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REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

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APPENDIX/ANNEXURE

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SERVICE PRODUCTIVITY: CONCERNS, CHALLENGES, AND RESEARCH DIRECTIONS

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ABSTRACT

The concept of productivity is widely discussed in manufacturing but not in services. The researches in this area lack its focus. There is a need to explore the meaning and understanding the concept of productivity in services. The logical analysis of literature review and critical enquiry on productivity aims to build up patterns for concept of productivity in services. Inductively, the research questions make an attempt to discuss concerns, challenges and provide the conceptual understanding of service productivity. Also, the paper offers research directions through the issues of measurement aspects and techniques for improving service productivity.

KEYWORDS

Challenges, Measurement, Qualitative aspects, Quantitative aspects, Service productivity.

INTRODUCTION

Not every thing that counts can be counted, and not everything that can be counted, counts.

____ Albert Einstein

The origin of productivity is deeply rooted in the mass production and therefore productivity concept mainly discussed and analyzed in the manufacturing. Despite the importance of productivity in service organizations it is surprising that there is relatively little empirical research on this topic. Organizations that deliver service must broaden their examination of productivity from the conventional organization-oriented perspective to a dual, organization and customer perspective. This broadened approach can help reconcile conflicts between improving service quality and boosting productivity in services (Sahay, 2005). Some researches state that quality and productivity are two unrelated concepts (Brignall et. all., 1996), (Heskett et. al., 1994). However, most researches state that quality and productivity can not be approached as separate concepts (Sahay, 2005), (Kontaghiorghes, 2003). Productivity of manufacturing organizations is measured in quantitative units of input and output. There are some attempts to measure service sector productivity in the same way, i.e. using only quantitative dimensions of input and output (McLaughlin, 1990). There are two reasons for inadequacy in service productivity measurement aspects. The first reason is the inputs and out puts of service productivity consist not only quantitative elements but also qualitative (Ried, 2005). The second reason is the fact that quality and productivity in all sectors of services are strongly correlative (Gummesson, 1998). Also, customer involvement to the organizational activity in the services generates variations in the output. The concept of productivity has been analyzed for more than two hundred years in the manufacturing but not in services signifies the scope this paper. Further more, there is an incomprehension surrounding the topic makes it necessary to explore the meaning and to understand the concept of service productivity. The paper makes an attempt to discuss conceptual understanding service productivity by posing research questions: Viz., i) what is the service productivity, ii) How we can determine the service productivity, iii) what are the dimensions of service productivity is the core of the research problem.

DEFINING AND MEASURING SERVICE PRODUCTIVITY

The issues surrounding the definition and measurement of productivity have been the topic of research for a variety of disciplines, including accountancy, economics, engineering and operations research. At a basic level, the concept of 'productivity' is relatively easy to define. It is the ratio of output to input for a specific production situation. Rising productivity implies either more output is produced with the same amount of inputs, or that less input are required to produce the same level of output. In either case, it is not difficult to understand the importance of productivity changes for general welfare, including environmental concerns. According to Misterik et al. (1992), an increase in productivity can be caused by five different relationships of input and output: i) Output and input increases, but the increase in input is proportionally less than increase in output, ii) Output increases while input stays the same, iii) Output increases while input is reduced, iv) Output stays the same while input decreases and v) Output decreases while input decreases even more. Simply to define, productivity measures the amount of output produced relative to the amount of inputs used. Hence, improvements in productivity require an increase in the ratio of outputs to inputs. An improvement in this ratio might be achieved by cutting the resources required to create a given volume of output or by increasing the output obtained from a given level of inputs. Input varies according to the nature of the business but may include labour (both physical and intellectual), materials, energy, and capital (consisting of land, buildings, equipment, information systems, and financial assets). The intangible nature of services makes it more difficult to measure the productivity than that of manufacturing. Measuring productivity is difficult in the services when the output is hard to define. In a people processing service like a hospital, we can look at the number of patients treated in the course of a year or average bed occupancy. But how do we account for the different types of interventions performed, such as removal of tumours, treatment of diabetes, or setting of broken bones? How do we evaluate the inevitable difference in outcomes? Some patients get better, some develop complications, and sadly, some even die. Relatively few standardized medical procedures offer highly predictable outcomes. A major problem in measuring service productivity concerns variability. Another approach is counting the number of customers served per unit of time also has the similar shortcoming. Suppose, hairdresser who serves three customers per hour that increases output to one every fifteen minutes - giving what is technically just as good a haircut – by using a faster but noisier hairdryer, eliminating all conversation, and generally rushing. Even if the haircut itself is just as good, the delivery process may be perceived as functionally inferior, leading customers to rate the overall service experience is poor. Thus, the problem is that classical techniques of productivity measurement focus on outputs rather than outcomes, stressing efficiency but neglecting effectiveness. In the long run, organizations that are more effective in consistently delivering outcomes desired by customers should be able to command higher prices for their output. The need is to emphasize effectiveness and outcomes, suggest that issues of productivity cannot be divorced from those of quality and value. Loyal customers who remain with a firm tend to become more profitable over time, an indication of the payback to be obtained from providing quality service. Intangible nature of many service elements makes it hard to measure the productivity of service firms. (Information-based services, efficiency mean comparison to a standard-usually time-based, e.g. how long employee takes to perform specific task). The Problem is focus on inputs rather than outcomes, which may ignore variations in quality or value of service. Service productivity cannot be ignored from quality/customer satisfaction. Traditional measures of service output tend to ignore variations in quality or value of service. They focus on outputs rather than outcomes, and stress efficiency but not effectiveness. Firms that are more effective in consistently delivering outcomes desired by customers can command higher prices. Furthermore, loyal customers are more profitable. Measures with customers as denominator include profitability by customer, capital employed per customer, Shareholder equity per customer. Therefore, the Service productivity measure needs to include the service experience, customer involvement, cooperation and so on.

