations that are able to create new knowledge, extend it throughout the whole organization and quickly implement it within their technologies will be able to gain an edge over their competitors. Important to this relationship is the role of management in ensuring that the learning process is successful. This implies that the management should actively and consciously drive the learning process.

Sufficient and up-to-date infrastructure is important in implementing successful OLMs. Cereal millers have the challenge to put in place necessary infrastructure and frequently update this infrastructure to meet their learning needs that evolve continuously. This includes updating the training tools as well.

It can be costly to meet the learning expectations of each employee. However, cereal milling firms in Kenya should work towards equipping their workers with the necessary knowledge to enable them perform their day to day duties in an efficient manner. Rewarding of employees for new ideas that bring about better organizational

performance not only motivates the employees, but makes them own the ideas as well. This is a challenge that cereal millers must work on for valuable ideas to keep flowing from the workforce. The fact that the management is aware of its role in the learning process makes it less difficult to address these existing challenges.

## **5.4 Recommendations**

Organizational learning is important in ensuring that workers have the right knowledge to perform their duties efficiently. To achieve effective organizational learning, it is recommended that cereal millers should strengthen the systems that enable them to generate, transfer and utilize new information.

Performance management systems and regular meetings may serve a good percentage of the total organizational learning needs. However, adopting other OLMs such as quality circles can greatly contribute to the objectives of organizational learning, more so from a quality perspective. A quality circle exposes employees to new ideas, expands their knowledge of quality issues and encourages them to think differently about the nature of their jobs. This motivates employees to learn new and better ways of doing their jobs hence improving the overall performance of the organization.

Increased process efficiency, improved product quality, less production costs and higher productivity among other things are the motives behind continuous improvement. This positive organizational performance as a result of continuous improvement activities is the objective of organizational learning. Cereal milling firms should seek ways to acquire and appropriately deploy the necessary infrastructure to aid their learning needs. They should also work with professionals in the field of continuous improvement to learn about different OLMs that can positively drive their performance. This will reduce this sector's dependence on just a few OLMs.

## **5.5 Recommendations for Further Research**

This study explored the use of OLMs in supporting the activities of continuous improvement in the Kenya's cereal milling industry. The results show dependence on a

few OLMs while other OLMs have been largely ignored, and yet these OLMs could contribute greatly to improved organizational performance and competitiveness. Further research should be carried out to determine the factors that cereal milling organizations use when choosing their preferred OLMs.

Further studies should also establish how to address the challenges faced by these firms in implementing various OLMs, as well as the most suitable continuous improvement approaches to achieve optimal performance.

## REFERENCES

- Adewole, B. (Ed.) (2008). *Nigeria's flour milling industry: An analyst's perspective*. Nigeria: LeadCapital Ltd.
- Augustsson, H., Törnquist, A., & Hasson, H. (2013). Challenges in transferring individual learning to organizational learning in the residential care of older people. *Journal of Health Organization and Management*, 27(3), 390-408.
- Baker, W. & Sinkula, J. (2002). Market orientation, learning orientation and product innovation: delving into the organization's black box. *Journal of Market-Focused Management*, 5(1), 5-23.
- Barber, K. D., Munive-Hernandez, J. E., & Keane, J. P. (2006). Process-based knowledge management system for continuous improvement. *International Journal of Quality and Reliability Management*, 23(8), 1002-1018.
- Bessant, J., Caffyn, S., Gilbert, J., Harding, R. & Webb, S. (1994). Rediscovering continuous improvement. *Technovation*, 14(1), 17-29.
- Bessant, J. & Caffyn, S. (1997). High-involvement innovation through continuous improvement. *International Journal of Technology Management*, 14(1), 7-28.
- Bessant, J., Caffyn, S. & Gallagher, M. (2001). An evolutionary model of continuous improvement behaviour. *Technovation*, 21(2), 67-77.
- Bessant, J. & Francis, D. (1999). Developing strategic continuous improvement capability. *International Journal of Operations & Production Management*, 19(11), 1106-1119.
- Bhuiyan, N. & Baghel, A. (2005). An overview of continuous improvement: from the past to the present. *Management Decision*, 43(5), 761-71.
- Boer, H., Berger, A., Chapman, R. & Gertsen, F. (Eds) (2000). *CI Changes: From Suggestion Box to Organisational Learning. Continuous Improvement in Europe and Australia*. Aldershot: Ashgate Publishing.

