

DETERMINANTS OF KAIZEN ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN AFRICA: A LITERATURE REVIEW

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ABSTRACT

Kaizen is a Japanese word meaning a continuous improvement which involves both managers and workers in the workplace using relatively little expenses. The method originated from the United States of America and was imported and modified in Japan after the Second World War to resolve the challenge of scarce resources. Several businesses which adopted Kaizen confirmed its impact in waste reduction and productivity improvement. However, Kaizen adoption rate has been very low in the African countries. Thus, this study synthesizes determinants of Kaizen adoption by Small and Medium Enterprises (SMEs) in African countries. It specifically, assesses Kaizen related components and examines the determinants of Kaizen adoption by SMEs in African countries. A comprehensive review of twelve related empirical literature of African countries practicing Kaizen was assessed. The data were analyzed using Microsoft Excel and those with scores of 50% or above were considered to be significant. The study found that Total Quality Management (59%), 5S Kaizen (25%), Lean Manufacturing (8%) and Quality Circles (8%) are Kaizen related components adopted by SMEs in twelve African countries. The study also found that, Top Management Commitment and Support (75%) (Attitude and facilitating conditions), Training and Education (67%) (Facilitating conditions), Teamwork, Employees Participation and Empowerment (50%) (self-efficacy) are critical determinants of Kaizen adoption by SMEs in African countries. The study implies that, African countries which practice Kaizen should focus on the Top Management Commitment and Support; Training and Education; Teamwork, Employees participation and Empowerment; as the key significant determinants of Kaizen to accelerate its implementation so as to enhance the SMEs' productivity and performance.

Keywords: KAIZEN, Lean Manufacturing, TQM, Adoption, 5S, SMEs, TPB Model, Africa

1. INTRODUCTION

Kaizen is a Japanese word meaning a continuous improvement which involves both managers and workers in the workplace using requires relatively little expenses (Imai, 2012). It is a practice of using resources for value creation and waste elimination. Kaizen originates from the United States of America (USA) as a quality control method which was adopted and modified by the Japanese after the Second World War to resolve the challenge of scarce resources (Ohno, Ohno, & Uesu, 2009). Due to Kaizen's significant achievement, it has become a popular quality improvement model for various companies in the world (Zhou, 2016) including Africa. As a quality improvement model, Kaizen adoption leads to: waste reduction, improved productivity and product quality, better space utilization, safety, speed up delivery time, increased customer satisfaction, decreased stock levels, and improved business performance (Bwemelo, 2017; Kumar *et al.*, 2018; Tiwari, 2017).

The increase in customers' demand on quality products and competition among businesses forced many firms to find effective quality improvement models. In order to meet this demand, Maarof and Mahmud (2016) recommend companies to opt for any of the following Kaizen continuous activities concepts which are under the Kaizen umbrella. These concepts are 5S Suggestion System which stands for Sort (Seiri), Straighten (Seiton), Shine (Seiso), Systemize (Seiketsu), and Standardize (Shitsuke); Quality Control Circles (QCC); Total Quality Control (TQC); Total Quality Management (TQM); Just-In-Time (JIT) System; and Kanban System (Ohno *et al.*, 2009) just to mention a few. According to these authors, 5S suggestion system is the key step in the quality and productivity improvements. Thus, Kaizen implementation in a particular enterprise should start with the 5S suggestion system and later the advanced techniques should follow.

The importance of Kaizen in product quality improvement cannot be underestimated. Thus, the model could be beneficial to SMEs in African countries. The SMEs sector plays an important role in African economy and particularly in job creation. The sector employs about 80% of the African population (Okewu, 2015). Although SMEs contribute significantly to the economy, they are faced with several challenges, such as, power shortage, lack of capital and technology, poor management skills and competencies, inadequate information, and corruption (Muriithi, 2017; Ishiwata, 2009). Therefore, Kaizen adoption is one among the options for SMEs in African countries that can enhance productivity as well as products quality. Currently, a total number of twenty-four (24) African countries practice Kaizen, of which eight (8) countries have Kaizen projects and sixteen (16) countries received Kaizen training (JICA, 2018). However, its implementation among SMEs in African countries where it has been introduced and practiced seems to be very low (Edu, 2013; Larteb, Haddout, & Benhadou, 2015; Mapfaira, Mutingi, Lefatshe, & Mashaba, 2014). Therefore, the purpose of this study is to synthesize the determinants of Kaizen adoption by SMEs in Africa. The study uses the theory of Planned Behavior (TPB) by Ajzen (1991) to group the reviewed determinants under its three constructs namely: attitude, subjective norm, and perceived behavior control to justify the findings.

