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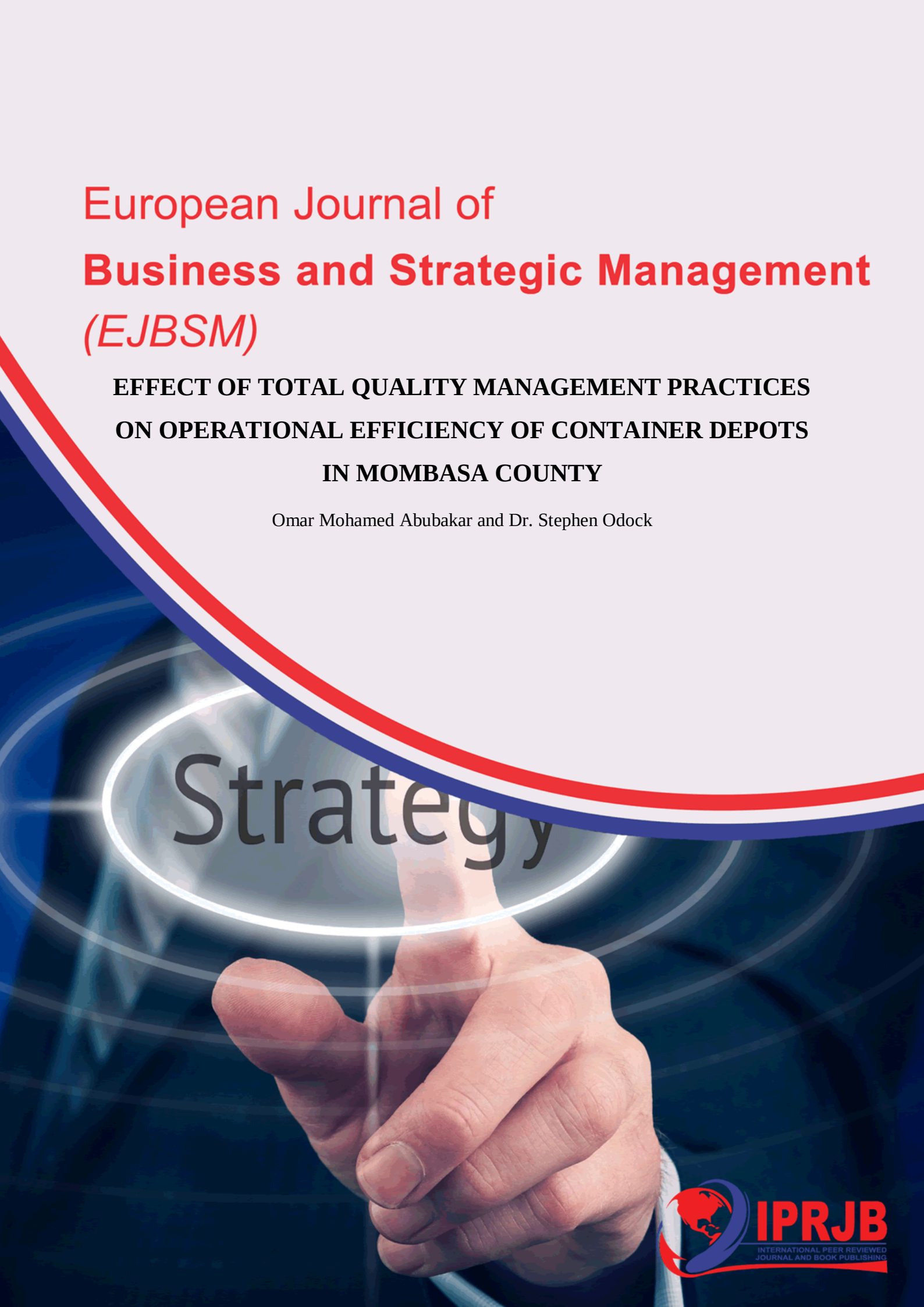

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EFFECT OF TOTAL QUALITY MANAGEMENT PRACTICES ON OPERATIONAL EFFICIENCY OF CONTAINER DEPOTS IN MOMBASA COUNTY

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Abstract

Purpose: The main objective of this research was to establish the effect of total quality management practices on operational efficiency of container depots in Mombasa County.

Methodology: The study adopted a descriptive design using cross-sectional data. The target population was 36 container depots in Mombasa County and since the population was small, a census survey was carried out on all the container depots in Mombasa County. A questionnaire was distributed to collect primary data. Out of the 40 research instruments distributed, 37 questionnaires were received and analysed representing 81% response rate which was considered adequate. Data analysis was done using of SPSS which produced both descriptive and inferential statistics.

Results: The findings revealed that three elements of total quality management practices (top management commitment, training, teamwork and employee commitment, customer focus and quality focus) had a significant relationship with operational efficiency ($p<0.05$). When individual total quality management practices were considered, top management commitment, training, teamwork and employee commitment, customer focus and quality focus also had a strong positive correlation with operational efficiency.