- Bond, T.C. (1999). The role of performance measurement in continuous improvement. *International Journal of Operations & Production Management*, 19(12), 1318.
- Caffyn, S. (1999). Development of a continuous improvement self-assessment tool. *International Journal of Operations and Production Management*, 19(11), 38-53.
- Clarke, E. (2009). Learning outcomes from business simulation exercises: Challenges for the implementation of learning technologies. *Education + Training*, 51(5/6), 448-59.
- Daniel, J-J., Raquel, S. V., & Miguel, H-E. (2008). Fostering innovation: The role of market orientation and organizational learning. *European Journal of Innovation Management*, 11(3), 349-412.
- Deming, W. (1982). *Out of the Crisis*. Cambridge, MA: MIT Press.
- Escrig-Tena, A.B. (2004). TQM as a competitive factor: a theoretical and empirical analysis. *International Journal of Quality & Reliability Management*, 21(6), 612-37.
- Food and Agriculture Organization of the United Nations (1996). *Small mills in Africa: Selection, installation and operation of equipment*. Retrieved from [http://typo3.fao.org/fileadmin/user\\_upload/ags/publications/J8482E.pdf](http://typo3.fao.org/fileadmin/user_upload/ags/publications/J8482E.pdf)
- Francis, D., Jager, B., Minnie, C., Jager, J., Bessant, J., & Welgemoed, M. (2004). Enabling continuous improvement: a case study of implementation. *Journal of Manufacturing Technology Management*, 15(4), 315-24.
- Gitau, R., Mburu, S., Mathenge, M. K., & Smale, M. (2010). *Trade and agricultural competitiveness for growth, food security, and poverty reduction: a Case of wheat and rice production in Kenya*. Tegemeo Working Paper Series No 45/2011.



- Godé, C. & Barbaroux, P. (2012). Towards an architecture of organizational learning: Insights from French military aircrews. *VINE: The Journal of Information and Knowledge Management Systems*, 42(3/4), 321-34.
- Goh, M. (2000). Quality circles: journey of an Asian public enterprise. *International Journal of Quality and Reliability Management*, 17(7), 784-99.
- Goh, S. C., & Ryan, P. J. (2008). The organizational performance of learning companies: A longitudinal and competitor analysis using market and accounting financial data. *The Learning Organization*, 15(3), 225-39.
- Goulden, C. (1995). Supervisory management and quality circle performance: an empirical study. *Benchmarking for Quality Management & Technology*, 2(4), 61-74.
- Grütter, A. W., Field, J. M. & Faull, N. H. B. (2002). Work team performance over time: three case studies of South African manufacturers. *Journal of Operations Management*, 20(5), 641-57.
- Hamel, G. (2000). *Leading the Revolution*. Boston, MA: Harvard Business School Press.
- Harrington, H. J. (1995). Continuous versus breakthrough improvement: finding the right answer. *Business Process Re-engineering and Management Journal*, 1(3), 31-49.
- He, Z., Qi, E. & Liu, Z. (2003). Continuous improvement through integration of quality tools. *The Asian Journal on Quality*, 3(2), 38-45.
- Hill, F. M. (1996). Organizational learning for TQM through quality circles. *The TQM Magazine*, 8(60), 53-57.
- Hill, F. M. (1997). En route to TQM: Organizational learning through quality circles. *Training for Quality*, 5(2), 84-7.