The study's specific objectives were:

- i. To assess Kaizen related components adopted by SMEs in African countries;
- ii. To examine the determinants of Kaizen adoption by SMEs in African countries.

2. CONTEXTUALIZING KAIZEN ADOPTION BY SMEs AND THEORETICAL REVIEW

2.1 KAIZEN Adoption by SMEs

Various studies have been conducted worldwide regarding the factors influencing Kaizen adoption among SMEs. For instance, Maarof and Mahmud (2016) reviewed literature on contributing factors and challenges in implementing Kaizen among SMEs in developing countries. Their findings revealed that, good communication between the top management and their subordinates, clear corporate strategy, the existence of a kaizen competition awards among personnel in the organization, and employees empowerment have a positive effect on the successful adoption of Kaizen. On the other hand, resistance to change, failure to motivate employees, and vague companies' strategic path were some of the challenges impeding successful adoption of Kaizen among SMEs in the developing countries.

Knol, Slomp, Schouteten, and Lauche, (2018) conducted a study to test critical success factors for Kaizen implementation by SMEs in the manufacturing sector in Holland. Their findings revealed that, in the initial stage of Kaizen implementation in SMEs, some improvements could be done through a bottom up approach using learning focus, enhanced training, and support congruence. Additionally, during the advanced stage of Kaizen implementation top management support, a collective upgrading vision, and a supplier link are supposed to be considered by the SMEs. Zhou (2016) undertook a study to examine various factors associated with Kaizen implementation by SMEs in the USA. The results showed that resources capacity, management concept as well as philosophy, availability of Kaizen tools and techniques were some of the obstacles inhibiting the adoption of Kaizen among SMEs.

Bwemelo (2017) conducted a study to examine the acceptability and feasibility of Kaizen among SMEs in Tanzania. The findings revealed that, employees' resistance, lack of employees' motivation, lack of recognition of hardworking employees, inadequate communication and bureaucratic organizational structures were some of the challenges threatening Kaizen implementation.

Based on the above various scholars (Knol, *et al.*, 2018; Bwemelo, 2017; Zhou, 2016) examined various factors related to Kaizen implementation using empirical literature in developed as well as in developing countries. However, limited studies have been done using literature review. To the author's knowledge, there only one study by Maarof and Mahmud (2016) reviewed literature on contributing factors and challenges in implementing Kaizen among SMEs in developing countries. Thus, this study is an attempted to fill this research gap by conducting a literature search on the determinants of Kaizen adoption by SMEs in African countries.

2.2 Theory of Perceived Behavior (TPB)

On the theoretical perspective, the study used a Theory of Planned Behavior (TPB) which originates from the Theory of Reasoned Action (TRA) (Ajzen, 1991). According to Ajzen (1991) TRA was extended by adding one variable- Perceived Behavior Control (PBC) to overcome its limitation and form the TPB model. The theory has three constructs namely attitude, subjective norm, perceived behavior control. Attitude is the extent to which an individual has positive or negative feelings regarding the behavior in question. Subjective norm is the individual's perception of social pressure

