

IDLE RESOURCES: TOWARDS A CONCEPTUAL FRAMEWORK

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ABSTRACT

The concept and importance of idle capacity has undergone significant changes since the beginning of twentieth century. Idle capacity as a measure of productive inefficiency, the notion which dominated the field for six decades, has given way to notions of idle capacity as a measure of sales and marketing inefficiency. Renewed interest in the subject is the result of turbulent times associated with globalization processes, which are prompting managers to eliminate non-value added activities. This paper reviews emerging conceptions of idle capacity in providing goods and services, and develops a conceptual framework to focus on generalizable contributors to idle capacity. Following on, the paper also explores the strategic role that idle capacity can play to build customer relationships and loyalty.

Keywords:

Capacity management, Idle capacity

INTRODUCTION

The concept and importance of idle capacity has undergone significant changes since beginning of the twentieth century. Idle capacity as a measure of productive or operational inefficiency, the notion which dominated the field for almost 5 to 6 decades, has given way to conceptualizations of idle capacity as a measure of sales and marketing inefficiency (see Vollmers, 1996). Renewed interest in the subject of idle capacity may be a result of turbulent times associated with globalization processes, which are providing roots to unprecedented exchange of ideas, products, services, capital, technology, information, and trained capacity over space. These changes are prompting managers to eliminate non-value added activities; and idle capacities can be a starting point for consideration. In addition to its strategic significance to improve competitive advantage, the measures of idle capacity have potential to be used as (a) short or long term organizational goals; (b) an opportunity to build customer relationship and loyalty, and (c) a tool of corporate control. Reduction or alternate use of idle capacity can also be viewed as having an opportunity to contribute to the efforts of attaining cost leadership and customer relationship.

Manufacturing and services sector companies, whether private or public, rarely operate at 100% capacity. Full capacity or practical capacity is the maximum level of capacity that can be expected to be maintained for long periods of time. If companies operate below the full capacity, then the issue of idle capacity will occur. Idle capacity is perceived to be a material waste of resources, and is regarded as the second largest form of waste, only next to customer dissatisfaction (see Vercio, Bayliss and Thompson, 2005). Idle capacity which had been taken as a measure of operational inefficiency had also been blamed for poor financial performance and economic waste.

Therefore, proper identification of idle capacity in manufacturing plants or in services can lead to effective and relevant cost measurement of products and services. Efforts to achieve efficient cost leadership and operational performance could then be focused at the appropriate segments. An understanding of what idle capacity really is should help consultants and managers in making decisions that could optimize the whole operating system.

This paper focuses on emerging conceptions of idle capacity in providing goods and services; though idle human resource (essentially could be linked with the concepts of downsizing or rightsizing) or money (like reserves not being used for reinvestment, expansion, or diversification) can also be included in the extended scope. We begin with a literature review on capacity management to identify possible generalizable factors or contributors which potentially lead to existence of idle capacity. Following on, we will explore the strategic role that idle capacity can play in eliminating non-value added activities and in building customer relationships and loyalty.

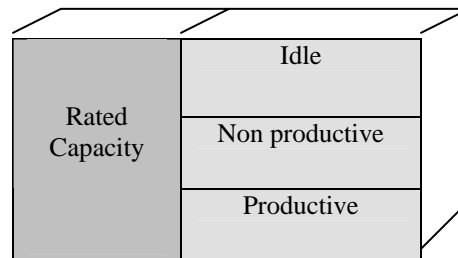
SURVEY OF LITERATURE

We will begin the discussion with the term “capacity”. Capacity of a plant, for example, includes all the resources (facilities, equipment, and people) and the way these resources are used to produce products for its customers when needed.

Capacity

We prefer a definitional approach adopted by Consortium for Advanced Manufacturing – International (CAM-I), which categorizes capacity into three categories: productive, non-productive, and idle – and uses the term “rated capacity” in its model. Rated capacity is equal to the sum of idle, non-productive, and productive capacity in the CAM-I model (see Stratton, 1996).