BASIC TYPES OF PRODUCTIVITY MEASURES

Productivity is concerned with effective utilisation of resources (ie. inputs) in producing the goods or services. (Output).It is strong indicator ability organisation to compete with others. Basically there are three main types of productivity measures.

PARTIAL PRODUCTIVITY: It is the ratio of the output to one class of input. E.g. Physician productivity, labour productivity.

TOTAL FACTOR PRODUCTIVITY: It is the ratio of net out put of the sum of labour and capital input .The net out put is the total of out put minus the materials and services purchased.

TOTAL PRODUCTIVITY: It is the ratio of total output of sum of all input factors. The productivity measure reflects the joint impact of all the inputs producing the out put.

DIFFERENT TERMS OF PRODUCTIVITY

The literature shows that concept of productivity should distinguish from four other similar terms: Profitability, Performance, and Efficiency, Effectiveness**.**

PROFITABILITY: Perhaps the reason why companies tend to ignore the importance of the productivity is that they often link productivity and profitability as one issue. Profitability is overriding the goal of the success and growth of any business, and generally ratio between the revenue and cost. However the profitability as performance measurers mainly addresses shareholders as the interests group and many researchers therefore claim that using monetary ratios as the productivity measures will results in several shortcomings. Profitability can change for reasons that have little to do with productivity, such as inflation and other external condition that may bear no relationships to the efficient use of resources. The term profitability clearly has a productivity component, but it is strongly influenced by the prices a company pays for its input and receives for its output. If a company can recover the more than the cost of input from rising prices for its output, its profitability can be increased even in times when its productivity is decreasing. There is strong argument for productivity being expressed in physical units (in quantities) instead of monetary units. In conclusion, productivity can separate from profitability by the price recovery.

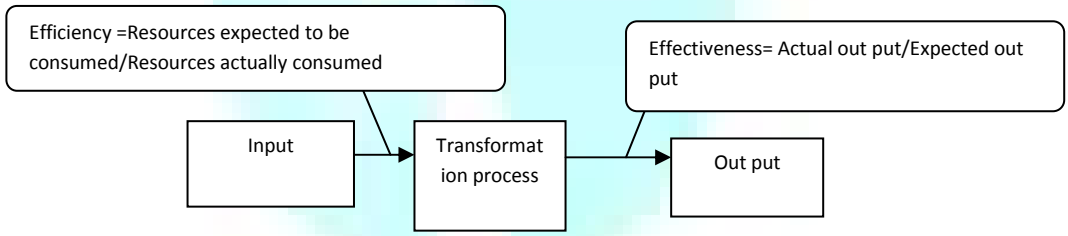
PERFORMANCE: Many people who claim to be discussing the productivity are actually looking at the more general issue of performance. While productivity is fairly specific concept related between output and input, performance is term which includes almost any objective of competition and manufacturing excellence such as cost flexibility, speed, dependability and quality.

EFFICIENCY AND EFFECTIVENESS: The two terms effectiveness and efficiency used in relation to productivity. The effectiveness is usually described as 'doing the right things 'and efficiency means 'doing things right. Most of the researchers agree that efficiency is strongly linked with to the utilization of the resources and mainly influence the input of the productivity ratio. The efficiency ratio simple to measure, whether it is based on time, money or other. Effectiveness is more diffused term and in a many cases difficult to quantify. It is often liked to creation of value for the customer and affects the output of productivity ratio.

