International Journal of Economics, Finance and Management Sciences
2014; 2(6): 306-312
Published online November 29, 2014 (http://www.sciencepublishinggroup.com/j/ijefm)
doi: 10.11648/j.ijefm.20140206.12
ISSN: 2326-9553 (Print); ISSN: 2326-9561 (Online)

Determinants of quality management practices in Kenyan sugar processing industry: A case of Chemelil Sugar Company

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To cite this article:

Quinter Omware, Raphael Nyonje, Muma Benard. Determinants of Quality Management Practices in Kenyan Sugar Processing Industry: A Case of Chemelil Sugar Company. *International Journal of Economics, Finance and Management Sciences.* Vol. 2, No. 6, 2014, pp. 306-312. doi: 10.11648/j.ijefm.20140206.12

Abstract: This study focused on determinants of quality management practices in Kenyan Sugar Processing Industry. Due to sparse distribution of the sugar processing firms in the country, Chemelil Sugar Company was used as a case for the study. Literature was reviewed on: Demographic factor; Top management commitment, Training factors, Organizational culture and Government policy. Qualitative research design was used; specifically descriptive survey. Probability sampling specifically stratified sampling at the departments of; Finance & Administration, Factory, Marketing & corporate services, Training & Welfare and finally at Agriculture & Field services was used. The main research instrument used was self-administered questionnaire. Target population was 861 employees at CSCL, 266 respondents were sampled during data collection; Reliability and Validity of instrument was tested by carrying out a pilot study involving 50 respondents. After fieldwork, the data was organized according to the population studied. Data collected was analyzed using descriptive statistics and by aid of SPSS computer software. Hypothesis `was used and tested using Chi-Square applied at 5% significant level. Data was presented in table format. Summary of findings revealed that|: Demographic characteristics with indicators of age, gender and education is a determinant of quality practice. It was evident that there was lack of top management commitment and training which has stagnated improvement of QMS. The study recommends that the organization need to benchmark their quality practices with organizations that have succeeded in quality management. There is need to train all staff on current quality practices and develop an all-inclusive policy that gives all the gender equal opportunity to suggest on quality assurance changes and ensure continuous improvement of quality process by applying principles like Kaizen that encourages small but significant changes is not an option. Crucially further research should be done to determine if hiring of employees at CSCL has influence on organizational culture, to find out sustainability factor and funding of Quality Assurance System at implementation stage and assess trailing and training succession program at CSCL.

Keywords: Determinants of TQM, Quality Management Practices, Sugar Industry

1. Introduction

Globalization of market economies has compelled firms in all sectors to concentrate in maintaining a sustainable competitive edge in term of services as well as productivity. An effective model of such a vision of success is total quality management (TQM) which is customer centric set of management policies that deliver quality (Deming, 1986). It is a management strategy that encourages awareness in all organization processes. It operates within the circles, which encourages effective collaboration within the workforce in different departments in order to improve production and reduce wastage.

Companies in U.S.A like Motorola have a TQM in their organizational culture, they strives for the best by targeting zero defects in everything they do. Japans industrial sector has equally practiced QMS and they are among the founders. Toyota Motor Corporation has commitment to manufacturing world class and quality automobiles, at Toyota quality is inbuilt into each manufacturing process and employees from

all divisions ensure that defective items don't pass to the next process.

In Kenya sugar companies like Mumias and Chemelil are ISO 9001: 2000 Certified (Mumias Sugar Company, 2013) Organizations are judged by the quality of their products and services every day and those judgments' determine how well they are meeting the requirements of their customers. Without sound educational background backed by proper training; and involving the right personnel in QM system there is great frustration towards its implementation in most organization. Top management commitment remains elusive in the pursuit and implementation to interface with cascading to the lower cadre due to lack of mobility to enhance and reward the system especially in financing the QMS. The suspect mind of the organization's top management to view QMS as another avenue audit plan betrays its implementation. Most organizational cultures still remain adamant in perception.

Chemelil Sugar Company being one of the largest public sugar processing companies in Kenya with a quality system in place is equally faced with many problems; like organizational politics, bureaucratic organization, inadequate funding, flooding of market with imported sugar. Quality management practices have been extensively investigated (Flynn, Schroedder, and Sakakibara, 1995; Kaynak 2003). These studies have found that quality is a multidimensional construct. These quality practices have different functions and roles regarding continuous improvement. Even though a number of studies have been done on the concept and context of Quality management (QM) in manufacturing industries, none has been done within the context of Sugar industries in Kenya. This study therefore sought to investigate the determinants of quality management practices at Chemelil Sugar Company.