Figure 1: Capacity Model developed by CAM-I



(Source: Stratton, 1996)

Productive capacity is the capacity used to produce products or provide services that are of value to customers, whereas nonproductive capacity does not result in the production of valuable products, and are non value added, e.g. scrap or rework. Idle capacity is capacity not utilized. This non utilization could be for a variety of reasons. It may be due to market share or price/cost constraints, decision by top management, or because of holidays, policies, and contracts. The cost of idle capacity is generally treated as period cost of product or service when the company is operating at practical capacity (see Vercio et al, 2005; Stratton, 1996). Practical capacity is the maximum level of capacity that can be expected to be maintained for long periods of time. Therefore, as idle capacity attracts costs, the knowledge of what contributes to underutilization of capacity would be valuable to managerial decision making.

Technological Advancement

Idle capacity is seen by some authors as a result of technological advancement and is considered as one of the highest valued advantages of automation (Hershkowitz, 1991). As automation results in higher volume of output per employee, and which is ideal for repetitive tasks, the idle capacity is delivered.

According to these conceptualizations, if a task is automated to perform 150 times per shift instead of 100 times previously, the company has achieved 50% idle capacity for that task. Although these technologies deliver idle capacity at a price, these investments are considered worth pursuing.

Demand-supply Imbalances

Another source of idle capacity could be due to poor forecasting of demand for goods and services and demand supply imbalances (see Browne, 1995; Shemwell and Cronin, 1994). Excessive demand forecast leads to increase in the level of inventory and hence increased storage costs. Similarly, an excess of service capacity over demand often results in idle machine hours. If these demand-supply imbalances could be synchronized to achieve just-in-time production of goods and services, the effect on the company's efficiency will be overwhelming.

However, coping with demand-supply imbalances for services are more complicated than those for physical goods as it is impossible to inventory excess services. Examples cited include a theatre owner who cannot take an empty seat from Friday night and add it to the capacity for Saturday night. Similarly, when demand cannot be met, customers may be forced to go to another service provider. Revenue loss and eventual customer dissatisfaction may result. Therefore, enterprises will be impelled to make efforts to alter demand to match supply (marketing mix options) or change the supply capacities to meet fated demand (input scheduling option) (see Shemwell and Cronin, 1994).

Manufacturing Process Related Factors

Yet another group of authors have cited variations in manufacturing processes as contributors to idle capacity (see Kara and Kayis, 2004; Msimangira, 1993). Poor management, lumpiness of resources, frequent machine downtime due to breakdowns, and poor maintenance of machines could lead to underutilization of capacities. Companies are often forced to change production plans or re-route production processes in order to tackle this problem.

Entry Deterrent

Although idle capacity is perceived to be an “unwanted” element as stated in the above discussions, there are instances where idle capacity is created intentionally. An interesting study by Fusillo (2003) reported that in concentrated industries, e.g. ocean liner shipping (where capacity could only be added in large and discreet sizes), idle capacity were used as entry deterrent to forestall entry by competitors. Therefore, industries that are characterized by high fixed costs, large economies of scale, and high producer concentration could maintain idle capacities as a means to protect its competitive advantage (see Ng, Wirtz and Lee, 1999).

Differentiation Strategy and Service Quality

Service firms rarely achieve full capacity unless they operate through appointments (Ng et al, 1999). Even then, idle capacity may still be retained in anticipation of unforeseen potential business. It is argued that fully booked consultation hours (e.g. in clinics) can still set aside idle time for emergency cases. In addition, it is also pointed out that some services like tow truck services, lift maintenance, and other emergency services differentiate themselves through quality and short waiting times by setting the capacity utilization low enough to provide almost instant services. This could result in higher customer satisfaction and loyalty. It is also observed that to target selected niche market segments, for example, in private hospitals and exclusive fitness clubs, excess capacity is maintained intentionally to ensure customer comfort as service quality is of utmost importance in these enterprises.