Unique contribution of the study: The study recommended that the container depots should concentrate on all aspects of total quality management practices since all the practices work in tandem to bring about superior operational efficiency.

Key Words: *Total Quality Management Practices, Operational Efficiency and Container Depots*

1.0 INTRODUCTION

1.1 Background to the Study

In the objective of achieving competitive advantage, the improvement of quality is one of the strategies that has become essential. It is observed as being essential to improve the quality of services and products offered by an organization in a global market that is expanding (Gharakhani, Rahmati, Farrokhi & Farahmandian, 2013; Sadikoglu & Olcay, 2014). The enhancement of quality of services and products including the aspect of satisfaction is one of the biggest challenges faced by organizations today (Gharakhani et al., 2013). Companies have initiated and adopted high quality concepts to the process of production so as to minimize costs and produce products of high quality. Overall, A philosophy that focuses continually on the improvement of quality of services/products through the expectation to achieve customer satisfaction and targeting of customer needs and organizational performances. The extent to which an organizational operation full fills the onjectives of cost, flexibility, dependability, speed, and eventually quality (Nigel, Stuart & Robert, 2010**).**

1.1.1Total Quality Management

TQM is a framework focused on managing people that target a steady rise in satisfying customers and continually lowering costs (Yildirim, 2012; Reed, Lemak & Mero, 2000). A fundamental part and comprehensive approach of the high level strategy is TQM; it is efficient across every staff member division thus stretching out in forward and revers to inculcate customer and supplier chains. TQM focuses on adaptation and learning to change that is progressive as being fundamental to organizational success (Evans & Dean, 2000). According to Lee and Chang (2006), a micromanagement philosophy that aims at incremental improvement in all organizational components thus relaying services or products in compliance with customer pre-requisites or customer requirements in a superior way which is a simpler route and more secure, quicker, and less costly when compared to other market players in conjunction with other departments working under the senior managements can also be used to define TQM.

An important and essential role is played in the performance and productivity of an organization through the utilization of TQM. It thus appears that there is an inherent need for quality practices for organizational continued survival (Jaafreh & Al-abedallat, 2012; Choi & Eboch, 1998). The TQM practices that this study will be considering include: commitment for leadership and top management; learning organization; teamwork and employee commitment; employee training; role of the quality department; consumer emphasis; incremental improvement; innovation analysis and information and analysis; quality focus and quality management of supplier (Reed, 1996; Teece, 2010; Day, 1994; Yildirim, 2012; Reed, 2000; Govindarajan, Kopalle, & Danneels, 2011).

1.1.2 Operational Efficiency

Operational efficiency is a measure of information contained in an estimating equation defined using a result. Lon(1994) adds that operational efficiency measures the level of productivity, volume of service, thus helping to minimize the resources used in achieving objectives of an organization. Efficiency is also referred to as the level or the degree with which the process use up resources, time and money. Drunker (2011) defined efficiency as the right way of doing things. According to him, efficiency denoted the achievement of the

organizational objective with minimum sacrifice of the available but scarce resources. According to Kalluru and Bhat (2009), the proficiency of the corporate to inhibit the unwelcome and reduce resources capabilities so as to deliver services to final consumers and products of quality is the definition of operational efficiency. Operational efficiency depends on factors including skilled workforce, up to date technology, return to the scale of the businesses and effective supply chain among others.

Efficiency scores obtained for the organization can be used to formulate the operational strategy to enable a firm to meet its business objectives and goals by enhancing allocation of available resources to maximize outputs of the company (Reid & Sanders, 2007).

1.1.3 Total Quality Management and Operational Efficiency

Proper TQM implementation directly increases satisfaction to customers with the service offering, lead the organization to change their way of performing activities to do away with inefficiency and achieve best results (Ozaki 2003). According to Sila (2007) TQM plays a big role in product quality, it also reduces scrap and need for rework, stabilizing production process to cater for the inherent need for buffer stock.

It was deduced that cost of product production time is reduced through the utilization of TQM. TQM enhance employees' training, information system management, relationship with suppliers (Khanna, Laroiya, & Sharma, 2010; Sadikoglu & Olcay, 2014; Sadikoglu & Zehir, 2010). Improvements on operational efficiency directly affect organization's profit levels and efficient organizations are more cost effective. For any business, operational efficiency is important and must be taken seriously by managements to earn stable and sustainable financial performance (Sufian, 2007).

1.1.4Container Depots in Mombasa County

Container terminals are very important to part of chain of logistics. At the terminals, importers leave their empty containers and the exporters use them for shipment. For many shipping line companies, The Mombasa port operates as the empty container collection terminal for Kenya and East Africa thanks to its numerous container terminals and high quality service (Nyema, 2014). Mombasa Port is the largest and the busiest in East Africa. Apart from its service to Kenya, the Mombasa port offer service to inland countries like Uganda, Rwanda, Democratic Republic of Congo, Ethiopia, Sudan and Somalia.