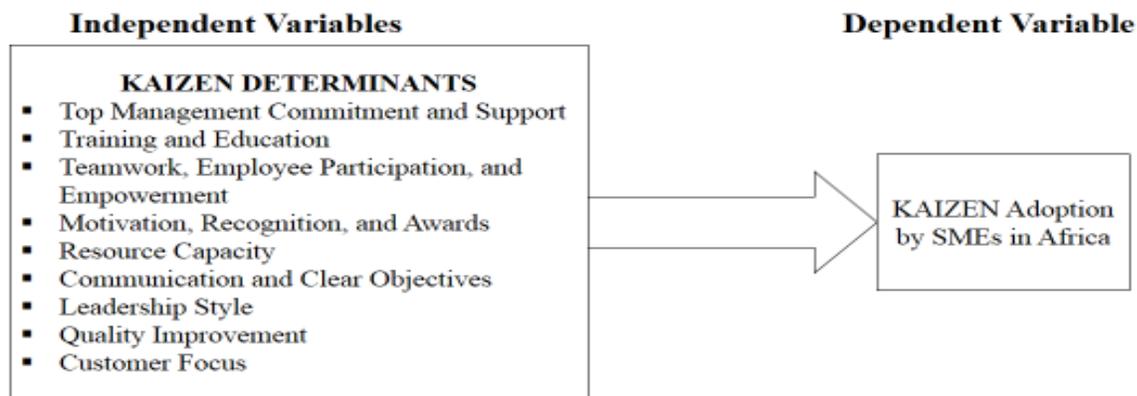
to implement or not to implement the behavior in question (Chin, 2016). On the other note, perceived behaviour control is an individual's perception of the ease or difficulty of conducting the behavior in question, determined by facilitating conditions and self-efficacy (Nikander, 2011). According to Nikander (2011) facilitating conditions signify the availability of resources required by an individual to execute a behaviour for example, time, money or knowledge. Similarly, self-efficacy is an individual's self-assurance to perform a behavior in question (Nikander, 2011). The TPB model suggests that, individual behaviour is driven by behaviour intentions, where behavior intentions are a function of: an individual's attitude toward behaviour, subjective norms, and perceived behaviour control (Ajzen, 1991).

The theory has been applied in the adoption of technology in various empirical settings in the SMEs sector. For instance, e-business adoption in hotel services in the Indian context (Sarmah, Sharma, & Gupta, 2017), managers' innovativeness and e-commerce acceptance in SMEs in Chile (Grandón & Ramírez-Correa, 2018) and owners' intention to adopt environmental management practices among SMEs in Malaysia (Latip, Sharkawi, Sharifuddin, & Mohamed, 2018). Thus, considering these premises, the TPB model was selected in the current study. Based on the TPB model, an individual's behaviour (Kaizen adoption) is driven by the behaviour intention (SMEs owners' willingness) which is determined by attitude (SMEs owners' feelings toward the use of the technology), subjective norms (social pressure), and perceived behavior control (time, resources, self-confidence). Thus, the relevance of the TPB model in this study is that, Kaizen adoption by SMEs can be determined by ATT, SN and PBC.

2.3 The Conceptual Framework

Based on the literature review, the study developed a conceptual framework with independent variables and dependent variables. The Kaizen adoption by SMEs (dependent variable) is determined by the following (independent variables): Top Management Commitment and Support; Training and Education; Teamwork, Employee participation and Empowerment; Motivation, Recognition and Awards; Resources Capacity; Communication and Clear Objective; Leadership Styles; Quality Improvement; and Customer Focus. (See figure 1).

Fig.1. Conceptual Framework



Source: Developed From Literature Review

3. METHODOLOGY

This article is based on specified literature review with the objective to synthesize significant literature related to determinants of Kaizen adoption by SMEs in African countries. The articles were selected based on the following inclusion and exclusion criteria:

- The search was restricted to Kaizen research reports written in English otherwise they were excluded;
- Data were bound to the SMEs implementing Kaizen technique for productivity and quality improvement;

The study included Kaizen Projects run from 2006 to 2018 since, Japanese International Co-operation Agency (JICA) introduced the project in Africa in 2006 (Kikuchi, 2008).

3.1 Data Sources

The literature review was conducted from October 2017 to November 2018 using the scholarly articles accessed through the following search engines: Google Scholar, Google Search Engine, Google Books, Sage Publications, Emerald Insights, Wiley, Science Direct, Dissertations Reports, and Conference Proceedings. These databases were selected because they were easily accessible and are connected to the College of Business Education database.

3.2 Search Keywords

The following set of keywords was used to search for determinants of Kaizen adoption by SMEs in African countries. (Kaizen OR "5S, Kaizen" OR "Total Quality Management" OR "Total Quality Control" OR "Lean Management" OR "Productivity improvement" OR "Quality Circles" OR "Quality Control Circles" OR "Just-In-Time" OR "Toyota Production System" OR Kamban) AND ("Small and Medium Enterprises" OR Microenterprises OR "Small Businesses") AND ("Sub-Saharan Africa" OR "North Africa" OR "East Africa" OR "West Africa" OR "South Africa" OR Tanzania OR Kenya) all African countries. (Note separate search engines, databases and gray literatures).