Cost Factors

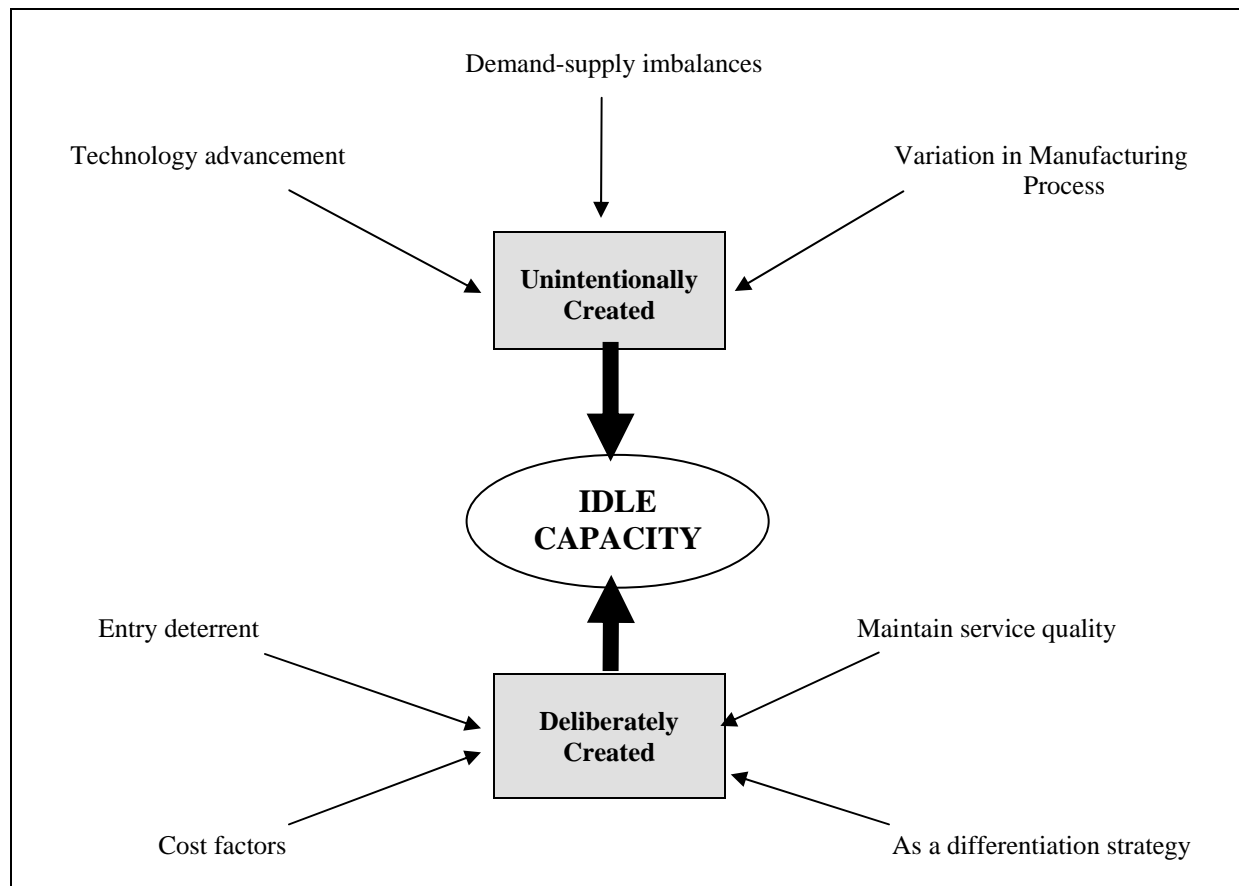
Deliberate idle capacity can significantly reduce the level of work-in-process inventory (see South and Hixson, 1988). According to this view, the cost of keeping idle capacity is lesser than the cost of reducing work-in-process inventory. Moreover, the company could easily respond to fluctuations in demand on the strength of intentional excess capacity. Hence, planned idle capacity is not necessarily a

cost (Fry and Steele, 1994), but as a contributor to operational efficiency. This strategic perspective can be instrumental in building cost leadership as well as response-based customer relationships.

PROPOSED FRAMEWORK FOR IDLE CAPACITY

Given these different ways of looking at the notions of idle capacity in the literature, we are proposing a preliminary conceptual framework identifying a possible set of factors affecting idle capacity. This framework is presented in Figure 2.

