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STRATEGIC TIME MANAGEMENT IN MANUFACTURING ACTIVITIES AND ORGANIZATIONAL PRODUCTIVITY

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Abstract

Managers are not only concerned with how well time is used to be able to evaluate managerial effectiveness, but also the efficiency of workers to carry out assignments or tasks within a measurable time limit with respect to input, output and outcome all of which culminate into measuring organizational productivity. Correspondingly, workers are appraised on the basis of time used for achieving certain quantity and quality of work. This parameter sets the internal activity control mechanism of a manufacturing concern. The paper examines how strategic time management affects the quantity and quality as well as some of the strategic time management plots in manufacturing activities. It explores the various conceptual ambits of strategic time management and organizational productivity through relevant literature.

Keywords: strategic management, timeframe, manufacturing activities, work hours, overtime hours.

Introduction

The recurrence of time in human history and activities has never been any news except for the activities themselves. Activities are lively events and acts people participate in or carry out with some effect or results, consciously or unconsciously involving both mental and physical exertion of energies as well as planned or incidental processes in doing something. In the workplace, particularly in manufacturing, activities are the various tasks or duties carried out on a daily basis by workers at all le ranging from setting production floor to finishing and delivery of final products to consumers. All of these activities require careful planning to be accomplished, and thus, informed the idea and need for strategic time management. By derivation from strategic management philosophy, strategic time management is the total framework of plan for the conduct of activities tied to specific time measurement. While the movement or passage and use of time have remained challenging to managers, observation has shown that some if not most managers lack the ability to identify what activity to allocate, and to be carried out at what time period, particularly in manufacturing. Hence, they are left with no option than seeking better ways of selecting what activity or activities to carry out within what time frame, in order to achieve optimum results. This involves what to do, how, and the resources to do them giving birth to strategic time management.

Fundamentally, strategic management brings to light the sourcing and allocation of resources and activities to time horizons. Accordingly, managers are constantly in search for

the best time period to plot their decision and actions. A time is a valuable but perishable period, endowed by nature for every productive and unproductive human activity depending on how it is used by those to whom it has always been available (Enuoh & Edema, 2019; Adetola, 2021). The frequency of time passage makes it perishable particularly when it is not used for any tangible, productive activity and, yet irrecoverable, while time usage is measured by the output and outcome of the activity to which it is applied. Thus, managers are not only concerned with how well time is used, to be able to evaluate managerial effectiveness, but also the efficiency of workers to carry out assignments or tasks within a measurable time limit with respect to input, output and outcome all of which culminate into measuring organizational productivity.

Organizational productivity (Mahto and Kumar, 2010) is a unitary and collective relationship between the input, output and outcome of activities and people (workers) to the overall predetermined target of a planned productive system in relation to an operation cycle, which is measured by time. Correspondingly, workers are appraised on the basis of time used for achieving certain quantity and quality or outcome. This parameter sets the internal activity control mechanism of a manufacturing concern.

This paper explores the various strategic time settings managers of small and medium scale manufacturing organizations can adopt to ensure the effectiveness and efficiency of their activity times. The specifics of the paper are to conceptually examine strategic time management and the quantity of manufacturing; describe strategic time management and the quality of manufacturing; as well as identifying some relevant strategic time management plots in manufacturing activities.

Methodology

The study adopts generic qualitative approach and explores the various conceptual ambits of strategic time management relative to manufacturing processes and their usefulness to modern managers in achieving greater organizational output and quality outcome.

Theoretical and Conceptual Frames

The Just-In-Time (JIT), Resource Allocation (RA) and Scheduling are philosophically germane theories to manufacturing and services activities across industries. JIT was developed in the 1970s by Taiichi Ohno, and put into effective use in Toyota manufacturing plant in Japan. Since then, JIT has popularly become a Japanese management philosophy which has been practiced in many Japanese manufacturing organizations (Kootanaee, Babu &Talari, 2013; Goddadrd, 1986). Thus, Taiichi Ohno, has been frequently referred to as the father of JIT. No doubt, the JIT has popularly been associated with manufacturing and/or production activities than those of services. JIT is a manufacturing methodology meant to reduce, if not eliminate waste (Chase et al., 1998; Hernandex, 1989; Krajewski & Ritzman, 1999; Schlesinger & Heskett, 1999). Waste is anything other than the minimum amount of resources (man, material, machine, money, time, information, and space), required to add value to manufacturing outcome. The import of JIT is to meet customers' demands as necessary, while avoiding wastage and eliminating any tendency to tie down cash and space in stockholding. By this, manufacturers needless keep any stock of materials not required for immediate use, thus, ensuring suppliers deliver on schedule for operational activities, so as to enable timely delivery to the buying customers.

Resource allocation theory, developed by Beilharz, et al. (1993) is thoughtfully premised on setting priority for apportioning organizational assets or wealth (resources: man money, material, machine, information, space and time (Rauw, et al. 1999). The essence of this is to get manufacturing and other organizational activities carried out with optimum

outcome expectancy within desired, planned, and monitored time horizon, hence, strategic time management.

The scheduling theory, developed by Kelly and walker, in 1957 following their 'activity-on-Arrow' scheduling methodology, (Zhang et al. 2019; Alemão et al. 2021) is an age long and a philosophically natural phenomenon, which has proven the test of time both in human history and practice. Scheduling, concerns with decisions to allocate and utilize resources (man, money, material, machine, information, time and space) for activities within planned time. As a strategic time management tool, scheduling enables the manager to make decision about the time sequence for a job, customer orders, operation activities and allocation of the resources required to achieve them. The theory subsumes both the just-in-time and resource allocation theories in that JIT deals with supplier, process and delivery activities at allotted time frames; and RA deals with making specific choices about activities and amount of resources in terms of quantity and quality to use in a given time period. Scheduling deals with the cyclical orientation of every operation from the beginning to an end. The JIT, to achieve its prominence, depends on scheduling of time to commence, monitor and deliver on specific activities. Thus, allocation of resources is scheduled for specific activities and times. Nonetheless, all three – JIT, RA and Scheduling are strong practice tools for achieving efficiency and effectiveness, hence, their relevance in the manufacturing activities of small and medium scales manufacturing enterprises.

