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Does Capacity Utilization Mediate the Relationship between Operations Constraint Management and Value Chain Performance of Tea Processing Firms? Evidence from Kenya



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ABSTRACT

The environment in which most businesses operate in is characterized by very stiff competition. Thus, organizations are designing various strategies to enable them create competitive advantage and improve the welfare of their stakeholders. This paper sought to establish the mediation role of capacity utilization in the relationship between operations constraint management and value chain performance among tea processing firms based on perspectives from Kenya. Specifically the study sought to answer the following research question: Is there a mediating role played by capacity utilization on the relationship between operations constraint management and value chain performance of tea processing firms in Kenya. The study adopted a cross-sectional research design. A sample of eighty-four (84) tea processing firms was used, and the respondents were the factory Chief accountants, production managers, and the environmental representatives. Multiple regression and correlation analysis were used to analyze the data. The findings show that the moderating effect of capacity utilization in the relationship between operations constraints management and the firm's value chain performance is positive and significant. Applying the Theory of Constraints (TOC) philosophy in the decision-making process in managing capacity, will improve the capacities of the bottleneck resources hence increase the Throughput and creating competitive advantage.

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1. Introduction

The environment in which most businesses operate in is characterized by very stiff competition. Organizations are designing various strategies to enable them create competitive advantage and improve the welfare of their stakeholders. This paper sought to establish the mediation role of capacity utilization

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Theory of Constraints (TOC) guides the user through the decision-making process of problem structuring, problem identification, solution development, constraints identification, and solution implementation [1]. The TOC thinking processes are more crucial in establishing “what to change, what to change to, and how to cause that change to happen”. The TOC thinking processes emphasizes on the factors that are limiting the system from achieving its goals. First is to identify the symptoms within the system that provide evidence that the system is not performing as expected. [1] states that it is the weakest link that limits the overall performance of an organization. An organization to improve its performance, it must identify the system’s weakest link or constraint and elevate it. There is a positive relationship between the throughput orientation of the TOC and the performance of an organization [2]

Every industry is ever carrying out self-appraisal and searching for tools for measuring its performance based on the various past achievements, targets, and operative capacity. Manufacturing capacity utilization is a key indicator of economic performance that explains changes in inflation, investment, long-run output growth [3]. Companies that operate at full capacity face challenges like lack of time for routine maintenance, machine breakdown frequently occur, delayed orders, demotivated staff, inefficient work, increasing labor costs [3], [4].

A typical supply chain involves three segments made up of the upstream segment, internal supply chain (value chain segment) and downstream segment. The value chain performance metrics can have tangible and intangible benefits. According to [5] and [6] the tangible benefits include inventory reduction, personnel reduction, cost reduction, improvements in cash management, productivity improvement, short lead time, and order management improvement. The intangible benefits include efficient processes, globalization, effective communication, customer responsiveness, standardization of process and products, flexibility, and business performance. This study used both the tangible and intangible value chain performance metrics.

Capacity utilization is the percentage of the firm’s total possible production capacity that is being used [4]. There are two measures of capacity utilization. One group measure capacity utilization from an estimated cost function while another group uses Federal Reserve Board (FRB) or Wharton measure that investigates the macroeconomic implications capacity utilization. [3] observed that there have been very little research work on the economic measurement of capacity utilization. Most of the studies on capacity utilization had used conventional methods and had paid less attention to the possible theoretical problems. Therefore, there was a need for a study to extend the concept of capacity utilization beyond conventional methods and build up some new theory.

In 1984, the theory of constraints (TOC) was coined as a revolutionary method for production scheduling that was in high contrast to accepted methods like Materials Resource Planning, Total Quality Management. TOC is a management philosophy that is applicable to activities like manufacturing processes and procedures aimed at improving organizational effectiveness and efficiency [7], [8]. When fully implemented, TOC results in positive and observable outcomes related to the improved performance of the organization. Therefore, firms considering TOC implementation can feel some degree of confidence that worthwhile improvements can achieve as a result of the TOC application [9], [10].

This study is grounded in the Theory of Constraints (TOC) theory that has played a very crucial role in Supply Chain Management Research [11]. The theory of constraints (TOC) is a management paradigm that sees any management system as being limited/hindered by at least one barrier or constraint from realizing its set goals. TOC and Resource Based Value are the key theoretical perspectives applicable to the value chain and supply chain management studies for the last twenty years [12].

Tea Processing is an important industrial activity in Kenya because the country is one of the primary producers, consumer and exporter of tea. The tea industry in Kenya operates under the supervision of the Ministry of Agriculture for policy and technical advice. The tea industry has a well structure right from the regulatory body; the Tea Board of Kenya; the Tea Research Foundation of Kenya, tea processing factories, marketing, the blending and packaging sections. The tea industry in Kenya is made up of two sectors; namely, the plantation or large scale sector and the smallholder sector. The Tea Board of Kenya conducts a continuous audit to determine the level of compliance with regulations and guidelines, good manufacturing practices (GMPS), good agricultural practices (GAPS), and best practices [13]. Despite all the efforts to improve the value of the tea processing firms in Kenya, the industry has continued to perform dismally due to suppressed international demand and erratic weather changes [14]. Therefore, there was a need to undertake a study to determine how capacity utilization mediates the relationship between constraints management and value chain performance.

2. Problem of Research and Research Focus

Stiff competition in firm’s local and global markets coupled with shorter products life cycles and the heightened customers’ expectations have made business enterprises to invest in and pay more attention to their supply chains. Competition, continuing advances in communications and transportation technologies, have motivated the continuous development of the supply chain and the techniques to manage the entire supply chain effectively [15], [16]. [17] argued that for organizations to achieve sustainable competitive advantage they should be responsible in the way they use their internal resources. The usage of resources poses a significant challenge on how firms can better adapt to dynamic supply under a number of operations constraints and limited capacity. Constraints management (CM) has developed for over twenty (20) years by various practitioners but has received little attention from most researchers. Constraints management serves as a broad theory of operations and supply chain management allowing integration of a great deal of existing research [2]. The concept of operations constraints management, capacity utilization, and value chain performance were tested on the tea processing firms in Kenya within which these three variables operate.

Evidence of beneficial effects of constraints management in improving the organizational performance have been reported in both manufacturing [18], [19], [20], [21] and services [22], [23], [24], but none has focused on internal value chain performance. [9] in their study found out that the use of TOC led to improved business unit performance and the overall organizational performance. Further [9] argued that firms utilizing TOC performed significantly better than firms employing other manufacturing methods. According to [20], [21] and [25], application of TOC in organizations, will lead to

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