3.3 Data Analysis

The study used descriptive statistics to analyze data from the reviewed literature. The determinants of Kaizen adoption, which were mentioned more than once, were tabulated and assigned frequencies. Then, the total frequencies of each Kaizen determinant were divided by twelve (number countries) and multiplied by a hundred to get the percentage. The determinants which scored 50% or above were considered to be significant since (Magasi, 2016; Rumanyika & Mashenene, 2014) used the same method. Finally, Microsoft Excel was used to summarize the results.

4. RESULTS AND DISCUSSION

Though the main objective was to synthesize determinants of Kaizen adoption by SMEs in African countries based on the literature review, the results are presented based on specific objectives and analysis of data.

4.1 To assess Kaizen related components adopted by SMEs in African countries

From the reviewed literature the study the findings reveal four Kaizen related components adopted by SMEs in twelve African countries. These include: Total Quality Management, Lean Manufacturing, Quality Circles, and 5S Kaizen as displayed Table 1 and Figure 2.

Table 1: The list of Kaizen related components from twelve African countries

Author	Kaizen related component	Country
Ahmed and Yusof (2016)	Total Quality Management	Sudan
Hagos (2016)	5S Kaizen	Ethiopia
Ayandele and Akpan (2015)	Total Quality Management	Nigeria
Al-Tayeb (2015)	Total Quality Management	Egypt
Larteb <i>et al.</i> (2015)	Lean Manufacturing	Morocco
Matsoso and Benedict (2015)	Total Quality Management	South Africa
Wanderi, Mberia, and Oduor (2015)	Total Quality Management	Rwanda
Bwemelo (2014)	5S Kaizen	Tanzania
Seebaluck, Vencataya, and Buldan (2014)	Quality Circles	Mauritius
Arshida and Agil (2013)	Total Quality Management	Libya
Edu (2013)	Total Quality Management	Ghana
Kamau (2012)	5S Kaizen	Kenya

