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EFFECT OF ORGANIZATIONAL FACTORS ON ADOPTION OF CLEANER PRODUCTION IN COMPOSITE TEXTILE INDUSTRIES IN UASINGISHU COUNTY, KENYA

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Abstract

Main purpose of the study was to assess effect of manager supports and employees' skills on adoption of cleaner production in composite Kenyan textile industry. The study was guided by diffusion theory and theory of Technology Acceptance Model. The study adopted explanatory research design. Proportional stratified sampling was used to select 144 respondents. Data collection was done using a questionnaire. A reliability coefficient of 0.7 or higher is recommended and was used as the threshold for accepting reliability. Data was analyzed using descriptive statistics using mean and standard deviation and inferential statistics such as regression analysis. Findings indicated manager support positively and significantly influences the adoption of cleaner production technologies, while employee skills do not. The study, thus concludes that Adoption of cleaner production technologies is enhanced by management manager support. It is therefore crucial for the management to be committed in the use of cleaner production. They should therefore have sufficient training on how to operate cleaner production.

Keywords: Managerial support, employees' skills, cleaner production, adoption, TAM, textile

INTRODUCTION

Project management remains a prominent issue in project delivery all over the world. It involves defined objectives which must be achieved and numerous resources which need to be efficiently utilized (Robinson et al. 2005). However, in today's global challenges, manufacturers do not only being confronted with the need to increase the environmental performances, but

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also to improve the quality of products, work, environment as well as safety and health performances. Before the idea of sustainable development becomes an important part in the manufacturing practices, the End-of-Pipe (EOP) approach are widely used to protect the environment from the pollutions generated (Jovanovic et al, 2010; Boltic, Ruzic, Jovanovic, Savic, and Petrovic. 2013).

However, several manufacturers that achieved the level of sustainable manufacturing claimed that the EOP practices are costly to implement and maintained. It is therefore, no longer efficient to be used in resolving the environmental degradation that resulted from the manufacturing activities (Klemes, Varbanov, and Huisingh, 2012).This prompts leading firms and researchers to look for a new model of industrial activity based on the minimization of waste, energy saving and the reduction of resources used in production. This is through the concept of cleaner technologies, which is an integrated pollution control and prevention approach that conserves resources, minimizes waste generation and energy use, and is based on the comprehensive analysis of process and product impacts on the environment. The introduction of Cleaner Production (CP) successfully offers new opportunity in managing the environmental concerns in a more efficient and comprehensive manner. The CP that defined from the perspective of thinking based on social- technical approach has provided several essential concepts in managing the environmental issues (Dieleman. 2007). Unlike the EOP, the CP system emphasizes the environmental issue at every stage of manufacturing processes. It encompasses the entire process from mining of raw material, manufacturing, production and to waste discharge (Zeng. 2010).

This finally successfully encourages the manufacturer to develop a more comprehensive prevention strategy at every stage in product development and the production cycles, primarily in handling the environmental concerns (Yusup, Wan Mahmood, Salleh, and Norhafiza. 2013). Moreover, the selection of CP as a key strategy to manage the environmental issues is also able to cultivate the sustainable manufacturing practice as well as provide a platform to gain better economic and environmental benefits, primarily in the realization of the circular economy (Peng and Li. 2011). Cleaner Production also tends to incorporate certain technological components and training (Hilson and Nayee, 2002). This approach is considered to be an organized, innovative and creative way to improve production processes, products and services, reducing their environmental impact through preventative measures (Fresner, 2004). Cleaner Production is also defined as a greater level of environmental performance that can only be achieved through strategic improvement in a way that minimizes risks to the environment and to human health with the use of sound control, layout optimization and the implementation of efficient management techniques (Hilson and Nayee, 2002).

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The ability in implementing cleaner production does not only depend on the process of planning, implementation and monitoring. The identification of the challenge in the implementation process is also needed to make sure the CP can be smoothly implemented (Mitchell. 2006). The use of old and inefficient technologies, lack of information about new green technologies and insufficient manufacturing infrastructures are the examples that can impede the implementation of the CP (Liu, 2014). In addition, social issues such as the level of consciousness, psychological effects, work cultures and the uncertainty of economic performance are the other challenges that always occur during the implementation process of the CP (Yuksel, 2008). The ability in identifying all of these challenges in the textile industry can reduce the failure rate and provide an accurate focus in adopting the CP system.