1.1. Objectives of the Study

The study was guided by the following objectives:

1. To determine the extent to which demographic characteristics of employee influence Quality management
2. To establish the extent to which top management commitment influence quality management practices.
3. To investigate the extent to which training of employee training influence quality management practices.
4. To assess the extent to which organizational culture influence quality management practices.

1.2. Research Hypothesis

The following hypotheses were tested in this study

Ho_1: There is no significant relationship between demographic characteristics of employees and quality management practices.

Ho_2: There is no significant relationship between top management commitment and quality management practices

Ho_3: There is no significant relationship between employees training and quality management practices

Ho_4: There is no significant relationship between organizational culture quality management practices.

1.3. Conceptual Framework

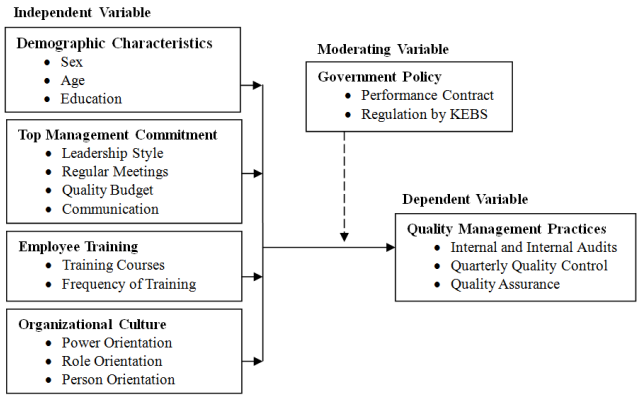

Figure 1. *Conceptual Framework*

2. Literature Review

2.1. Demographic Characteristics

All complex behavior is learned. To explain and predict behavior, we need to understand how people learn. Classical conditioning theory is one among many theories explaining a Learning behavior of mankind. An experiment to teach dogs how to salivate in response to the ringing of a bell, conducted at the turn of the century by Russian physiologist Ivan Pavlov. When Pavlov presented the Dog with a piece of meat; the dog exhibited a noticeable increase in salivation. When Pavlov withheld the presentation of meat and merely rang a bell, the Dog did not salivate. He proceeded to link the meat and the ringing of the bell. After repeatedly hearing the bell before getting food, the dog began to salivate as soon as the bell rang. After a while, the dog would salivate merely at the sound of the bell, even if no food was offered. In effect, the dog had learnt to respond-that is to salivate-to the bell. The meat was an unconditioned stimulus that caused the dog to react in a specific way. The reaction that took place whenever unconditioned stimulus occurred was called unconditioned response. The bell was an artificial stimulus conditioned response describing the behavior of the dog; it salivates in reaction to the bell alone (Gormezano, 1987).

The concept can summarizes classical conditioning as, essentially, learning a condition response involves building up an association between a conditioned stimulus and unconditioned stimulus. When the stimulus, one compelling and other neutral, are paired, the neutral one becomes a conditioned stimulus hence takes on the properties of unconditioned stimulus. Classical condition can be used to explain why Christmas carols often bringing back pleasant memories of childhood, the songs associated with festive Christmas spirit and evoke fond memories and feelings of euphoria. According to Ngetich (2011), behavioral approach requires changes in human attitudes by using motivation, raising awareness and skill development.

According to (Rhodes, 1983) the perception of older workers is evident with employers who have a mixed feeling. They see a number of positive qualities that older workers

bring to the jobs like experience, judgment, a strong work ethic and commitment to quality. On the other hand older workers are also perceived as lacking flexibility and also being resistant to new technology. Most organizations seek individuals who are adaptable and open to change and the negatives associated with age clearly hinder the initial hiring of older workers and increase the likelihood that they will be let go during cut backs. Studies done on age turnover relationships indicate that the older one gets, the less likely you are to quit your job. As workers get older they have fewer alternatives job Opportunities. Older workers are less likely to resign than are younger workers because their long tenure tends to provide them with higher wage rates, longer paid vacations and more attractive pension benefits. There is a widespread belief that productivity declines with age. Individual skills particularly speed, agility, strength and coordination decay overtime and prolonged job boredom and lack of intellectual stimulation all contribute to reduced productivity. The evidence however, contradicts that belief and those assumptions.