- Hurley, R. F., & Hult, G.T. (1998). Innovation, market orientation and organizational learning: an integration and empirical examination. *The Journal of Marketing*, 62, 42-54.
- Hyland, P.W., Soosay, C. & Sloan, T.R. (2003). Continuous improvement and learning in the supply chain. *International Journal of Physical Distribution & Logistics Management*, 33(4), 316-35.
- Ishikawa, K. (1985). *What is Total Quality Management: The Japanese Way*. Englewood Cliffs, NJ: Prentice-Hall.
- Jabnoun, N. (2001). Values underlying continuous improvement. *The TQM Magazine*, 13(6), 381-87.
- Kaziliūnas, A. (2011). Examination of organizational learning mechanisms for successful implementation of quality programs. *Issues of Business and Law*, 3, 85-94.
- Kluge, J., Stein, W. and Licht, T. (2001). *Knowledge Unplugged. The McKinsey & Company: Global Survey on Knowledge Management*. Basingstoke: Palgrave.
- Kossoff, L. L. (1993). Total quality or total chaos?. *HR Magazine*, 38(4), 131-34.
- Marin-Garcia, J. A., Val, M. P. & Martín, T. B. (2008). Longitudinal Study of the results of continuous improvement in an industrial company. *Team Performance Management*, 14(1/2), 56-69.
- Michna, A. (2009). The relationship between organizational learning and SME performance in Poland. *Journal of European Industrial Training*, 33(4), 356-70.
- Ministry of State for Planning, National Development and Vision 2030. (2013). *Sessional paper No. 10 on Kenya Vision 2030*. Retrieved from [http://www.vision2030.go.ke/cms/vds/VISION\\_2030\\_Sessional\\_Paper\\_final\\_09\\_11\\_12.pdf](http://www.vision2030.go.ke/cms/vds/VISION_2030_Sessional_Paper_final_09_11_12.pdf)
- Mitki, Y., Shani, A. B., & Meiri, Z. (1997). Organizational learning mechanisms and continuous improvement: a longitudinal study. *Journal of Organizational Change Management*, 10(5), 426-46.

- Murray, P. (2002). Cycles of organizational learning: a conceptual approach. *Management Decision*, 40(3), 239-47.
- Murray, P. & Chapman, R. (2003). From continuous improvement to organizational learning. *The Learning Organization*, 10(5), 272-82.
- Ni, W., & Sun, H. (2009). The relationship among organizational learning, continuous improvement and performance improvement: An evolutionary perspective. *Total Quality Management*, 20(10), 1041-54.
- Nilsson-Witell, L., Antoni, M., & Dahlgaard, J. J. (2005). Continuous improvement in product development: Improvement programs and quality principles. *International Journal of Quality and Reliability Management*, 22(8), 752-68.
- Nonaka, I. & Takeuchi, H. (1995). *The Knowledge-creating Company*. New York, NY: Oxford University Press.
- Oliver, J. (2009). Continuous improvement: role of organizational learning mechanisms. *International Journal of Quality and Reliability Management*, 26(6), 546-63.
- Oprime, P. C., Sousa Mendes, G. H. & Pimenta, M. L. (2012). Continuous improvement: critical factors in Brazilian industrial companies. *International Journal of Productivity and Performance Management*, 61(1), 69-92.
- Rabobank International (2012). *European flour milling industry*. Rabobank industry note #328.
- Raquel, S-V., Julia, C. N-V., Daniel, J-J., & Laureano, P-C. (2011). Linking organizational learning with technical innovation and organizational culture. *Journal of Knowledge Management*, 15(6), 997-1015.
- Rickards, T. (1998). *Creativity at Work*. Aldershot: Gower.
- Schechter, C., & Feldman, N. (2010). Exploring organizational learning mechanisms in special education. *Journal of Educational Administration*, 48(4), 490-516.