Hilson and Nayee (2002) argue that the effective implementation of well-structured organization technology is key to achieving Cleaner Production because such implementation presents elements that support environmental improvement and help coordinate individual technological processes and management, both of which can contribute to advances in environmental performance. Casado, (2002) carried out a study on adoption of clean production technologies in Portuguese and found that good management support strives to create corporate environmental reporting which can be a useful way for firms to effectively disseminate information about their environmental performance activities, but more than that, it can be used as an internal diagnostic tool for cleaner production. The creation of this strategy by the management support leads to more adoption of cleaner production technologies thus creating a safe and healthy environment for the people.

Kitazawa and Sarkis (2000) report the direct impact of organizational culture dimensions on the implementation and maintenance of environmental business practices, the indispensability of empowerment of employees for the reduction of environmental impacts and the need for appropriate human resource management practices in making the empowerment process effective with respect to environmental practices. In this context, Ogden et al. (2006) assert that empowerment has been treated as a practice of management excellence emerging from contingencies that oblige companies to reduce their operational costs and to increase the quality of their manufacturing processes and of their products; in this process, they act flexibly and with high productivity according to the concept of Cleaner Production. To a large extent, Stone (2000) argues that the organizational technology as equivalent to limiting business activities to those that are coherent with sustainability. Recent literature on Cleaner Production identifies commitment and support from organizational technology as essential for the success of the programs (Stone, 2000; 2006). This support is also highlighted in the literature on

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environmental management (Daily and Huang, 2001; Govindarajulu and Daily, 2004; Pujari et al., 2004; Zutshi and Sohal, 2004; Wee and Quazi, 2005; Brío et al., 2007; Daily et al., 2007).

Problem Formulation

The success of cleaner production programs is an essential part of the search for more sustainable societies, because Cleaner Production emerges as one of the main activities of the companies committed to effective environmental management (Fresner, 2004). The adoption of cleaner production systems potentially reduces the risk of hazard in work environments, improves the environmental management performance as well as streamlining the sustainability in manufacturing operations. However, failure to identify and understand the challenges in implementing this practice may cause the implementation process become less efficient and it is believed that Cleaner Production proves to be unrealistic without the support of human resources (Stone, 2000).

Adoption and implementation of Cleaner Production in manufacturing firms has been slower than in other firms. Some of the barriers for implementation of Cleaner Production include lack of professional management skills, poor record keeping, and resistance by decision-makers(exacerbated by the concentration of decision-making power in a few persons). Additionally, implementation faces over-emphasis on production, non-involvement of workers, limited technical capabilities and access to technical information, limited skilled human capital, lack of in-house monitoring, deficiencies in maintenance, unstable finances, high cost and low availability of capital for Cleaner Production (Graci, 2009). The adoption and spread of Cleaner Production has been slow despite availability of case studies of excellent and profitable Cleaner Production solutions (Ernst and Young 2008; Deloitte, 2006).Challenges vary from industrial sector to industrial sector. Most textiles firms in Kenya has adopted cleaner production technologies. However, the program has been faced by numerous challenges such as management support, employees' skills and experiences of cleaner technologies among others. This study therefore will attempt to find out how these factors affect adoption of cleaner technologies.

Several studies had analyzed the factors leading to the adoption and diffusion of environmental technologies in different sectors and countries. Most of the studies focus on socio-political aspects of the environment, such as stakeholder demands, regulatory pressure, and external relationships (Delaplace and Kabouya, 2001; Mazzanti and Zoboli, 2006;among others). The purpose of the study was to assess factors affecting adoption of cleaner production in Kenyan textile industry. The study hypothesized that;

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$H_{O1:}$ There is no statistical significant relationship between manager supports and adoption of cleaner production technologies

$H_{O2:}$ There is no statistical significant relationship between employees' skills and adoption of cleaner production technologies

LITERATURE REVIEW

Theoretical Framework

The organizing principle of Cleaner Production is efficiency. Many theories have been used to support the growing need for cleaner industrial operations such as the Theory of Inventive Problem Solving. However, this study will be guided by the Technology Acceptance Model (TAM) and the Diffusion Theory.