2.1.1. Top Management Commitment and Quality Management Practices

Top management commitment must be integrated among the various departments in an organization. Departments other than quality such as production, finance and human resource, research and development may feel that they know their job and there is no need for quality personnel to meddle in their affair. Due to this attitude, the department heads resent intrusion by quality departments for collecting data or for assisting in solving their problem (Lal, 2008).There is need for a strong message to go that quality is a company and not the responsibility of quality department. There should be a system constituting multidisciplinary committees to address various quality issues. Senior managers' support for Six Sigma determines the degree to which other quality practices are implemented (Breyfogle, et al., 2001; Herderson and Evans, 2000). During the process of adopting quality management program, new rules need to be set up, new procedures need to be followed, and new tools need to be learned. Companies often encounter instability, confusion, and resistance in the process.

Managers' consistent involvement in the quality program's activities enables the restructuring of business process and facilitates changing employee's attitudes toward continuous improvement through the unstable transformation period (Bhote, 2003; Hendricks and Kelbaugh, 1998). Some companies link managers' compensation to their efforts and performance in quality practices implementation, which helps to reduce the risk of managers' having temporary but quickly fading zeal for quality improvements and to ensure consistent and high level of top management support for six sigma (Anthony and Banuelas, 2002; Breyfogle et al., 2001; Johnson and Swisher, 2003). According to Callaghan & Schnoll (1997) the greatest challenge for the quality manager in small company could be executive commitment. When the upper management in a company gives the quality manager a directive to become ISO 9000 registered, they may have little or no knowledge of the standard. This could result in lack of support when they discover that the quality manager cannot implement ISO 9000 alone and in a vacuum. Business owners need to change their business philosophy. They need to shed their traditional conservative management styles and share ideas, principles and philosophies that work. Companies that pursue registration of their quality systems without being fully committed to the process have little chances of success in achieving long term goal of quality.

2.1.2. Training of Employees and Quality Management Practices

In most TQM initiative, the training programs on concepts and tools are mainly focused on higher and middle management. This is based on the assumption that an organization's survival and growth mainly depends on their ability (Lal, 2008). The assumption tends to ignore the contribution of other employees. It should be noted that the person operating the process is neither on the higher nor middle management and have intimate knowledge of the process as well as possible solution to bring about improvement. They do not share this knowledge with their superiors for fear of giving an impression that they have difficulty in caring out their operations or worse still they will be beamed for the problem. Those who have studied quality improvement in Japan would know that they had launched massive programme for training workers on quality tools and techniques. Because of this knowledge, workers are able to suggest for improvement, they have formed quality circles through which they discuss ways and means to improve their process (Morgan, 1989).

Two elements that must be looked into before deploying any training are; knowledge about a process and quality improvement tools and these quality capabilities can only be built through training. The metric for assessing effectiveness of human resource deployment department is the number of personnel trained and expenditure incurred (Morgan, 1989). He asserts that there is a problem with quality of a product or a service which can be traced to inadequacy of technical competence and skill of operating personnel, blame game starts. Operations will blame human resource deployment (HRD) department for poor training and skill building while HRD will defends by saying the subject training need was not identified by operations people. The real cause of conflict is lack of proper training management system. Training is not only an end in its self; it is only a tool which if properly used can improve the quality of processes, products and services.

According to Morgan (1980), training can be classified into two broad categories; technical and quality related training. Technical training is aimed at developing basic knowledge and a required skill for the job which is person is employed. While quality related training is aimed at developing a capability to improve the current level of activity with a view to improve the current level of activity with a view to improving quality of a product/service for achieving greater customer satisfaction. This would include training on quality

management concepts/systems and quality improvement tools. Both categories of training are necessary for Introducing quality management practices in organization. Important considerations should be made when developing a training plan. Identification of exact need of training that is level of personnel to be trained, scope of training and duration of training. Secondly a suitable method of training should be considered that is participation in open seminars/training programmes by organization of in house program, number of persons to be trained and cost of training.