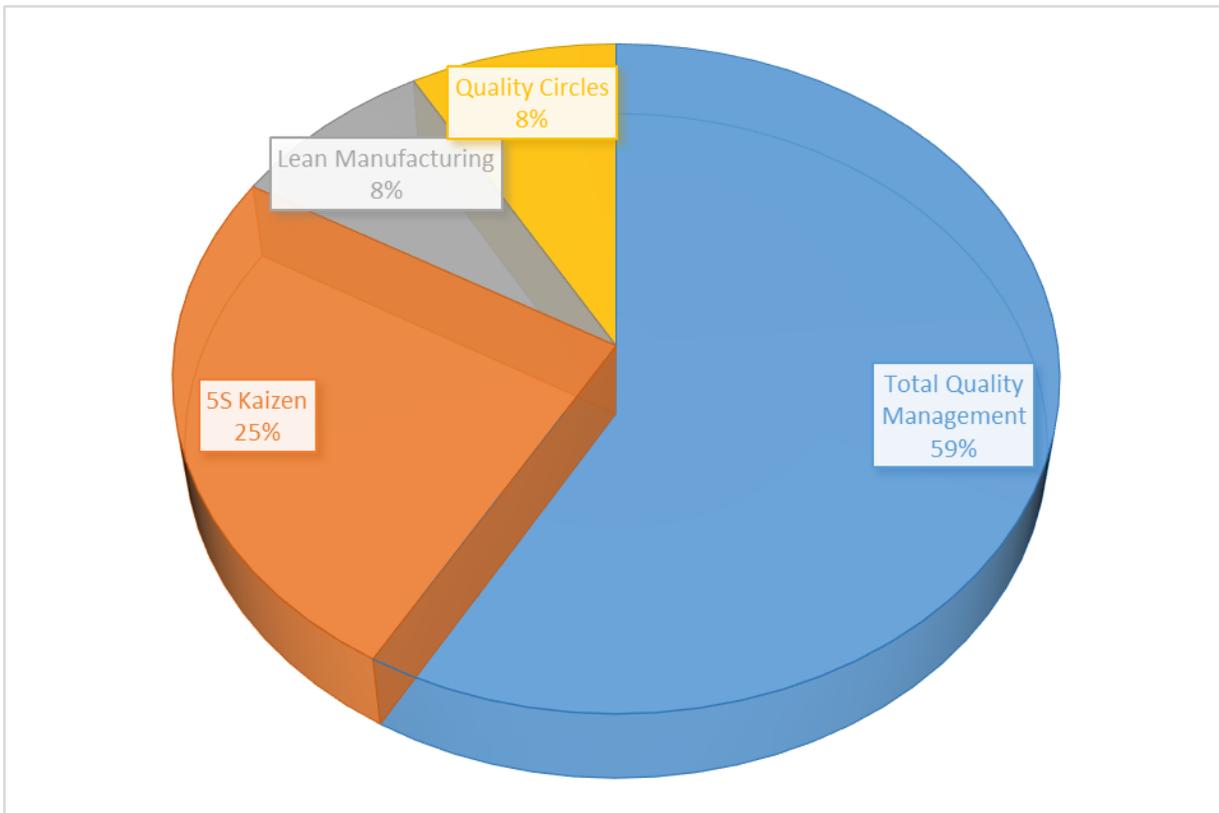


Fig. 2: Kaizen related components adopted by SMEs in African countries.

The results (as presented in Table 1 and Fig. 2) show that Total Quality Management (59%), 5S Kaizen (25%), Lean Manufacturing (8%) and Quality Circles (8%) are the most Kaizen related components adopted by SMEs in twelve African countries.

As pointed out in the previous sections, this study revealed four Kaizen related components adopted by SMEs in twelve African countries with TQM being more practiced compared to others. The reason for TQM being more practiced is as a result of being influenced by award excellence than just the quality of the product or service (Reis, Matias, and Azevedo, 2014). On the other hand, the limited empirical literature is due to the limited number of actors to bring Kaizen practice in Africa thus resulting to low adoption rate (Ishiwata, 2009; JICA, 2018). Findings are similar with those obtained in the study of Edu (2013) who found that Total Quality Management implementation was very low among the native manufacturing SMEs in Ghana. Likewise, Larteb *et al.* (2015) obtained similar results of low adoption rate on Lean Manufacturing implementation by manufacturing firms in the Moroccan context. Moreover, Mapfaira, *et al.* (2014) concluded that, there is a slow rate of Kaizen implementation in Botswana despite its benefits among SMEs.

4.2 To examine the determinants of Kaizen adoption by SMEs in African countries

The study findings show that there are several determinants of Kaizen adoption by SMEs from twelve (12) African countries. From these, nine (9) determinants of Kaizen adoption were extracted by selecting the variables which were mentioned more than once. The variables include Top Management Commitment and Support; Training and Education; Teamwork, Employee participation, and Empowerment; Motivation, Recognition and Awards; Resources Capacity; Communication and Clear Objectives; Leadership Styles; Quality Improvement; and Customer Focus (see Table 2).

Table 2: Selected determinants of Kaizen adoption in African countries

Author(s)	1) TMCS	2) TE	3) TEPE	4) MRA	5) RC	6) CM	7) LS	8) QI	9) CF
Wanderi et al. (2015)	X	X				X			
Kamau (2012)	X	X	X						
Ahmed and Yusof (2016)	X		X					X	X
Hagos (2016)	X		X	X					
Seebaluck et al. (2014)	X	X				X			
Ayandele and Akpan (2015)	X				X				
Al-Tayeb (2015)	X			X	X			X	
Arshida and Agil (2013)		X	X	X				X	X
Bwemelo (2014)		X		X			X		
Larteb et al. (2015)	X	X			X		X		
Edu (2013)	X	X	X	X				X	X
Matsoso and Benedict (2015)		X	X					X	

Note: TMCS –Top Management Commitment and Support; TE – Training and Education; TEPE– Teamwork, Employees participation and Empowerment; MRA – Motivation, Recognition and Awards; RC – Resources Capacity; CM- Communication and Clear Objectives; LS-Leadership Styles; QI – Quality Improvement; and CF – Customer Focus.

Furthermore, the findings as presented in Table 2 show that the total frequencies of each Kaizen determinant were ascertained, then divided by twelve (number countries) and multiplied by a hundred to get the percentage. The determinants which scored 50% or above were considered to be significant, see Table 3 which summed up the frequencies and percentage of determinants of Kaizen adoption and Figure 3 is a 3-D clustered column chart which describes the same.