Transportation of goods is provided by road trucks and rail and selected retainer service operates from the port to inland container terminals (KPA, 2016). The Mombasa port operates inland container depots for containerized, non-containerized cargo and empty containers for handling and storage. This serves inland customers in a faster and more reliable way. The Kenya Port Authority owns and operates three inland container depots directly linked to the container terminals at the port of Mombasa. The inland depots are in Nairobi, Kisumu and Eldoret (KPA, 2016). The Mombasa port are near to the customers through the inland container depots and also eases congestion at the Mombasa port therefore, reducing dwell time and increasing container turnaround time.

Considering growth in the sea traffic and the ever changing maritime technology, the sea ports are bracing themselves for demands to update their systems with cutting edge technology and also improve their container terminals' efficiency to give comparative advantage to produce more traffic. some of the fundamental impediments terminal operators are cascading through or facing includes prevention of diversions to nearby ports and

securing traffic flows including ensuring multi-model connections to the hinterland, enabling large storage capacities, reducing berth delays and times, providing more performance enabling and adequate equipments and handling cargos and containers more rapidly (Castro, 1999; Nyema, 2014).

On the other hand, the Mombasa port has exceeded expectations on its design and there are still expectations on it handling exports and imports that are incremental in nature. The operations at the port are at its maximized capacity for both lose and containerized cargo. The port operations are at its maximum capacity for both containerized and lose cargo. The eventual causal effect which may be an eventual downfall in operations efficiency unless both terminal and capacity efficiency issues are addressed urgently (KPA, 2010). Concerning capacity, container imports has gone down on average of ten per cent annually since 2014, despite relatively low GDP rates in 2015 and 2017. Regarding efficiency, both imports and exports key issues need to be addressed relating to the movement of cargo cargo movement by utilizing inefficiencies and the port influenced by unloading and loading management, inspection and duty collections.

The capacity for operational capacity cargo is essentially rare with the growing demand in cargo that is containerized corgo; the port entry in Mombasa faces fundamental capacity problems (KPA, 2010). The effects in the short-run is an increased delay on the vessel, slow movement through the port and port congestion surcharges when therefore causing unnessary and serious cargo delays and increased importers costs. Some proposed punitive measures will be dished out to exporters with costs that are higher higher because of congestions at the port and movement that is slower through the port when congested therefore causing unnecessary and serious cargo delays at the port; consumers that would have based their own business on scheduled fixed delivery. The remaining fact is to be the issue capacity at the Mombasa port could act as an obstacle on the regional trade growth (KPA, 2010).

1.2 Research Problem

Responding to the world wide pressure from customers demand for high quality standards of goods and services, TQM and benchmarking are the main practices adopted by many organizations in the world. Container depots have faced challenges of dealing with scope global market place and its chain of supply while employing flexibility and speed, eliminating time, materials and effort wasted from all points in the chain of supply and meet customers' needs without holding high stock levels (Zu, 2009; Kaynak, 2003). In order to bring about such issues, these depots can make use of various tools and business philosophies to expedite improvements across business functions. TQM principle is one such business philosophy (Dean & Bowen). Kenya's transport infrastructure is under pressure from the rising levels of traffic both on rail and road. At the same time, container depots in Mombasa County are under immense pressure from the massive increase in imports and exports (Kenya Shippers Council, 2014). Hence, due to the above, container depots in Mombasa County must adapt to business improvement programs one of them being TQM.

Operational efficiency can be viewed as the right integration of manpower, technology and processes merge to improve productivity and worth of any business operations, whereas lowering the daily cost of operations to a more acceptable level. The outcome is that resources can be redirected to a new and value adding initiatives that bring additional capability to the organization rather than being used to manage operational tasks (Dhillon, 2012).

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Resource-Based View

This theory proposes that competencies are a significant contributor to organizational performance (Bharadwaj, 2000; Teece, 2007; Tippins & Sohi, 2003). Competencies indicate that a firm is capable to accumulating, assimilating and utilizing scarce resources (Amit & Schoemaker, 1993): Resources comprise assets, skills, processes, companies' qualities, information and know how; and can be classified according to human, physical or organizational capital. RBV is an approach to strategy formulation aimed at attaining competitive advantage based on an organization's resources. Under this view, organizations look for competitive advantage within themselves as opposed to looking for competitive environments outside (Teece, 2007; Barney, 1991). The theory suggests that capabilities are a critical contributor to organizational performance (Tippins & Sohi, 2003). Capabilities ensure the organization utilizes scarce resource to improve organizational efficiencies.

Barney, Ketchen and Wright (2011) argue that RBV of the organization is the fundamental point at which performance and competitive advantage can be efficiently forecasted. How well resources are allocated to various activities so as to address the gaps in the market is an essentiality in the attainment of competitive advantage in this scenario. Harnessing resources is deduced as the main aim of RBV. These resources are observed as intangible human resources so as to attain competitive advantage over rival organizations.