Opportunities should be provided to the trained personnel to apply their knowledge for the benefit of the organization; training not applied in time is a wasted asset. Also application of training must be evaluated whether it has achieved the specific objectives. Lastly, results of evaluation should be thoroughly examined and shortcomings of the training be identified. Based on this analysis, changes may be made in the context of the training or methodology of conduct of training packages, bonding on strength and overcoming the problem faced. The concepts of plan do control and act can be used for continuous improvement in training for competence building of employee.

2.1.3. Organizational Culture and Quality Management Practices

Organizational culture is viewed as the pattern of values, beliefs, and assumptions shared by members in an organization, which are perceived by the organization as the valid, correct way to perceive and solve problems (Sigler and Pearson, 2000; Schein, 1985, 1992). These shared values, beliefs and assumptions in the organization bind its employees together and become the manner or strategies, through which the organization achieves its goals (Marcoulides and Heck, 1993). In the context of quality management, the values and beliefs underlying an organization's culture are able to shape its philosophy and policies of managing business, which in turn influence the development of the organization's quality management practices (Waldman, 1993).It has been argued that for an organization to realize the value of implementing quality practices, it must have a culture that is capable of fully supporting their implementation (Sousa-Poza, Nystrom, and Wiebe, 2001). 'Evangelism and coaching' are a strong corporate culture.

Many authors are critical of approach and see it as a way of manipulating people to 'buy into' a way of thought (Crowther, & Green, 2008). A case study written on tandem where employees were encouraged and given the space to be flexible and creative. (Morgan 1989) describes how all the employees in Tandem, including the founders and chief executive officer, were on first-name terms and how they all went to the pub on Friday evenings and shared their social events. The employees would not get very far in the company if they did not participate in these events. This culture helped to build team work in their organization. Casey (1996) analyzed a large multinational corporation (Hephaestus) involved in the design and manufacture of technological systems and in corporate restructuring. She showed how the organization culture was changed in the wake of heavy market loss to Japanese companies and the firing of 25000 employees.

The new culture and redesign of work, made possible by computer aided design and technology led to more generalized jobs including both technical and other corporate-related work such as management functions. These served to weaken employees former loyalties and networks in the organization-namely their occupational identities, trade unions affiliations and informal social groupings in favor of organizational 'teams and families' with an agenda of employee involvement and customer satisfaction. Strong corporate culture can have a dangerous effect on family life. Many people are increasingly spending most of their time and energy working in and for their organization as happening in the United Kingdom and U.S.A. It has been noted that some employees begin to identify more with their organization and feel more comfortable there than with their families. Another optimistic portrayal of work in the future has been to the idea that work is becoming more flexible, giving people greater choice and opportunity (Crompt, 1996) have pointed out how modern flexibility does not affect all employees equally or positively. He distinguished between a 'core' workforce whom he saw as benefitting from such flexibility and from opportunities for further training and career development and the peripheral workforce which afforded flexibility for organization in that they could be hired and fired as needed, and who lacked other rights, as well as those of secure employment and career opportunities e.g. social security, pension right, and holiday pay. The role that culture plays in influencing an organization's level of quality management practices has received much attention (Buch and Rivers, 2001; Klein, Masi, and Weidner, 1995; Zeitz, Johannesson, and Ritchie, 1997).

There have been a number of studies that attempted to identify the cultural characteristics conducive to quality management as a one-dimensional construct. As Prajogo and McDermott (2005) found, the studies that examined quality management as a single construct usually focused on the cultural characteristics related to people flexibility, and overlooked the potential effect of cultural characteristics about control and standardization. Quality management research to date has found that quality management is a multidimensional construct; composed of multiple quality practices (Flynn, Schroedder, and Sakakibara, 1995; Kaynak 2003). These quality practices have different functions and roles regarding continuous improvement. Workforce management emphasizes the organizational and people side of quality management and uses a variety of techniques to facilitate changes, such as employee participation in decisions, employee recognition, teamwork and use of effective communication to create awareness of organizational goals (Kaynak, 2003).

Considering the different features of the quality practices, it is possible that cultural characteristics that support a certain type of quality practice differ from those cultural characteristics that support other types of quality practices. However, there are relatively few studies that examine the

different effects of cultural characteristics on different quality practices. Several studies (Chang and Wibbe, 1996; Dellana and Hauser, 1999; Lagrosen, 2003; Projogo and McDermott, 2005) that appeared recently are the exception in quality management literature. Projogo and McDermott (2005) compares quality management as a single construct with a pluralist model which considers quality management with its multi-dimensional elements. Collins (1987) points out two forms of cultural changeability that are both relevant in this connection. One is the possibility of changing culture that is changing the contents of the culture.