The diffusion theory was introduced by the French sociologist Gabriel Tarde in late 19th century and was first published in 1962 by Everett Rogers. Diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. The origins of the diffusion of innovations theory are varied and span multiple disciplines. There are four main elements that influence the spread of a new idea: the innovation, communication channels, time, and a social system. This process relies heavily on human capital. The innovation must be widely adopted in order to self-sustain. Within the rate of adoption, there is a point at which an innovation reaches critical mass. The categories of adopters are: innovators, early adopters, early majority, late majority, and laggards. Diffusion of Innovations manifests itself in different ways in various cultures and fields and is highly subject to the type of adopters and innovation-decision process.

In relation to the study, the introduction of cleaner production is a major step in promoting innovation.

Theory of Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was advanced by (Davis 1989) who came up with the theoretical model aiming to predict and explain ICT usage behavior. According to Davis TAM is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably: Perceived usefulness (PU), this is the degree to which a person believes that using a particular system would enhance his or her job performance and Perceived ease-of-use (PEOU) which Davis defines as the degree to which a person believes that using a particular system would be

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free from effort (Bagozzi, 2007).In relation to the study the theory confirms the importance of understanding the acceptance of the computer technology within the textile industry on the context perceived usefulness and perceived ease-of-use.

Empirical Review

According to a qualitative study done by Buysse, (2003) on environmental protection among 20 randomly selected firms, he found that harnessing the power of environmental manager support can be a potent tool in the furtherance of cleaner production objectives. Environmental leadership refers to the management process within firms. He further stated that those firms in which senior management demonstrates a strong commitment to the principle and practice of cleaner production are likely to experience a trickle-down effect whereby all layers of the firm experience a much greater corporate environmental commitment thus more adoption of cleaner production technologies.

Cantorna AIS (2005) in his study on the effect of the implementation of advanced manufacturing technologies found that a potentially powerful motivator for the adoption of cleaner production is improvements in manager support. Because of the substantial overlaps between good management generally and cleaner production in particular, firms have the opportunity to realize significant cost savings. As Michael Porter, at the Harved Business School points out, cleaner production is a process that not only pollutes less but lower costs or improves quality. Depending in part on length of time the technologies and associated management systems had been in use, firms may achieve cost savings: through better energy and waste management; decreased demand for raw materials; reduced storage requirements for waste and toxic materials; and less pollution control expenditure.

Junquera, (2007) in his empirical study on adoption of cleaner production technologies found that environmental manager support can have a positive impact on the employees, particularly where they can see improvements in the local environment which may results from their actions. A key element in environmental manager support, as a factor affecting decisions on environmental management and cleaner production, is the sense of accountability to local communities and also, increasingly important, to financial stakeholders shareholders, banks and insurers. Good relations with local authorities were also seen as important, particularly given the need for planning permission for new plants or sites. In an increasingly globalized market place, environmental manager support may be exerted over firms in a number of countries through a centralized head office cleaner production policy thus harnessing the objective of cleaner production technologies. One industry representative referred to an Australian subsidiary of a multinational where it is considered that the best long term solution is simply to adopt a high

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international environmental standard and apply it to all its operations regardless of where they are located.

Casado, (2002) carried out a study on adoption of clean production technologies in Portuguese and found that good management support strives to create corporate environmental reporting which can be a useful way for firms to effectively disseminate information about their environmental performance activities, but more than that, it can be used as an internal diagnostic tool for cleaner production. The creation of this strategy by the management support leads to more adoption of cleaner production technologies thus creating a safe and healthy environment for the people.

Steiner, (2007) conducted a study to determine the factors leading to adoption of cleaner production technologies and argued that in order to maximize the benefits of employee skills and expertise, all levels of the firm's management structure should be engaged to ensure that cleaner production is integrated into other aspects of the firms operations. Cleaner production education and training to promote employee skills should be extended beyond the current generation of business managers to encompass future generations. It was suggested that, as the success of cleaner production is rooted in cultural attitudes, it would be easier to inculcate a cleaner production ethos through our secondary and tertiary education systems for a future benefit than to change the world.