In contrast to the manufacturing environment, there are fewer objective ways of determining the quality of a service. How do you determine when an audit is really complete and up to the quality standard, whether the patient needs one more day of hospital care, or whether the advertising campaign is as successful as it should be? More resources almost always increase the cost and, if the output units are unchanged, result in lower efficiency. However, more resources can increase or decrease effectiveness. For example, frequently more hospital days and tests can be detrimental to a patient reducing the effectiveness of the care. At the same time, under treatment or under care can damage the health of the patient as well.

One could easily improve the productivity of any educational institution by increasing the number of students per class. This could have adverse impact on the quality of education, reputation of the institution, desirability of the institution, ability of the institution to attract represent "good" management of productivity but rather "different" management resulting in higher efficiency and lower quality. It may, however, represent good management if there were adequate evidence that the reduced quality would be immaterial for all intents and purposes or if lower service quality expectations would continue to satisfy the service organization clientele or constituents. Thus, researcher in opinion that the combination of effectiveness and efficiency leads to higher productivity.

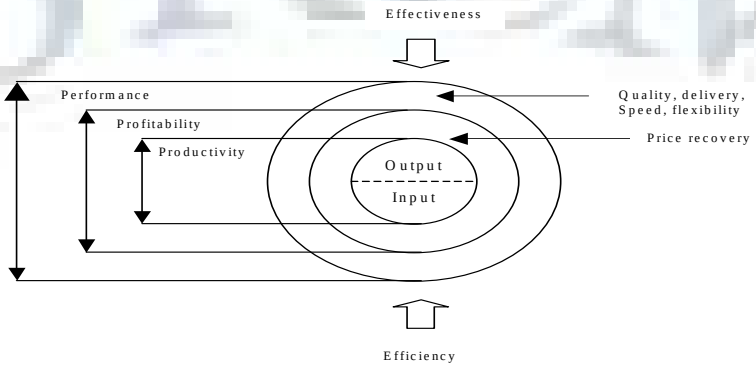
FIGURE 1: EFFICIENCY AND EFFECTIVENESS



THE TRIPLE –P MODEL

The model involves five terms are productivity, profitability, performance, effectiveness and efficiency, and explains how they are related to each other. The Triple P model, gives the main differences between the terms can easily be captured. Productivity is the central part of triple P model and has a straightforward operational definition of productivity as the ratio of out put (i.e. the number of correctly produced products which full fill their specification) divided by input (i.e. all types of the resources are consumed during the transformation process).Profitably is also seen as the relation between output and input but it includes influences of price –factors(Price recovery).Performance is the umbrella term of manufacturing excellence and includes profitability as wells as non cost factors such as quality, speed, delivery and flexibility. Effectiveness is the term to be used when the output of the manufacturing or services process is focused, while efficiency represents how well the input of transformation process is (i.e. resources) utilized.