The other might be called the question of changing in cultures, whether changeability in itself may be a value in culture and thus part of the contents of culture. The establishment of culture susceptible to change has advantages as well as disadvantages as compared with what might be a conservative culture. This can be explained by the fact that the culture susceptible to change is by definition adaptable and puts only little resistance to new processes if they prove to be expedient but lacks loyalty to the procedures. With organizational theory, cultural change is a question of changing cultures as a rational process, beginning with suspicion among the management of an organization that its culture is dysfunctional, continuing with systematic sociological mapping out to understand whether this is really the case, followed by an effort to formulate a new, more adaptive culture and finally an effort to abolish the old and introduce a new culture. Management literature enumerates different methods of attacking change. Collins (1987) has shown the relevance of rites, group- dynamics mechanisms, recognition of the effectiveness of norms and rewards and punishments to bring about cultural change. Schein (1985) enlists different types of processes of change: evolutionary process, change as adaptation, learning or a specific evolutionary process, change as a therapeutic process, change as a revolutionary process and change as a managed process.

3. Research Methodology

3.1. Research Design

A descriptive survey research design was used. According to Kothari (2004), surveys are conducted in case of descriptive research studies with larger samples, when need for hypothesis formulation and testing and appropriate in case of social and behavioral science. The target population was 861 employees in CSCL. The survey was carried out using a questionnaire that was distributed to all target employees of the company. Distribution of employees in their departments was as follows; finance and administration with a population of 129, factory 398, marketing and corporate services 11, training and welfare 143 and Agriculture & field services 180 employees. A sample of 266 employees was derived .The determination of sample was done using Cochran's (1977) formulas. In Cochran's formula, the alpha level is incorporated into the formula by utilizing the t-value for the alpha level selected (e.g. t-value for alpha level of 0.05 is 1.96 for sample size above 120). For categorical data, 5% margin of error is acceptable (Krejecie & Morgan 1970). Cochran's sample size formula for categorical data is:

Using the Krejecie and Morgan sample size table, the researcher found that the sample was 266 employees (Krejecie & Morgan, 1977). This is supported by what was calculated by using Cochran's (1977) formula, each tail=1.96 (the alpha level of .05 indicates the level of risk the researcher is willing to take; true margin of error may exceed the margin of acceptable margin of error (p)(q) =estimate of variance =.25. (Maximum possible proportion (.5)* 1-maximum possible Proportion (.5) produces maximum possible sample size) d=acceptable margin of error for proportion being estimated=.05? (Error researcher is willing to accept).

The study applied stratified random sampling in order to achieve the desired representation from the various employees' subgroups in the population. The subject was selected in such a way that the existing subgroups in the population are more or less reproduced in the sample. After sampling at each subgroup, simple random sampling proportional to size based on relative number of employees in each department was used. A sample should be optimum fulfills the requirements of efficiency, representativeness reliability and flexibility. (Kothari, 2004) Proportionate allocation was used by sampling fraction in each of the strata that is proportionate to that of the total population.

4. Discussion

A chi-square test was conducted to test if Demographic Characteristics, Top Management Commitment, Employee Training and Organizational Culture influence Quality Management Practices. Chi-square test was conducted to test the relationship between the individual factors and quality management practices. Table 4.1- 4.5 shows the results that were obtained. The tables are accompanied by the interpretations of the results.

4.1. Employees Demographic Characteristics and Quality Management Practices

Table 4.1. *Chi-square tests between Demographic Characteristics of employees and quality management practices*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.069[a]	3	.000
Likelihood Ratio	42.129	3	.000
Linear-by-Linear Association	31.693	1	.000
N of Valid Cases	204		

Table 4.1 shows a zero value *Chi Square = 36.069; df = 3; asymptotic significance = 0.000. Since the p value was 0.000 which is <0.05, the null hypothesis was rejected and conclusion was made that there is a strong significant relationship between demographic characteristics of employees and quality management practices. This implies

that demographic characteristics such as age and gender are important determinants of quality management practice. As employees take long in a given field, the more they understand the field and the better their ability to make quality decisions and implement quality management processes and initiatives. Similarly, different genders understand the concept of quality differently and attach different level of importance to quality. Therefore, there is need to balance the human resource base of the organization in order to broaden the approach given to quality management.