This theory points to the need for container depots to consistently deduce means of increasing value to consumers or customers through reducing costs. This is the fundamental reason why Total Quality Management tendencies arise so as to increase effectiveness of service delivery while minimizing costs of delivering the goods or services (Fiol, 2010). TQM thus strive to ensure that competitive advantage is attained by the container depot organizations in Mombasa County so as to achieve eventual operational efficiency. The objective of the aforementioned theory is deduced to be intertwined with the objective of this research which is to ensure operational efficiency of container depots. They both suggest eventualities that are related, being achieving of operational efficiency by the depots through ensuring that all non-inhibitive facets or factors are put in place. This will ensure the eventual attainment of operational management and thus also enhance the practice of total quality management (Priem & Butler, 2010).

2.1.2 Market-Based Theory of Competitive Advantage

Porter (1998) in his book has indicated superiority as the core of a firm's performance, which shows that being superior to others, means operating at low costs or differentiating products/services as compared to other players in the industry or market. He also argues that competitive advantage develops mainly out of the value an organization which can be emerged from the benefit of its consumer which surpass company's production expenditure. Value is what consumers are comfortably and able to buy. Competitive advantage also refers to the best value by presenting cheaper exchange value of a product to be compared to other organizations in the same field for administering rare advantages that have high prices outweighed or equivalent gains.

When products are utilized to achieve unique benefits through which higher prices are counterbalanced and also when products are priced at a lower rates than the competitors is when the value of products rises. Diversity/differentiation and cost control are the two main types of competitive advantage. This statement points to the need for KPA to consistently deduce means of increasing value to consumers or customers through reducing costs. This is the fundamental reason why Total Quality Management tendencies arise so as to increase effectiveness of service delivery while minimizing costs of delivering the goods or services.

2.2 Empirical Review

The theory and review of literature indicates that immense literature was written on TQM subject and specifically on its contribution towards operational efficiency. Several theories and empirical researches provided available set of information on the subject and TQM as a tool towards quality operational efficiency. However, the subject on the influences of Total Quality Management tendencies on operational efficiencies has not specifically been researched on to indicate the contribution of each specific variable in quality performance of a company.

According to Ang (2011), he carried out a research to analyse the effects of TQM tendencies on the learning organization and consumer orientation in the Malaysian service industry. The study focused on 600 small service firms chosen from FMM directory(2007). The authors used different analysis techniques and methods and deduced that senior management staff had a greater influence on consumer orientation when compared to various other TQM tendencies or practices. Other than the finding, the authors also discovered that top management is not one of the three element that are significantly related to organization training. First, this study was carried out in Malaysia and not Kenya. Second, this study was done in service sector whereas the current study targeted at container depots. Third, this study established a connection between TQM, customer orientation and learning organization while the present study looks at TQM and operational efficiency. This study did not identify the specific TQM practices that enhance efficiency a gap the present study sought to fill.

Sadique and Walob (2014) did a research on the impact of TQM on different measures of performance. In addition, the study came across several barriers and reasons of the TQM implementation in Nigeria. The research established that various elements of TQM interfere with final result of the outcomes. The obstacles faced by firms in implementing TQM are the inadequate information and commitment by employees, insufficient employee involvement, insufficient of resources and inappropriate business structure. The conclusion was that firms should strive to improve on firm structure, staff involvement/commitment/awareness to TQM and make available enough facilities to eliminate the obstacles that hinder proper use of TQM practices. This research established the link between TQM and performance while the present research sought to determine the effect of TQM practices on operational efficiency. This study was also done in Turkey while the present study is carried out in Kenya.

2.4 Conceptual Framework

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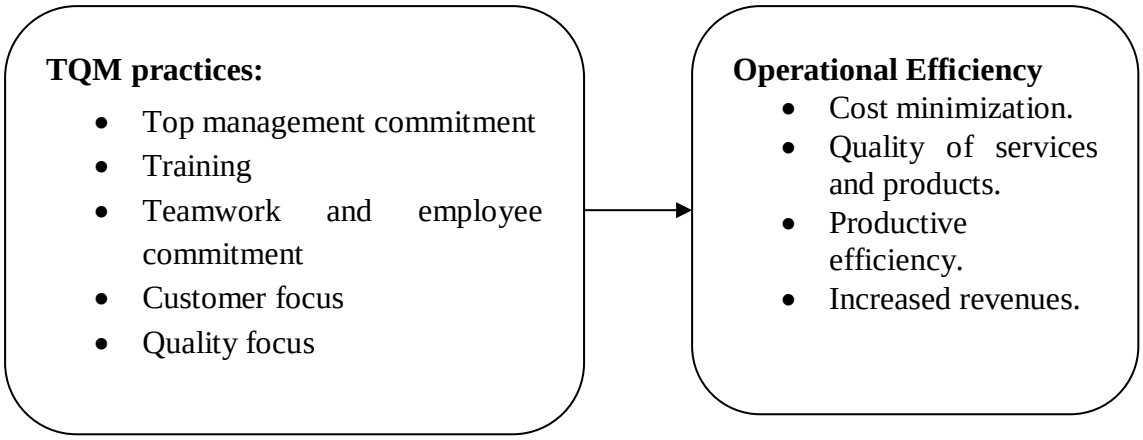

Figure 1: Conceptual Framework

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive design using cross-sectional data. The target population was 36 container depots in Mombasa County and since the population was small, a census survey was carried out on all the container depots in Mombasa County. The questionnaires were distributed to collect primary data. Out of the 40 research instruments distributed, 37 questionnaires were received and analysed representing 81% response rate which was considered adequate. Data analysis was done using of SPSS which produced both descriptive and inferential statistics.