However, in a UK study done by Bryman, (2002) it was concluded that a major hurdle to the widespread adoption of cleaner production is the inaccessibility of appropriate employee skills and expertise thus impeding the process of adoption of cleaner technologies. In the economist's language, there are positive transaction costs associated with the quality employee skills. Despite the considerable potential of cleaner production to improve a firm's competitiveness, in many instances they are incapable of exploiting such opportunities because of ignorance of strategies to improve employee skills. Firms may lack training and expertise about specific clean technologies, thus contributing to risk and uncertainty regarding the adoption of the technology. Even to the extent that they are aware of these opportunities, a lack of appropriate skills and expertise prevents firms from acting upon them. This may be compounded by irregular decision making firms may not review cleaner production issues on a regular enough basis to benefit from the available information.

Kitazawa and Sarkis (2000) report the direct impact of organizational culture dimensions on the implementation and maintenance of environmental business practices, the indispensability of empowerment of employees for the reduction of environmental impacts and the need for appropriate human resource management practices in making the empowerment process effective with respect to environmental practices. In this context, Ogden et al. (2006)

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assert that empowerment has been treated as a practice of management excellence emerging from contingencies that oblige companies to reduce their operational costs and to increase the quality of their manufacturing processes and of their products; in this process, they act flexibly and with high productivity according to the concept of Cleaner Production.

According to Castrillon and Cantorna (2005), based on the results of a study conducted in 90 companies in industries with advanced technology in production processes, the managerial decision to develop training is not determined by or directly correlated with investment in new technologies or production techniques. Thus, one of the main driving forces for technological training programs, as well as for the implementation of Cleaner Production, is the support and commitment of top management (Unnikrishnan and Hegde, 2007). The involvement of top management in environmental technology topics translates into the diffusion of an environmental policy supported by the members of the highest hierarchical level of an organization (Brío et al., 2007).

To a large extent, Stone (2000) argues that the organizational technology as equivalent to limiting business activities to those that are coherent with sustainability (Stone, 2000). Recent literature on Cleaner Production identifies commitment and support from organizational technology as essential for the success of the programs (Stone, 2000; 2006). This support is also highlighted in the literature on environmental management (Daily and Huang, 2001; Govindarajulu and Daily, 2004; Pujari et al., 2004; Zutshi and Sohal, 2004; Wee and Quazi, 2005; Brío et al., 2007; Daily et al., 2007).

Huang, (2001) has identified structural factors, such as the need to amortize equipment already installed, as major impediments to the implementation of cleaner technology. Firms may have substantial investments in existing technologies, with associated investments in the staff whose skill and expertise is necessary to operate them. Firms may be reluctant to engage in activities that retire expensive equipment before the end of its useful life. Changes in systems and technology may also make certain employees obsolete, and therefore induce organizational structural protection of the existing system thus posing a great challenge to the adoption of cleaner production technologies.

Nagano, (2010) found that opportunities for cleaner technologies also vary between industry sectors. In those sectors where technology does not change rapidly, for example mature industry sectors and where it is hardest to justify investing the capital in new plant and equipment, there will be less opportunity for firms to modify their production processes to implement cleaner production. A number of industry representatives pointed to the vintage of much industrial technology in Australia. The literature review above has identified various challenges related to adoption of cleaner production technologies. However, few empirical