FIGURE 2: THE TRIPLE –P MODEL



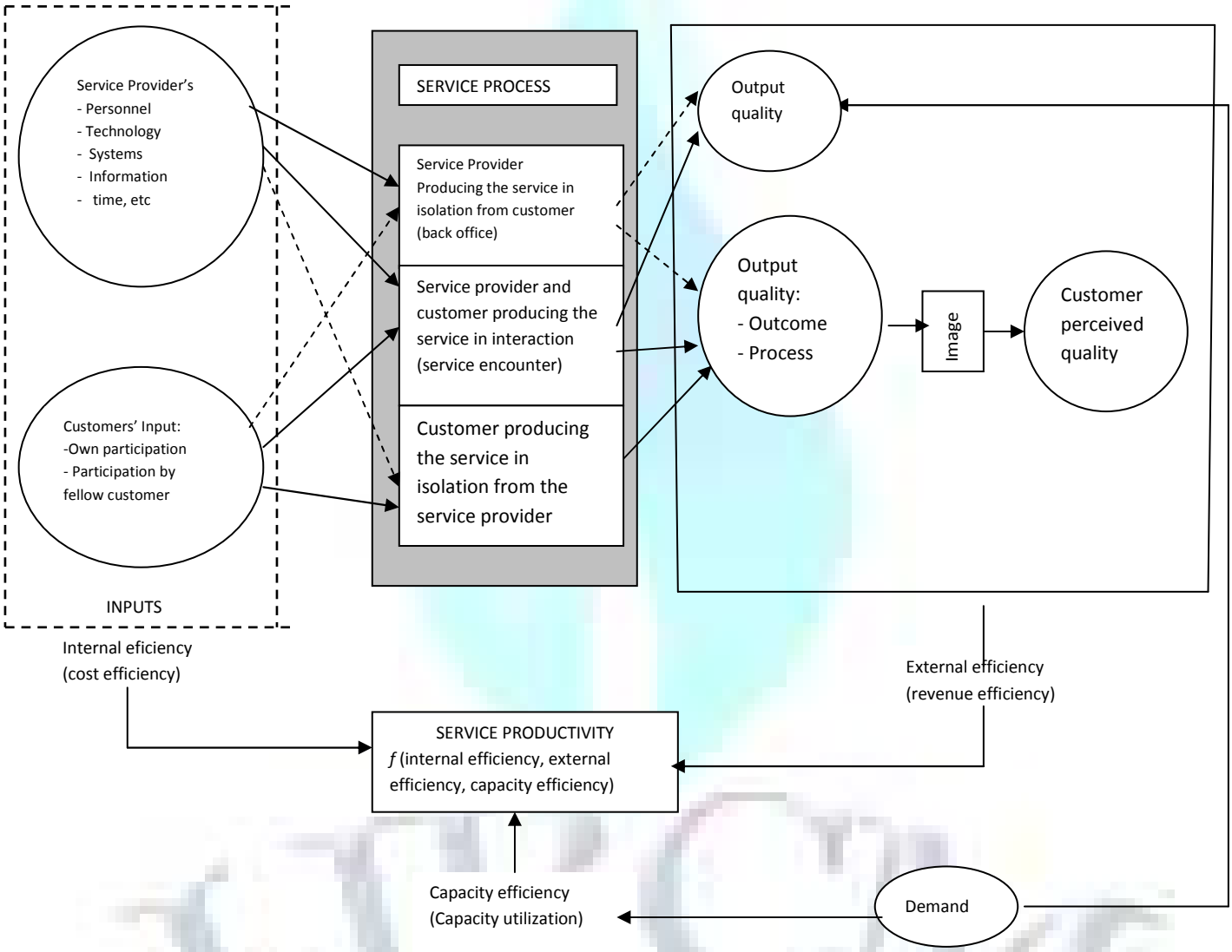
Stefan Tangen (2002), Understanding the concept of productivity, Proceedings of the 7th Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS2002), Taipei

APPROACHING TO SERVICE PRODUCTIVITY MODEL

It is meaningless to develop a service productivity concept based on the management of internal efficiency (cost efficiency) and quantity out put only. Because of the characteristics of services and services process, the management of external efficiency (perceived service quality) of the quality out put has to be integral part of service productivity concept. Managing the external efficiency and perceived service quality is the matter of revenue efficiency, because better quality normally means more sales and increased revenues, and vice versa. A third element of service productivity is the management of demand or capacity efficiency. This is because service providers cannot use inventories to with excess capacity or excess demand, as goods of manufacture can. Hence, Service productivity concept can be described in the following way:

Service productivity = f (internal efficiency, external efficiency, capacity utilisation)
OR
Service productivity = f (cost efficiency, revenue efficiency, capacity efficiency)

FIGURE: 3. SERVICE PRODUCTIVITY MODEL



Sources: Ojasalo, K., *Conceptualizing Productivity in Services*. Helsinki/Helsingfors: Hanken Swedish School of Economics, Finland/ CERS, 1999, p.71. & Christian Gronroos, *Service Management and Marketing*, Second edition, John Wiley& Sons, Ltd.2000, Chichester, England

From productivity perspective the service process can be divided into three separate processes. i) the service provider produces service in isolation, ii) the service provider and customer produce service in interactions (service encounters),iii)the customer produces service in isolation from the service provider. The service provider's inputs into the service process (personnel, technology, systems, information, use of time, etc.) influence the two first process directly and third process indirectly (as illustrated by the back and dotted arrows respectively). The customer's inputs (customer's own participation and fellow customer's participation) directly affect the second and third processes, and indirectly affect the first (providing the information to back office processes). The more efficiently the service organisation uses its own resources as input into processes and better organisation can educate and guide customers to provide process-supporting input to produce a given amount of output, the better internal efficiency or cost efficiency of the service will be. From the provider's point of view, how customer produce the services in isolation from service provider has no direct effect on internal efficiency; but has decisive impact on service productivity through customer perception of service quality. The output of the service process is two fold: quantity of out put (volume), and quality of out put (out come and process) (Christian Gronroos, 2000, Jonas et al; 2005). The quantity produced is dependent on demand. If demand meets supply, the utilisation capacity or capacity efficiency is optimal. If there is excess demand, capacity is utilized to the full extent, but there may be negative effect on the quality of the output. If the demand is lower than potential out put, the capacity is under utilised and capacity efficiency will be lower than optimal. The perceived quality is produced using a given amount input (service provider's input and customer's input), the better external efficiency or revenue efficiency will be, resulting in improved service productivity. If perceived service quality goes down, because the available input is functioning in a less service oriented way or resources structure is altered in