Table: 3. Summarizes frequencies and percentage of Kaizen determinants in African countries

Variable	Frequencies	Percentage (%)
Top management commitment and support	9	75*
Training and education	8	67*
Teamwork, employee participation, and empowerment	6	50*
Motivation, recognition, and awards	5	42
Resources capacity	3	25
Communication and clear objectives	2	16
Leadership styles	3	25
Quality improvement	5	42
Customer focus	3	25

Key: ** = significant

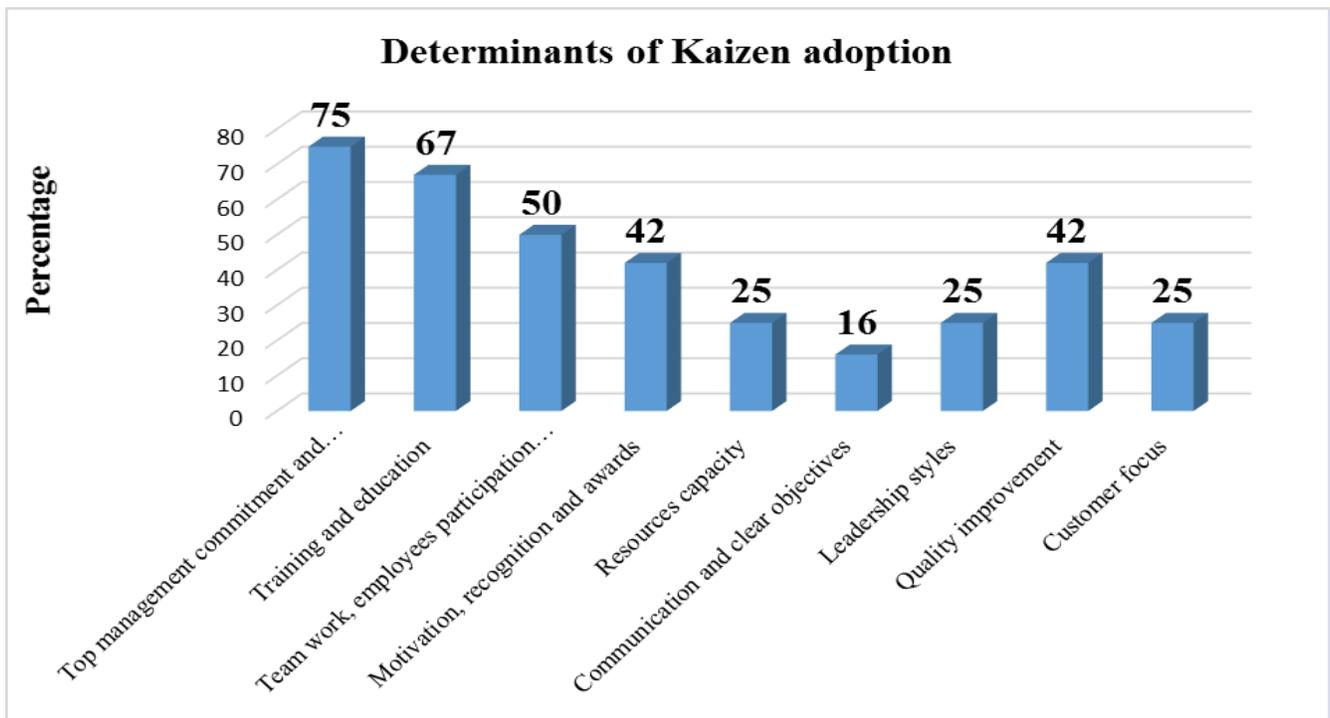


Fig. 3: Frequencies and percentage of determinants of Kaizen adoption by SMEs in Africa

The results (as presented in Table 3 and Fig. 3) show that Top Management Commitment and Support (75%), Training and Education (67%), Teamwork, Employees participation and Empowerment (50%) are critical determinants of Kaizen adoption by SMEs in African countries.