- Senge, P. M. (1994). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Currency Doubleday Publishing.
- Sinkula, J. (2002). Market-based success, organizational routines, and unlearning. *The Journal of Business and Industrial Marketing*, 17(4), 253-67.
- Smale, M. & Jayne, T. (2003). *Maize in Eastern and Southern Africa: "Seeds" of success in retrospect*. Environment and Production Technology Division, International Food Policy Research Institute.
- Smith, P. A. C. (2012). The importance of organizational learning for organizational stability. *The Learning Organization*, 19(1), 4-10.
- Srimai, S., Damsaman, N. & Bangchokdee, S. (2011). Performance measurement, organizational learning and strategic alignment: an exploratory study in Thai public sector. *Measuring Business Excellence*, 15(2), 57-69.
- Tegemeo Institute (Eds) (2009). Proceedings from a round table discussion. *Kenya's food situation: Challenges and opportunities*. Nairobi.
- Terziovski, M. & Sohal, A. S. (2000). The adoption of continuous improvement and innovation strategies in Australian manufacturing firms. *Technovation*, 20(10), 539-50.
- Thomke, S. (2001). Enlightened experimentation: the new imperative for innovation. *Harvard Business Review*, 79(2), 67-75.
- Tjosvold, D. (1991). *Team Organization: An Enduring Competitive Advantage*. Chichester: John Wiley & Sons.
- Tohidi, H., Seyedaliakbar, S. M., & Mandegari, M. (2012). Organizational learning measurement and the effect on firm innovation. *Journal of Enterprise Information Management*, 25(3), 219-45.

- Tran, T. (2008). A conceptual model of learning culture and innovation schema. *Competitiveness Review: An International Business Journal incorporating Journal of Global Competitiveness*, 18(3), 287-99.
- United States of America (1995). *1992 census of manufacturers: Grain mill products*. U.S. Department of Commerce, Bureau of the Census.
- United States Agency for International Development (2010). *Staple foods value chain analysis: Country report – Kenya*. Retrieved from [http://www.competeafrica.org/Files/Kenya\\_Staple\\_Foods\\_Value\\_Chain\\_Analysis\\_Study\\_JANUARY\\_2010.pdf](http://www.competeafrica.org/Files/Kenya_Staple_Foods_Value_Chain_Analysis_Study_JANUARY_2010.pdf)
- Yakhlef, A. (2009). Outsourcing as a mode of organizational learning. *Strategic Outsourcing: An International Journal*, 2(1), 37-53.
- Yang, B., Watkins, K. E., & Marsick, V. J. (2004). The construct of the learning organization: Dimensions, measurement and validation. *Human Resource Development Quarterly*, 15(1), 31-55.
- Yueh, Y-L. (2012). Relationships among organizational culture, knowledge acquisition, organizational learning, and organizational innovation in Taiwan's banking and insurance industries. *Development and Learning in Organizations*, 26(3), 52-71.
- Zangwill, W. I. & Kantor, P. B. (1998). Toward a theory of continuous improvement and the learning curve. *Management Science*, 44(7), 910-20.

## APPENDICES

### Appendix 1: The Questionnaire

Kindly assist fill this questionnaire.

#### **Section A: Organizational Learning**

##### **A1: Practice of Organizational Learning**

1. Please circle one choice for each of the following statements

*(1=strongly disagree, 2=disagree, 3=not disagree nor agree, 4=agree, 5=strongly agree)*

1	Appropriate organizational mechanisms are used to deploy what has been learned across the organization	1	2	3	4	5
2	Everyone learns from their experiences, both good and bad	1	2	3	4	5
3	Individuals and groups at all levels share (make available) their learning from all work and improvement experiences	1	2	3	4	5
4	Individuals seek out opportunities for learning/ personal development	1	2	3	4	5
5	Managers accept and, where necessary, act on all the learning that takes place	1	2	3	4	5
6	People and teams ensure that their learning is incorporated into the organization by making use of the mechanisms provided for that.	1	2	3	4	5
7	The organization articulates and consolidates (captures and shares) the learning of individual and groups	1	2	3	4	5