4.0 FINDINGS

4.1 Demographic Results

4.1.1 Academic Qualifications of Respondents

The presentation of academic qualification by the respondents was a requirement posted to the respondents. Table 1 is a clear presentation of the results.

Table 1: Academic Qualifications

	Frequency	Percentage
Certificate	0	0
Diploma	0	0
Bachelor Degree	9	31.0
Master degree	20	69.0
PhD	0	0
Total	**29**	**100.0**

Source: Research data (2017)

From table 1, it can be seen that a large percentage of the respondents (69%) had a masters degree. The rest, constituting 31%, had a bachelor's degree. This means that all the respondents had attained at least a bachelor's degree. This indicates that the respondents had adequate qualifications and thus had sufficient knowledge on TQM practices.

4.1.2 Length of Service

The respondents were also required to indicate the amount of time they had been with the organization. Table 2 shows the results.

Table 2: Length of Service

	Frequency	Percent
2 to 5 years	3	10.3
6 to 10 years	18	62.1
over 10 years	8	27.6
Total	**29**	**100.0**

Source: Research data (2017)

From table 2, it can be seen that 3 respondents representing 10.3% had been with the organization for 2 to 5 years. 62.1% had worked with the organization for 6 to 10 years and 27.1% had and experience of over 10 years with the organization. This indicates that the respondents had been with their organizations long enough to understand their processes and change that had taken place over the years.

4.1.3 Length of Company Existence

Finally, the time duration or years (time) that the company had been in existence was a requirement the respondents were to answer. Table 3 shows the results.

Table 3: Length of Service

	Frequency	Percent
5 to 10 years	5	17.2
10 to 15 years	18	62.1
15 years and above	6	20.7
Total	**29**	**100.0**

Source: Research data (2017)

From table 3, the results show that the most of the organizations had been in existence for 10 to 15 years with a frequency of 18 and a percentage of 62.1%. 6 respondents had been in existence for 15 years and above with a percentage of 20.7% while 5 respondents with a percentage of 17.2% indicate that their organizations had been in existence for 5 to 10 years. From the findings, it can be inferred that most organizations had been in existence for long to consider implementing TQM practices.

4.2 Extent of Adoption of Total Quality Management Practices

The study established the extent to which TQM practices had been put in place in the container depots. Indication on a lickert scale on the extent to which total quality management practices had been adopted by the respondents was a requirement. 1 represents not at all and 5 represents to a very great extent. The following sub-section clearly elaborate on the results.

4.2.1 Top management commitment

The first TQM practices that the respondents were required to respond to is top Management commitment. The results are displayed in the table 4.

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Table 4: Top Management Commitment

	Mean	Std. Deviation	Rank
Plan (drive, direct)	4.90	0.310	1
Check (review)	4.90	0.310	1
Do (deploy, support, participate)	4.79	0.412	3
Act (recognize, communicate, revise)	4.66	0.484	4
Senior managers actively encourage change	4.52	0.634	5
Leadership proactively pursue continuous improvement	4.52	0.634	5
Top management clearly understands the fundamental spirits and principles of quality management	4.41	0.682	9
The departmental heads accept responsibility for quality of goods	4.45	0.506	8
The company's plan always incorporates external customers, suppliers and other stakeholders	4.24	0.786	10
Management views activities in our organization as a whole in order to create synergy, interdependence and interconnections	4/52	0.574	5
Overall mean	**4.58**	**0.34158**	

Source: Research data (2017).

From table 4, it can be observed that the most adopted top management commitment practices are plan (drive, direct) and Do (deploy, support, participate) both with means of 4.90. This was followed by Check (review) with a mean of 4.79 and Act (recognize, communicate, revise) with a mean of 4.66. The least adopted practice was 'the company's plan always incorporate external customers and suppliers and other stakeholders with a mean of 4.24. The overall mean of adoption of top management commitment practice was 4.59 indicating that the container depots adopted the practices to a very large extent.

4.2.2 Training

The second TQM practice that the respondents were required to respond to is Training. The results are displayed in table 5.

Table 5: Training.

	Mean	Std. Deviation	Rank
The company encourages training and education to employees	4.79	.412	1
Statistical methods to measure and monitor quality training	4.34	.721	4
Management training in quality principles	4.69	.471	3
Training and education	4.76	.435	2
Overall mean	**4.6466**	**.31705**	

Source: Research data (2017)

From table 5, it can be seen that the most adopted Training practice is 'the company encourages training and education to employees' with a mean of 4.72 followed by 'training and education' with a mean of 4.65. The least adopted training practice is 'statistical methods to measure and monitor quality training' with a mean of 4.34. The overall mean of adoption of training was 4.65 indicating that the container depots adopted the practice to a large extent.