Similarly, the study highlighted top management commitment and support as one of the critical determinant by SMEs in African countries. According to TPB model, top management commitment and support could be categorized under perceived behaviour control. Under this construct, top management commitment and support might be in terms of facilitating conditions which include resources, and the time given for employees to attend Kaizen training. However, top management commitment and support could also be under attitude because their commitment and support will be available if they have positive attitude towards Kaizen techniques. Therefore, these findings are similar with those of Hagos (2016) who revealed that top management commitment is the base for the success of the other factors in the garment firm in Ethiopia. The remaining factors like training, motivation or any improvement in the organization depend mainly on management commitment. Likewise, Larteb et al. (2015) obtained similar results that top management engagement and commitment was one among the leading success factor in the lean manufacturing in international companies based in Morocco. Moreover, Wanderi *et al.* (2015) found that top management commitment is a critical success factor in the implementation of Total Quality Management in the construction firms in Rwanda. Thus, if the managers' attitude is positive towards Kaizen in their firms, the possibility of its adoption is guaranteed.

Training and education form other critical determinants of Kaizen adoption by SMEs as revealed in this study. Based on the TPB model, trainings and education are under PBC as facilitating conditions for Kaizen adoption. The SMEs which have been trained on Kaizen techniques, they are more likely to implement the techniques in their firms. Such findings are congruent with the study of Arshida and Agil (2013) who argued that education and training is the most critical leading factor in implementing Total Quality Management in iron and steel firms in the Libyan context. Similarly, Bwemelo (2014) recommended that training of managers and employees should be the leading strategy among others to enable effective adoption and implementation of Kaizen in Tanzania. Likewise, Tiwari (2017) concluded that SMEs implementing Kaizen in the manufacturing sector in Ethiopia should improve the commitment of employees and human resource skills by providing them with a well-structured training. Thus, an employee with adequate education especially Kaizen team leader can easily be given advanced training on Kaizen. This will increase his/her competencies in solving different problems he/she encounters in the work floor.

Moreover, the study found that teamwork, employees' participation and empowerment also determine Kaizen adoption in African countries. Relating to the TPB model, this comes under PBC as self-efficacy. The empowered employees might have self-confidence which determines the ability to implement Kaizen in their working places with their team members. The findings are supported with the study of Kamau (2012) who concluded that teamwork was one of the leading factors during Kaizen implementation in flower firms in Kenya. Similarly, Maarof and Mahmud (2016) found that employee empowerment was one of the contributing factors during Kaizen implementation by SMEs in Malaysia. Likewise, Matsoso and Benedict (2015) recommended employees' involvement in decision making as one of the critical factors towards the implementation of TQM among SMEs in South Africa

5. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this paper was to synthesize the determinants of Kaizen adoption by SMEs in African countries. Based on the empirical literature review, the conclusions and recommendations are centered on the following specific objectives.

5.1 Assessing Kaizen related components adopted by SMEs in African countries

Total Quality Management (59%), 5S Kaizen (25%), Lean Manufacturing (8%) and Quality Circles (8%) are Kaizen related components adopted by SMEs in twelve African countries. It is recommended that policy makers in African countries should invite more actors to bring in Kaizen practice. This will attract companies using Kaizen to come and invest in African countries.

5.2 Examining the determinants of Kaizen adoption by SMEs in African countries

Top Management Commitment and Support (75%) (Attitude and facilitating conditions), Training and Education (67%) (Facilitating conditions), as well as Teamwork, Employees participation and Empowerment (50%) (self-efficacy) are critical determinants of Kaizen adoption by SMEs in African countries. The study implies that African countries where Kaizen is practiced need to focus on the significant determinants of Kaizen adoption to speed up the SMEs' implementation and enhance their productivity and performance. Generally, the study recommends that measures should be taken by the policy makers in the SMEs sector and Kaizen experts in those countries to use Public Private Partnership in the Kaizen promotion which in turn may positively increase its adoption by SMEs.

6. STUDY LIMITATIONS

This study reviewed the past literature related to Kaizen implementation by SMEs in African countries and hence it was difficult to establish the reliability and validity of the data. In addition to that, the study considered Kaizen research reports written in English otherwise they were excluded. Similarly, the study included African countries which either implemented Kaizen Projects or received Kaizen training and this resulted in minimum sample size. The future study can be done by collecting primary data related to a Kaizen project to complement the literature review presented.

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