##### **A2: Organizational Learning Mechanisms**

2. Which of the following organizational learning mechanisms best describes the learning process within your organization? *(Tick all those that apply)*

<u>Organizational Learning Mechanism</u>	√
Knowledge Management System	<input type="checkbox"/>
Performance Measurement System	<input type="checkbox"/>
Quality Circles	<input type="checkbox"/>
Outsourcing	<input type="checkbox"/>
Experimentation	<input type="checkbox"/>
Regular Meetings (Held after every ____ weeks)	<input type="checkbox"/>
Other(Specify) 1) _____	<input type="checkbox"/>
2) _____	<input type="checkbox"/>

**A3: Challenges of implementing successful Organizational Learning Mechanisms to support Continuous Improvement activities.**

3. Please circle one choice for each of the following statements

(1= strongly disagree, 2= disagree, 3= nor agree nor disagree, 4= agree, 5= strongly agree)

1	There is sufficient infrastructure to support our learning activities	1	2	3	4	5
2	We frequently update our infrastructure to accommodate new training needs	1	2	3	4	5
3	There is continuity in the learning process	1	2	3	4	5
4	The organization adequately meets the learning expectations of our employees	1	2	3	4	5
5	We train employees depending on the timing when it is required	1	2	3	4	5
6	Managers are aware of their roles in the organizational learning process	1	2	3	4	5
7	Managers and employees have ownership of the learning and development process	1	2	3	4	5
8	Employees are rewarded for new innovative ideas	1	2	3	4	5
9	We frequently review our training tools to meet our learning needs	1	2	3	4	5

4. Any other challenges?

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**Section B: Continuous Improvement**

**B1: Practice of Continuous Improvement**

5. Please tick “Yes” or “No” for each of the following statements.

	Yes	No
1 Personnel are usually trained on problem solving tools		
2 There is monitoring of improvement activities (measures, follow-up)		
3 The management provides supportive leadership for improvement		
4 Personnel work in teams over fifty percent of the times		
5 There is a suggestion scheme for improvement		
6 There is laid down standard operating procedures (SOPs) for solving problems		

**B2: Indicators of Continuous Improvement**

6. Please circle one choice for each of the following statements with respect to your operations in the last three years.

*(1=strongly agree, 2=agree, 3=not agree nor disagree, 4=disagree, 5=strongly disagree)*

1	There is increased production volume	1	2	3	4	5
2	There is increased productivity	1	2	3	4	5
3	The cycle times have been reducing	1	2	3	4	5
4	The production cost is going down	1	2	3	4	5
5	The efficiency of our processes has increased	1	2	3	4	5