4.2.3 Teamwork and Employee Empowerment

The third TQM practice that the respondents were required to respond to is Teamwork and employee empowerment. The results are displayed in table 6.

Table 6: Teamwork and Employee Empowerment

	Mean	Std. Deviation	Rank
The employees are provided with feedback on their quality performance (effective top-down and bottom-up communication)	4.52	.509	4
All employees believe that quality is their responsibility	4.62	.561	2
Employee satisfaction is formally and regularly measured	4.41	.628	7
Employee flexibility, multi-skilling and training are actively used	4.55	.572	3
Employees are involved in design and planning	4.52	.574	4
Measurement and recognition	4.66	.484	1
Feedback on their quality performance	4.52	.574	4
Overall mean.	**4.540**	**.38442**	

Source: Research data (2017).

From table 6, it can clearly be seen that the most adopted teamwork and employee empowerment practice is measurement and recognition with a mean of 4.6 followed by 'all employees believe that quality is their responsibility with a mean of 4.62, then ' employees flexibility, multi skilling and training are actively used' with a mean of 4.55. The least adopted practice is 'employee satisfaction is formally and regularly measured' with a mean of 4.41. The overall mean of adoption is 4.5 indicating that the container depots adopted the practice to a great extent.

4.2.4 Customer Focus

The fourth TQM practice that the respondents were required to respond to is customer focus. The results are as shown in table 7.

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Table 7: Customer Focus

	Mean	Std. Deviation	Rank
The company actively and regularly seek customer input to identify their needs and expectations	4.41	.628	8
Customers are involved in product and service design process	4.38	.728	9
The company has effective process for resolving customer complaints	4.59	.568	3
Customer complaints and grievances are used to improve on product and service quality	4.59	.568	3
Market segmentation has enhanced operational efficiency	4.48	.634	7
Listen to customers and research	4.31	.891	10
Demand driven rather than supply driven	4.55	.686	5
Seek customer input to identify their needs and expectations	4.55	.686	5
Seek customer input to identify their needs and expectations	4.55	.686	5
Resolving customer complaints quickly	4.69	.541	2
Improve on product and service quality	4.76	.435	1
Overall mean	**4.5310**	**.42519**	

Source: Research data (2017).

From table 7, it can be seen that the most adopted practice is 'improve on product and service quality with a mean of 4.76, followed by 'resolving customer complaints quickly' with a mean of 4.69. The company has effective process for solving customer complain and customer complaints and grievances are used to improve on product and service quality both with a mean of 4.59. The least adopted practice is 'listening to customer and research' with a mean of 4.31. The overall mean of adoption is 4.53 indicating that the container depots adopted the practice to a very large extent.

4.4.5 Quality Focus

The fifth and last TQM practice that the respondents were required to respond to is Quality Focus. The results are displayed in table 8.

Table 8: Quality Focus

	Mean	Std. Deviation	Rank
Customer requirements are effectively disseminated and understood throughout the workforce	4.69	.541	2
Products and services produced meet the customer demands effectively	4.62	.494	3
Meeting the needs and expectations of customers	4.72	.455	1
Overall mean	**4.6790**	**.42221**	

Source: Research data (2017).

From table 8, it is shown that the most adopted practice is customer satisfaction with a mean of 4.72 followed by customer requirements are effectively disseminated and understood throughout the work force with a mean of 4.69. The least adopted practice is product and services produced meet the customer demand effectively with a mean of 4.62. The overall mean is 4.68 indicating that the container depots adopted the practice to a very large extent.

4.3 Operational Efficiency

The dependent variable of the study has four indicators that are shown in table 4.9.

Table 9: Operational Efficiency

	Mean	Std. Deviation	Rank
We are able to offer prices as low or lower than our competitors due to cost minimization	4.62	.561	4
We are able to compete based on quality of services and products	4.76	.435	2
Productive efficiency (utilizing all of its resources efficiently, producing most output from least input	4.72	.455	3
Increased revenues	4.93	.258	1
Overall mean	**4.7586**	**.30239**	

Source: Research data (2017)

From table 9, it is shown that the most experienced benefit from adopting TQM practices with a mean of 4.93 followed by ‘we are able to compete based on quality of services and products with a mean of 4.76, product efficiency (utilizing of its resources efficiently producing most output from the least input) with a mean of 4.72. The least experienced enefit is ‘we are able to offer prices as low or lower than our competitors with a mean of 4.62. The overall mean of operational efficiency that has resulted from adoption of TQM practices by the container depots is 4.78.

4.4 Effect of TQM Practices on Operational Efficiency

In order to establish the effect of TQM on operational Effeciency the data in table 4.10 was used.