Strategic Time Management and Quantity of Manufacturing

Quantity has remained a very important yardstick for measuring the output of manufacturing activities, it accounts for the units and overall amount of goods and services that can be achieved in a scheduled activity timeframe. Manufacturing organizations enjoy competitive advantage on the basis of not only quantity of goods produced but also quantity of goods sold to consumers by which both revenue and profit are calculated (Rauw, et al. 1999). Activity times are strategically mapped out to evaluate both efficiency and effectiveness, this way, both actual useful and wasteful times are easy to analyze. Thus, time can be expressed as a measure of cost, output, gain and or loss, hence, organizations can schedule their hours of work to determine whether employees are productive or not. This justifies for manufacturing time activities being streamlined into basic two types: ***normal hours of work*** and ***overtime hours***. While the normal work hours, account for the calculation of basic pay as enshrined in the conditions of service of an organization, overtime hours are rated based on extra time an employee is able to contribute extra quantity of goods and or services to improve the organization's overall productivity profile within a tolerable cost frame. This amplifies the importance of experience curve, positing that unit manufacturing cost for a product typically declines by some characteristic amount each time accumulated output of the product is doubled (Kachru, 2005; Edema, 2018).

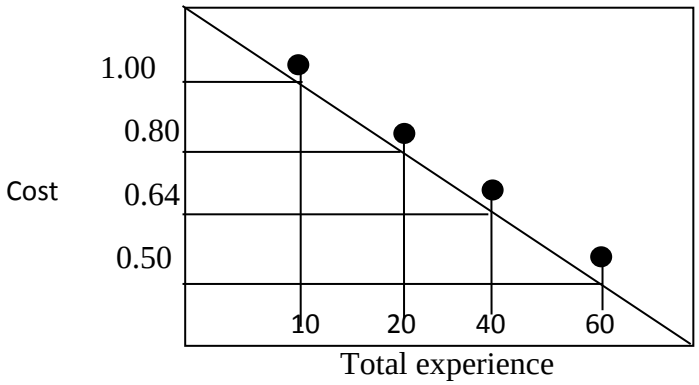

Figure 1 The Experience Curve
Source: Kachru, U (2005) Strategic Management Concepts and Cases, 1st ed. New Delhi: Excel Books

Strategic Time Management and Quality of Manufacturing

Manufacturing process is the core stage of achieving product quality and the main period of quality issues exposing extensively (Zhang, et al. 2017). Quality has over the time and continually, been a very important debate interest to both consumers and manufacturers. The consumer sees quality as the total value derivable from using a product thus depicting an expression of satisfaction. The manufacturer probably appreciates quality from the material input mixes that makes up a final product. No doubt, the dimensions of quality can be so wide to include felt and perceived texture, fashion and aesthetics (shape, style, color, etc.), functional effect or efficacy, effectiveness or speediness, life cycle or useful timeframe, comfort, social acceptability and class fit, fermentation process, etc. However, both consumers and manufacturers have observably been sharing among others, a common compromise through pricing, implying that the amount a product is sold for portrays its value to both parties.

The quality rating process for a product passes through a timing effect from manufacture to consumption, excretion and recycling. Thus, fermentation and heating stages are exposed to a specific time period to achieve a predetermined quality standard, hence, some hours and minutes are allowed at the various processes of production, for raw materials input mix, testing, controlling and packing (Chase et al.) While functional effect or efficacy of a product is quality driven, and describes the product's ability to meet its problem-solving promise to the consumer, the timeframe or speed with which such promise is delivered is even more paramount to the user, as for instance, pharmaceuticals. Again, extinction of time has been a strong determining factor in measuring the quality of a product when for example its texture and functionality are depleted by life-cycle-counts, indicating expiration and loss of shelve life.

Strategic Time Management Plots in Manufacturing Activities

Manufacturing activities (Alemão et al. 2021) involve various time plots, which are too numerous to comprehend each of which however, plays a valuable strategic role to ensure the desired right quantity output and quality outcome in order to gain competitive advantage by cutting cost, sustaining customer loyalty, gaining high market share, improving revenue and profitability. Managing manufacturing times evolve around scheduling of activities, as well as monitoring, controlling and evaluating each and every stage of the process not to compromise standard. Among the manufacturing activities time schedules are the following: *Lead time* – a period between when orders for raw material inputs are placed and when they are received for manufacturing activities to kick-start. *Operating or run time* – a planned manufacturing time minus any stop time, resulting from intruding factors such as breakdown, changeover, etc. *Down time* – a period within which manufacturing process is halted, due to light off, maintenance, switchover, etc. *Shift time* – a period in which one work group or work team takes over duty and machine line from the other. Similarly, *changeover time* occurs when a manufacturing line and machines are being transitioned from working one product to another. For instance, a mixer used for the production of green emulsion paint must be thoroughly washed before mixing white emulsion with it.

Conclusions

Time schedules need to be planned for each process of manufacturing considering the various constraints and productivity indexes from the aspects of input, output product quality and

costs. Managers of most small and medium scales organizations have been challenged with how to identify what activity to allocate, and to be carried out at what time period, particularly in manufacturing hence, they are left with no option than seeking better ways of selecting what activity or activities to carry out within what time frame, in order to achieve optimum results. Achieving this entails knowing the various time plots associated with manufacturing activities, which culminate in strategic time management.

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