4.2. Top Management Commitment and Quality Management Practices

Table 4.2. *Chi-square test between Top Management Commitment and Quality Management Practices*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.513[a]	1	.011
Continuity Correction[b]	5.483	1	.019
Likelihood Ratio	7.836	1	.005
N of Valid Cases	204		

Table 4.2 shows a low value *Chi Square = 6.513; df = 1; asymptotic significance = 0.011. Since p value, 0.011 is <0.05, the null hypothesis was rejected. It was then concluded that there is significant relationship between top management commitment and quality management practices and gender. Top management commitment is therefore a determinant of quality management practice. Management commitment through playing a leadership role, developing a supportive organizational culture and providing critical resources is critical in the success of quality management practices.

4.3. Employee Training and Quality Management Systems

Table 4.3. *Chi-square test between Employee Training and Quality management practices and training of employees*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.329[a]	3	.001
Likelihood Ratio	13.550	3	.004
Linear-by-Linear Association	.414	1	.520
N of Valid Cases	204		

Table 4.3 shows a value *Chi Square = 16.329; df = 3; asymptotic significance = 0.001. Since the p value is 0.001 which is < 0.05, the null hypothesis was rejected and conclusion was made that there is evidence of existence of a significant relationship between training of employee and quality management practices. This implies that employee's training is a determinant of quality management practice. Organizations should therefore consider training their employees especially on their roles and importance of quality management if they need to succeed on quality management.

4.4. Organizational Cultural Factors and Quality Management Practices

Table 4.4. *Chi-square test between organizational cultural factors and quality management practices*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.733[a]	3	.002
Likelihood Ratio	22.689	3	.000
Linear-by-Linear Association	10.443	1	.001
N of Valid Cases	204		

Table 4.4 shows a value *Chi Square = 14.733; df = 3; asymptotic significance = 0.002. The p value of 0.002 that was obtained is <0.05. This implies that the null hypothesis rejected and conclusion made that there is a significant relationship between organizational culture and quality management practices. It therefore means that organizational culture is a determinant of quality management practice. Organizations should consider developing organizational culture that supports employees' participation in quality management. The culture should be in line with the quality objectives of the organization.

5. Conclusion

The study examined determinants of quality management practices in Chemelil Sugar Company. From the study, it was concluded that: Demographic characteristics with indicators of age, gender and education is a determinant of quality practice. It was evident that top management commitment and employee training which has a critical role in improvement of QMS. The study further revealed that having a quality assurance plan alone without following it to the latter can be likened to having a driver's license without the skills to move a vehicle from point A to point B .To be a driver, one must be on the driver's seat, learn road signs and regulation and continuously improve skills. Organizations must therefore change inflexible organizational culture, all employees must be trained on quality practices, all the gender must be involved quality management practices and top management must be fully committed to implementing quality practices. In addition, quality must be in-built into the process, make employees own it and they must feel part of it.

Recommendations

Based on the findings of the study, the following recommendations were made. In order to improve the existing QMS and promote quality practices sugar processing factories and other processing firms, sugar processing companies and other processing/manufacturing companies should develop benchmark against other sugar industries which have seen a success in quality practices. Secondly, committees should be established to include all the departments and pay a visit to organizations that have succeeded in quality management and see how they have

implemented their QMS. Training of the entire staff on current quality practices is not an option for organizations that want to succeed in quality management. Training can be done on quality management approaches such as; Kaizen, a principle which encourages small but significant changes on a daily basis. Thirdly, there is need to develop an all-inclusive policy that gives all the gender equal opportunity to suggest on quality assurance changes. Policy on staff recruitment, staff development and motivating should not be bias towards one gender. Affirmative action should be put in place in recruitment of more women to reduce the gender disparity. It is critical to continuously improve quality process by applying principles like Kaizen that encourages small but significant changes and departments to monitor quality process audit and subsequently allow for timely corrective action. Lastly, quality management should be given a strategic look and aligned with the strategic objectives of the organizations. Top management to Champion, communicates QAP to all employees; set aside budget for corrective and preventive action, training and internal audit. Horizontal and vertical communication channel should be open to staff such that any barriers that prevents direct communication between junior and top management be minimized.

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