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Table 10: Effect of TQM Practices on Operational Efficiency

SNO	**COMPANY**	X_1	X_2	X_3	X_4	X_5	Y
1	TRANSAMI EAST AFRICA	4.40	4.50	4.00	4.60	4.00	5.00
2	LOGISTIC SOLUTION LIMITED	4.90	4.75	5.00	4.80	5.00	5.00
3	EAST AFRICAN CONTAINER DEPOT	4.60	4.75	4.43	4.90	5.00	5.00
4	FORTUNE CONTAINER DEPOT LTD	4.60	4.75	4.29	4.50	5.00	5.00
5	BASH HAULIERS CONTAINER DEPOT	4.80	5.00	4.71	4.70	5.00	5.00
6	INLAND CONTAINER DEPOT	5.00	5.00	4.86	4.70	5.00	4.50
7	MULTIPLE ICD KENYA LTD	4.90	4.75	5.00	4.90	4.67	4.75
8	YALFA HAULIER	4.90	5.00	4.71	4.80	5.00	4.75
9	GREAT LAKES PORT DEPOT	4.80	5.00	4.86	4.80	4.67	5.00
10	HAKIKA CONTAINER DEPOT	4.10	4.25	3.86	3.60	4.00	4.25
11	EMPTY CONTAINER DEPOT	4.70	4.50	4.71	4.70	5.00	4.75
12	ACMC CONTAINER LIMITED	4.80	4.75	4.71	4.80	4.67	4.75
13	MOMBASA ISLAND CARGO TERMINAL	4.70	4.75	4.71	4.60	5.00	5.00
14	PORT LINK LOGISTIC LIMITED	4.70	5.00	4.71	4.90	4.67	5.00
15	MAKUPA TRANSIT SHADE	4.50	4.00	3.71	3.70	4.00	4.75
16	COMPACT FREIGHT	4.70	4.75	4.71	4.70	5.00	5.00
17	PEPE LIMITED	4.00	4.50	4.14	4.00	4.00	5.00
18	FOCUS CONTAINER FREIGHT	3.80	3.75	4.00	3.90	4.00	5.00
19	KIPEVU ISLAND CONTAINER DEPOT	4.80	4.75	4.57	4.50	5.00	4.75
20	MITCHELL COTTS FREIGHT KENYA LTD	4.70	4.75	4.86	4.90	5.00	4.75
21	BOSS FREIGHT TERMINAL	4.90	5.00	4.86	4.70	5.00	5.00
22	WESTOM LOGISTIC LIMITED	3.80	4.25	3.57	3.70	3.67	4.00
23	DODWELL & CO. (EA) LIMITED	4.80	4.75	4.86	4.80	4.67	5.00
24	CONSOLBASE TERMINAL	4.70	4.50	4.57	4.80	5.00	4.50
25	LOGISTIC CONTAINER CENTRE MOMBASA	4.50	4.75	4.57	4.70	4.67	4.50
26	KENCONT TERMINAL	4.80	4.50	4.71	4.60	5.00	4.50
27	INTERPEL CONTAINER FREIGHT SERVICES	3.90	4.25	4.57	3.60	4.67	4.00
28	MVITA CONTAINER DEPOT	4.60	4.50	4.71	4.80	4.33	4.50
29	PORT SIDE LIMITED	4.70	5.00	4.71	4.70	5.00	5.00

The data was subjected to regression and correlation analysis. The variable in the table are X_1 = 4.58, X_2 = 4.65, X_3 = 4.54, X_4 = 4.53, X_5 = 4.68 and Y = 4.68.

4.4.1 Correlation Analysis

The results from the table 11 show that top management commitment, training and customer focus have significant relationship with operational efficiency with p values of 0.011, 0.015 and 0.002 respectively. teamwork and employee commitment and quality focus have insignificant relationship with operational efficiency with p values of 0.058 and 0.056 respectively.

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Table 11: Coefficient of Correlation

		Operational Efficiency
Top management commitment	Pearson Correlation	.424*
	Sig. (1-tailed)	.011
	N	29
Training	Pearson Correlation	.405*
	Sig. (1-tailed)	.015
	N	29
Team work and employee commitment	Pearson Correlation	.299
	Sig. (1-tailed)	.058
	N	29
Customer focus	Pearson Correlation	.512**
	Sig. (1-tailed)	.002
	N	29
Quality focus	Pearson Correlation	.301
	Sig. (1-tailed)	.056
	N	**29**

Source: Research data (2017)

4.4.2 Multiple Regression Analysis

Table 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.547[a]	.299	.146	.27938	1.588

From Table 12, the coefficient of correlation, r = 0.547. This shows that there is a positive relationship between the TQM practices in the model (Top management commitment, training, teamwork and employee commitment, customer focus and quality focus) and operational efficiency. This coefficient of correlation was tested for significance as follows:

Step 1: Stating the hypotheses

H_0: r = 0 (the relationship between TQM practices and operational efficiency is not significant).

H_1: $r \neq 0$ (the relationship between TQM practices and operational efficiency is significant).

Step 2: Level of significance

Significance $\alpha = 0.05$ and this is a two tailed test.