Figure 2: Contributors to idle capacity



DISCUSSION

Contributing Factors

Figure 2 above attempts to identify a possible set of generalizable factors, or contributors, which reveals that idle capacity could exist unintentionally (sometimes due to reasons beyond the client's control), or interestingly, may be created intentionally. Intentional idle capacity can be used for strategic reasons for building customer satisfaction and loyalty. Unintentional idle capacity could be due to demand-supply imbalances, manufacturing process related factors (e.g. lumpiness of resources, poor utilization and maintenance of machinery), and/or due to advancement of technology.

From this list of contributors of “unwanted” idle capacity, the demand-supply imbalances seem to be the dominant factor, especially for service sector as services are difficult or impossible to be inventoried. Marketers of physical goods, on the other hand, can still keep inventories to deal with fluctuations in demand-supply. To manage demand-supply imbalances more efficiently, Shemwell and Cronin (1994) suggested changing supply via input scheduling strategies and/or changing demand to fit supply via marketing mix strategies. These could be achieved through promotions, advertisements, offering discounts, conducting cold calls, or positioning products and services differently. Essentially, customers need to be motivated to curtail usage/demand during peak periods, and respond favorably to attractive price offers during off-peak periods as practiced by telephone companies and restaurants. These strategies have potential to convert possible customer dissatisfaction into productive customer satisfaction.

Strategic Role of Idle Capacity

Deliberate idle capacity arises as firms use it as an entry deterrent, as a differentiation exercise, as a cost control mechanism or as means of maintaining service quality. In other words, these contributors to deliberate underutilization of capacity possessed a strategic role (Ng et al, 1999). Besides, any additional capacity that the firms create may result in greater demand, especially if the additional capacity reduces

the waiting time imposed on customers (see Ittig, 2002). Therefore, firms could utilize these idle capacities to develop customer relationships and strengthen loyalty with their best customers.

Companies with excess capacities could implement loyalty promotion strategies and programs aimed at cultivating customer relationships. The airline industry which often struggled for a point of differentiation is a good example. The frequent flier program that offer free travel on exchange of some level of loyalty is often introduced as part of the business strategy (see Duffy, 1998). Such a strategy with addition of a marginal cost would not only help in creatively using the idle capacity, but also deliver higher customer satisfaction. This program could improve customer retention and create a psychological and financial reluctance to defect. Idle capacity could be offered as “freebies” or “free trials” which could lead the unexpected recipient to attach a higher customer value and invoke positive images and emotional responses.

Interestingly, under-used service capacities could be sold as packaged deals, used for employee benefits (as internal customers), or exchanged, bartered, and pledged to channel members (as supply-chain customers) (see Ng et al, 1999). Product/service bundling is normally adopted by firms that are not willing to engage in price war. The trend is also towards corporate bartering, as it allows full use of productive capacity, besides increasing companies’ competitiveness. Excess capacity exchanged through corporate bartering helps to reduce cost, increase product range, and reduce selling risks.

To highlight functional and strategic aspects of idle capacity, it is observed that when capacity is left idle due to demand slack, the employees can perform non-vital tasks and/or go for training to upgrade their knowledge and skills. Some companies may take on sub-contracted jobs, rent out the idle equipment or office space, or could donate work to charity as a form of corporate social responsibility.

CONCLUSION

Most manufacturing and services companies operate along side some form of idle capacity. Although the concept and importance of idle capacity has undergone some significant changes, the desire of managers to eliminate non-value added activities to enable companies to emerge as cost leaders, prompted renewed attention to this area.

It becomes apparent from the discussions above that idle capacity in providing goods and services could result from unintentional factors, that are beyond the control of the firm, or is intentionally created. The understanding of these contributory factors could enable managers to tackle this issue of idle capacity effectively. Supply demand disequilibrium that results in unintentional idle capacity, for example, could be managed with input scheduling and/or marketing mix strategies. Idle capacity deliberately created can be used to enhance service quality or as differentiation mechanism to further cultivate customer relationship with best customers, and in the process improve customer retention. Effective idle capacity management could then lead to an opportunity to formulate strategies that would generate maximum benefits, both to the firms as well as their customers.

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