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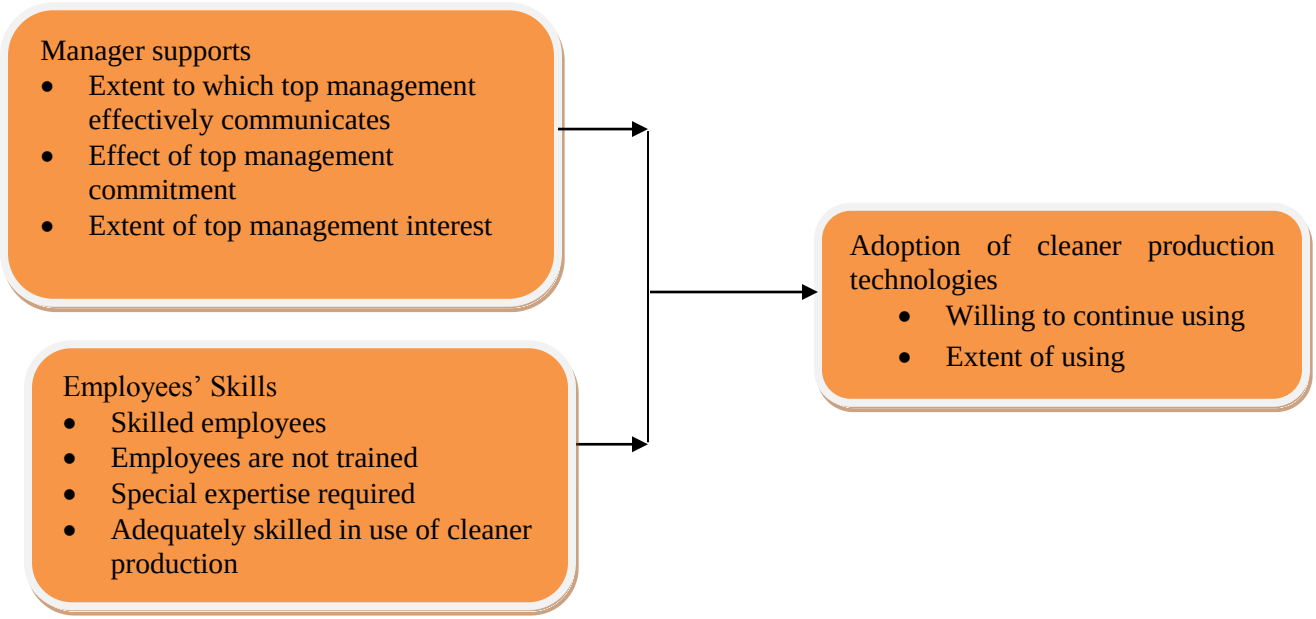
studies have been conducted on organizational factors on Adoption of cleaner production technologies.

In the study, independent variables are managers' support, employees' skills, organizational culture and organization technology which are some of the variables which have been discussed in the literature review. Adoption of cleaner production is the dependent variable (Figure 1).

Figure 1. Conceptual Framework



RESEARCH METHODOLOGY

The study adopted explanatory research design. The Explanatory research also attempted to build and elaborate on theories and add to predictions and principles where possible (leedy, 2001). This is done by using the scientific method to test the evidence to extend an idea put forth or uses it to reach into new areas and issues as well as new topics which science can address in an attempt to improve the quality of life for people. The population of the study consisted of 210 top management officials working in the 2 textile firms in UasinGishu County. For selecting these samples of management officials, stratified sampling was used in which the four key major top positions were engaged were taken as strata so as to give equal chance to each of the sectors.

Data collection was done using a questionnaire. The study used 5 point Likert scale questionnaires to collect the data from the treasury staff and, was represented by the following terms; *strongly Agree (5), Agree (4), Undecided (3), Disagree (2) strongly Disagree* (1). The

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questionnaires were be divided into sections. Each of the sections will investigate a different variable of the study. Reliability of the questionnaire was estimated using the Cronbach's reliability coefficient, which is a measure of internal consistency (Fraenkel and Wallen, 2000). A reliability coefficient of 0.7 or higher is recommended and was used as the threshold for accepting reliability. The Cronbach's reliability coefficient was 0.711 and 0.788 which was above 0.7. In case of a low coefficient obtained, item-by-item analysis was done in order to improve weak points in the questionnaire.

Model Specification and Data Analysis Procedures

Regression analysis is the statistical procedure that identifies the relationship between two or more quantitative variables: a dependent variable whose value is to be predicted and an independent variable or explanatory variable (or variables) about which knowledge is available (Cassidy, 1996). More specifically, linear regression was used as is the most applicable in this study. Linear regression is the technique that allows additional factors to enter the analysis separately so that the effect of each can be estimated. It was valuable for quantifying the impact of the four variables under study upon the dependent variable. Correlation analysis was also used to determine the relationship between the variables being analyzed in the research.

This model is expressed below;

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

Where;

Y = adoption of cleaner production technologies. α = Alpha (constant), X_1 = manager support and X_2 =employees' skills, e =error of prediction.