Step 3: Decision rule

Degrees of freedom = n – 2 = 29 – 2 = 27; Therefore, $t_{0.05, 29} = 2.045$

The decision rule will therefore be, reject the null hypothesis if the computed t does not fall in the region: $-2.045 \leq t \leq 2.045$

Step 4: Test statistic

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$$t = r\sqrt{\frac{n-2}{1-r^2}} = 0.448\sqrt{\frac{29-2}{1-0.299}} = 6.206$$

Step 5: Conclusion

Since the computed t (6.206) falls in the rejection region, the null hypothesis is rejected implying that the relationship between the TQM practices and operational efficiency is not significant.

4.4.3 ANOVA

To test the overall significance of the model, ANOVA was done. The results of ANOVA are:

Table 13: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.765	5	.153	1.960	.123[b]
	Residual	1.795	23	.078		
	Total	2.560	28			

From table 13, it can be observed that the p value (0.123) is more than the level of significance (0.05) implying that the overall model insignificant. The next step involved testing the significance of individual parameters. From table 4.14, it can be seen that all the parameters in the model are not significant as indicated by their p-values of 0.846, 0.748, 0.348, 0.092 and 0.996 which are all more than 0.05. This implies that their inclusion in the regression model is not justified.

4.6.4 Coefficients

Table 4.14: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.164	.825		3.833	.001		
	Top management commitment	.065	.331	.073	.196	.846	.218	4.580
	Training	.094	.290	.099	.325	.748	.330	3.033
	Team work and employee commitment	-.268	.280	-.341	-.957	.348	.240	4.163
	customer focus	.457	.260	.643	1.756	.092	.227	4.397
	Quality focus	.001	.232	.002	.005	.996	.290	3.451

a. Dependent Variable: operations efficiency

$Y= 3.164+ 0.065X_1+ 0.094X_2+ -0.268X_3+0.457X_4+0.001X_5$

From the above regression model, Top management commitment, Training, Team work and employee commitment, customer focus and quality focus were to be held constant; the operational efficiency would stand at 3.164. It was established that a unit increase in top management factor; the operational efficiency would change by 0.065. A unit increase in training would trigger a change in operational efficiency by 0.094. A unit increase in team

work and employee commitment would trigger a change in operational efficiency by -0.268. A unit increase in customer focus would trigger a change in operational efficiency by 0.475. Similarly, an A unit increase in quality focus would account for a change in the operational efficiency by 0.001 respectively. The study also established an insignificant relationship between operational efficiency and the independent variables; top management commitment ($p=0.846>0.05$), Training ($p=0.748>0.05$), team work and employee commitment ($p= 0.348>0.05$), customer focus ($p= 0.92>0.05$) and quality focus ($p= 0.996>0.05$).

($p=0.001<0.05$) as shown by the p values.

5.0 SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of findings

The study revealed that quality focus is the mostly adopted TQM practice with an overall mean of 4.68 followed by training with an overall mean of 4.65. Top management commitment comes third as the most adopted practice with a mean of 4.59 while teamwork and employee commitment and customer focus come fourth and five with a mean of 4.54 and 4.53 respectively. Pearson correlation also revealed that the independent variables (the TQM practices) had a positive correlation with operational efficiency. This relationship shows that as the TQM practices change, operational efficiency changes in the same direction but at varying degrees. The results revealed that there a positive coefficient of correlation between the TQM practices and operational efficiency. Top management commitment has a positive coefficient of r =.424, training with r =.405, teamwork and employee commitment with r =.299, customer focus with r =.512 and finally quality focus with r =.301. In the multiple regression model all the TQM practices in this study had an insignificant relationship with operational efficiency since they were all greater than 0.05. Overall, the consistency in the results show that, container depots in Mombasa County have experienced and will continue to experience tangible benefits when TQM practices are applied continuously. The mere fact that 81% responses received in this in this study had implemented TQM practices in one way or another proves that TQM practices enhances operational efficiency.

5.2 Conclusion

The study concluded that total quality management practices do indeed help Mombasa County container depot companies in a multi-faceted way that is; through ensuring that there are organizational processes related to the aforementioned practice implemented successfully so as to enhance operational efficiency, through arming the container depot companies with the tools that would eventually ensure that they gain competitive advantages related to the implementation of the aforementioned practices and through acting as an indicator for enhanced organizational processes in the sub-sector. Knowledge sharing in the actulization of TQM practices is also an essentiality for the container depot firms in Mombasa County to effectively thrive.

5.2 Recommendations

The study recommended that in the endeavour to improve operational efficiency, the increasing of certification through continuous improvement can be achieved by the management through internal quality auditors. Process-based auditing systems should be the main point of focus so as to examine the way processes are managed so as to improve on performance and attain the required results, ensure the determination of whether these results

consider the needs of any other interested parties and those of the customer and the system endeavours to attain the results the company wishes to achieve. The study also recommends that the Government of Kenya should design policies to ensure that the firms that have adopted TQM practices receive support during the period and after ISO certification for continuous improvement.

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