**Section C: Background Information**

7. Name of the organization/institution (Optional) \_\_\_\_\_

8. Number of employees in the organization \_\_\_\_\_

9. Number of years the organization has been in business \_\_\_\_\_

10. What products does your organization provide?

Maize Flour  Wheat Flour  Animal feeds  Others (specify) \_\_\_\_\_

11. How do you compare the quality of your products to those of competitors?

Superior  Similar  Below competition

12. Your current Designation/Position \_\_\_\_\_

13. How long have you worked in the position in (12) above? \_\_\_\_\_

14. How long have you worked at the organization? \_\_\_\_\_

15. What is your highest academic qualification?

PhD  Masters  Bachelors Degree

Advanced Diploma  Ordinary Diploma  Others

16. What is your area (s) of specialization in the (15) above? \_\_\_\_\_

**Thank you for your kindness and patience!**



Appendix 2: List of Cereal milling firms in Kenya

Medium – Large Scale Milling Firms		
S/ No.	Milling Firm	Location
1	Uzuri Ltd	Nairobi
2	Capwell Industries Ltd	Thika
3	Kabansora Millers	Nairobi
4	United Millers	Eldoret
5	Mombasa Maize Millers	Nairobi
6	Mombasa Maize Millers	Mombasa
7	Eldoret Grains Ltd	Eldoret
8	Pembe Flour Mills	Nairobi
9	Mombasa Grain Milling Company	Mombasa
10	Chania Mills	Thika
11	Unga Group Ltd	Nairobi
12	United Millers Limited	Kisumu
13	Eldoret Grains	Kitale
14	Osho Grains	Nairobi
15	Kitale Industries	Kitale
16	Kitui Millers Ltd	Mombasa
17	Eldoret Grains - Mwingi	Mwingi
18	Mombasa Maize Millers	Kisumu
19	Maize Milling Company Ltd	Eldoret
20	Nairobi Flour Mills	Nairobi
21	TSS Grain Millers Ltd	Mombasa
22	Unga Ltd – Eldoret	Eldoret
23	Eastern Flour Mills	Machakos
24	Atta	Mombasa
25	Bakex	Thika
26	Maisha	Kiganjo
27	McNeel (closed business)	Thika
28	Milly Grains	Mombasa
29	Premier Flour Mills	Nairobi
30	Rafiki Millers Ltd	Nairobi
Small Scale Milling Firms		
31	Cateress Milling Ltd	Nairobi
32	Nakuru Flour Mills	Nakuru

Cont'd

33	Aberdare Maize Milling Ltd	Nyeri
34	Rosanne Investments Ltd	
35	Proctor & Allan EA Ltd	Nairobi
36	Beada Millers	
37	Besoko Millers	
38	Kapari Ltd	Nairobi
39	Meru Central Multi-Purpose	Meru
40	Family Flour Ltd	
41	Bemar Ltd	
42	Muki Maize Millers	Nakuru
43	Karanda Millers	
44	Midland Millers	Kerugoya
45	Joli Millers	Matuu
46	Kalwa Maize House	
47	Centaur Milling Enterprise	
48	Organic Virgin	
49	Kifaru Maize Millers	Nairobi
50	Umoja Flour Mills	Thika
51	Mama Millers	Thika
52	Maycorn Kenya	Thika
53	Swaminarayan Industries	
54	Msafiri Flours Ltd	Athi River
55	AUM Maize Millers	
56	Meru Pendo Millers	
57	Kwest Millers	Thika
58	Batian Grain Millers	Nairobi
59	Sava Industries	
60	Katex Enterprises	
61	Pan African Grain Millers	
62	Sunrise Grain Millers	
63	Njora Food Products	
64	Sweet Meal Flour	
65	Valley Posho Mill	Nakuru
66	Mabrouk Flour Mills	
67	Daiga Millers	
68	Uchumi Grain Millers	
69	Summer Millers Ltd	
70	Range Food Products	

Cont'd

71	Snow Maize Millers	
72	Gakenge Maize Millers	
73	Nanyuki Grain Millers	Nanyuki
74	Savco Millers	Nairobi
75	Embu Food Industries	Embu
76	Nicey Nicey Maize Millers	
77	Glory Posho Mills	
78	Subukia Millers & General	Subukia
79	Faru Flours	Dandora
80	Dandora Millers	
81	Jamhuri Grain Millers	Kitale
82	Kirima Millers	Nairobi
83	Bima Grain Millers	
84	Pantack	
85	Garissa Maize Millers	
86	Queens Food Millers	
87	FAJ Safeway Foods	
88	Royal Maize Millers	
89	Pripal Millers	
90	Amos Ndungu Gatiki	
91	Jikaze Maize Millers	
92	Miriru Millers	
93	Crown Foods	
94	Thika Grain Millers	Thika
95	Umande Millers	
96	Gilgil Grain Millers	Gilgil
97	Migosi Cosmos	
98	Victor Posho	
99	Ng'ang'a Posho Mills	
100	Belgut Enterprises	
101	Gatakari Millers	
102	Milimani Stores	
103	Sifa Millers	