ANALYSIS AND FINDINGS

The study sought to collect data from 144 respondents, a total of 136 respondents' responded constituting 94.44% of the respondents' rate. The demographic information of the respondents focused on their gender, age bracket, job tenure, highest education level

In terms of gender, majority 61% of the respondents are male while 39% (53) of them are female respondents. The results imply that majority of the employees' working in the textile firms in UasinGishu County are male. With reference to the age bracket of the respondents, 49.3% (67) of the respondents are below 25 years, 41.2% (56) of them are between 25 and 30 years. In light of the foregoing, the respondents are mature and therefore beneficial to the study as they would give reliable information as sought by the study. Also, the study put into account the job tenure of the respondents. Majority 73.5% (100) of the respondents have worked in the organization for less than 5 years. This illustrates that the employees had worked in the

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organization long enough and could therefore offer reliable information regarding factors affecting adoption of cleaner production. With reference to the job designation, 37.5% (51) of the respondents are support staff, 21.3% (29) are in middle management, 18.4% (25) technical staff, 15.4% (21) senior management and 7.4% (10) of the respondents are interns. This distribution provided a diversified base of information given the contribution of the different management levels. Their views were therefore representative of the whole organization.

Manager Support

The researcher enquired from the respondents their views on manager support on adoption of cleaner production in a five point likert scale. The results are as presented in table 1. Table 1 illustrates that the management is committed to the use of cleaner production (mean = 4.11, SD = 0.98).This is corroborated by respondents who confirmed that the management has effectively communicated its support for cleaner production adoption (mean = 4.03, SD = 0.97). Further, the management considers cleaner technologies production important to the organization (mean = 3.83, SD = 0.84) and is interested in the adoption of cleaner production. Based on the above findings, there is commitment by the management in the adoption of cleaner production and this has been clearly evidenced by the interest and foremost consideration they have in it.

Table 1. Manager Support on Adoption Of Cleaner Production

	Mean	Std. Deviation	Skewness
The management interested in the adoption of the cleaner production	3.78	0.83	-1.1
Management consider cleaner technologies production important to the organization	3.83	0.84	-1.2
Have management effectively communicated its support for cleaner production adoption	4.03	0.97	-0.9
Management committed to the use of the cleaner production	4.11	0.98	-1.5

Employees' Skills

The researcher also sought to establish the influence of employees' skills on adoption of cleaner production technologies. Table 2 illustrates the results. Based on the results in the table, most of the employees have the skill required for cleaner production (mean = 4.11, SD = 0.84).However, employees are not trained on how to operate cleaner production (mean = 4.04, SD = 0.86).In light of this, cleaner production needs special expertise which the firm does not have (mean = 3.82, SD = 0.87).Nonetheless, the firm's management makes sure employees are adequately skilled in use of cleaner production (mean = 3.85, SD = 1.13).In light of the aforementioned

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findings, employees have the sufficient skills and expertise for cleaner production technologies despite the fact that they are not trained on how to operate cleaner production. On the whole, employees' skills is an added advantage in the adoption of cleaner production technologies.

Table 2. Employees' Skills

	Mean	Std. Deviation	Skewness
most of the employees have the skill required for cleaner production	4.11	0.84	-1.2
employees not trained on how to operate cleaner production	4.04	0.86	-1.2
Cleaner Production need special expertise which the firm does not have	3.82	0.87	-1.6
the firm management make sure employees are adequately skilled in use of cleaner production	3.85	1.13	-0.5

Adoption of Cleaner Production Technologies

This section of the analysis sought to establish the adoption of cleaner production technologies. Table 3 illustrates the results which revealed that the firm makes use of cleaner production technology (mean = 4.15, SD = 0.74).Additionally, the firm intends to continue using cleaner production (mean = 3.88, SD = 0.98).To sum up, the firm is satisfied with its use of cleaner production (mean = 3.92, SD = 1.03).Cognate to the results, Fresner, (2004) opines that organizational technology enhances the production processes, products and services, reducing their environmental impact through preventative measures thus more adoption of cleaner production.

Table 3. Adoption of Cleaner Production Technologies

	Mean	Std. Deviation	Skewness
Firm make use of cleaner production regularly	4.15	0.74	-0.5
Firm continue using cleaner production	3.88	0.98	-0.8
firm satisfactory with use of cleaner production	3.92	1.03	-0.7

Correlation Results

Pearson's product moment correlation analysis was used to assess the relationship between the variables. Correlation results in table 4 showed that manager support was positively and significantly correlated with adoption of cleaner production technologies($r=0.604$, $\rho<0.05$). Further, employee skills exhibited a positive and significant correlation with adoption of cleaner production technologies ($r=412$, $\rho>0.01$).

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Table 4. Correlation Results

	Adoption of CPT	Manager support	Employees skills
Adoption Of CPT	1		
Manager Support	.604**	1	
Employees skills	.412**	.393**	1

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

Regression results

The results from table 5 shows that the study multiple regression model had a coefficient of determination (R^2) of about 0.527. This means that 52.7% variation of adoption of cleaner production technologies is explained/predicted by joint contribution of organizational culture, manager support, employee skills and organizational technology. Table1 reveals that the F-value of 36.502 with a p value of 0.00 significant at 5% indicate that the overall regression model is significant, hence, the joint contribution of the independent variables was significant in predicting adoption of cleaner production technologies.

Table 5 shows the level of significance on the variables, it also provides the standardized and unstandardized coefficients. According to the regression equation, taking all factors into account (organizational culture, manager support, employee skills and organizational technology) constant will be 0.75. The results of multiple regressions, as presented in table 5 revealed that manager support has a positive and significant effect on adoption of CPT with a beta value of $\beta 1 = 0.327$ (p-value = 0.000 which is less than $\alpha = 0.05$). Therefore, for each unit increase in manager support, there is 0.327 unit increase in adoption of CPT. With reference to manager support for adoption of cleaner production, the results revealed that the management is committed to the use of cleaner production. This has been evidenced by support for cleaner production adoption and interest in the adoption of cleaner production. The management also considers cleaner technologies production important to the organization.

The results of table 5 showed that the standardized coefficient beta and p value of employee skills were negative and significant (beta = -0.007, $p < 0.05$). Thus employee skills has a negative and significant effect on adoption of CPT. A for each unit increase in employee skills, there is 0.007 unit decrease in adoption of CPT. Further, in regards to the influence of employees' skills on adoption of cleaner production technologies, the study revealed that the employees possess the skills required for cleaner production. However, they lack training on how to operate cleaner production hence the management has made an effort towards ensuring that employees are adequately skilled in the use of cleaner production.

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Table 5. Regression results

	Unstandardized Coefficients	Standardized Coefficients	Collinearity Statistics				
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.75	0.311		2.413	0.017		
manager support	0.258	0.058	0.327	4.455	0	0.671	1.489
employees skills	-0.008	0.084	-0.007	-0.093	0.926	0.643	1.555
R Square	0.527						
Adjusted R Square	0.513						
F	36.502						
Sig.	.000b						

a Dependent Variable: Adoption Of adoption of cleaner production technologies

CONCLUSION AND RECOMMENDATIONS

In conclusion, manager support positively and significantly influences the adoption of cleaner production technologies. This means that, whenever the senior management demonstrates strong commitment to the practice of cleaner production, there is a higher likelihood of adoption of cleaner production technologies. Adoption of cleaner production technologies is further enhanced by management emphasis and interest.

Additionally, employees' skills is fundamental to the adoption of cleaner production. In most cases, employee expertise is directed towards carrying out cleaner production technologies. The study however has found a negative relation between employees' skills and the adoption of cleaner production. The study has therefore added sufficient insights to the existing body of literature. This gives more room for further study to augment the above findings.

As evidenced in the study, manager support plays a crucial role in the adoption of cleaner production technologies. It is therefore crucial for the management to be committed in the use of cleaner production. The management should not only be committed but also have interest and lay emphasis on cleaner technologies production.

Despite the negative effect of employee skills on the adoption of cleaner production technologies, it is important for employees to possess the skills required for cleaner production. They should therefore have sufficient training on how to operate cleaner production. Further, organizations need to effectively target and deliver the message to the intended employees in regards to the adoption of cleaner production technologies.

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Based on this research, it is perceived that all the factors are equivalently related to adoption of cleaner production technologies. Since the current research was limited to top management staff and supervisors drawn from two textile firms in UasinGishu County. A larger sample and a more specific instrument might be desirable and might validate the negative relation between employee skills and adoption of cleaner production technologies. Apart from extending the sample size, to strengthen the research it is recommended that that this thesis be applied to specific industry segments, such as automotive sector.

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