way that decreases quality, external efficiency is reduced and firm revenue generating capability is lowered. This has negative impact on service productivity (Christian Gronroos, 2000). The internal efficiency and the cost –efficient use of resources s one side of the service productivity, and external efficiency and revenue-generating capability is another. In addition, the efficient utilisation of resources so that demand and supply meet as much as possible has a positive on service productivity. An interesting aspect of service productivity is the fact that because image has an effect on the quality perception, managing the image is also part of management of service productivity. Keeping in mind that customer perceived quality is function of the experiences of the services process and its outcome and also customer expectations realize that service productivity is also influenced by expectations management. This is not depicted in the service productivity model, because expectations are also included in perceived quality. (Christian Gronroos, 2000). Service Productivity at the outset of analysis, as the ability of a service organization to use inputs for providing services with the quality matching the expectation of customers (Jarvinen et.al., 1996; Jonnas et al 2005).

THE QUANTITY ASPECT OF SERVICE PRODUCTIVITY

The quantity aspect of service productivity is identical to the manufacturing productivity and consists of material, labour, capital. Service business is personnel-intensive; therefore productivity of many service spheres is low compared to manufacturing sphere. Therefore many providers of services investing to technologies as alternative of using labour (e.g. automated teller machines replace operators, World Wide Web business replace sellers in shops). It shows a way to increase productivity through investing to the technologies in expenses of input element of capital. Though capital mostly impacts service productivity, we have no use for only this partial (capital) productivity measures.

It might seem that output, amount or quantity is the primary factors to measure productivity. When a proposed service consists of one or several standardized components, output of service is easy to measure. Therefore output can consist of a number of standardized services adapted to individual customers (e.g. in the case of a unique service package). Therefore defining the service output is a difficult task.

It is strategically important for the service provider to have enough of resources in order to match demand for the service. This strategy is oriented towards the quantity. However, from the customer's view, the volume of the service output is hardly a significant issue, because the customer usually buys only one unit of output (e.g. haircut) or one package of service (e.g. holiday tour). The customer is therefore inclined to give priority to service quality (Sahay, 2005). Yet, the actual volume of operations is determined by the variation of demand over time (McLaughlin, 1996). As a consequence, the productivity ratio of service operations may vary greatly from one time period to another, if it is measured as a quantity ratio. Due to the variation in the amount of the total demand across time, the service provider has to solve two basic problems related to the quantity aspect: capacity size and capacity scheduling (McLaughlin et. al; 1991).

THE QUALITY ASPECT OF SERVICE PRODUCTIVITY

The quality aspect is a dimension that is difficult to define objectively. According to Gummesson (1992), there is a humanistic quality approach. At the one extreme we must pay more attention to the customers, personnel, leadership and culture, whereas at the other end lies a technical approach concerning operations management, statistics and methods of measurement. Service quality is generally defined as customer perceived quality which stresses the individuals' assessment of the value of the total service offering (Gummesson, 1994) and there is difference between expected service quality and experienced service quality (Gronross, 1982). Physical environment – buildings, offices and interior design – affects customer beliefs, attitudes and satisfaction (Zeithaml and Bitner, 2003), and provides an opportunity to tell the "right" story about a given service (Berry, 1984). It is also very important how contact personnel dresses, articulates, writes, designs and presents proposals (Levitt, 1983). As intangible input, the service personnel represent the service, the organization and the marketers in the customer's eyes (Zeithmal and Bitner, 2003). The quality management of personnel includes such things as motivating, managing information, traning, career planning, recruiting and retaining the right people (Zeithalm and Bitner, 1996). Service business is personnel-intensive, meaning that quality supplied to the customer is essentially a result of the way personnel perform (Normann, 1991). According to Gummesson (1994) there are attempts to include customers in the service organization activity. Another important intangible element is service culture. By participating in the service delivery process, customers influence and even create perceived service culture. High levels of intangibility call for image building and maintenance to attain reliance based on reputation and subjective impressions of the service (Cowell, 1998). In the long run, image depends mainly on what the organization actually provides but in the short run image can be used as a tool for the creation of new reality (Normann, 1991). Service sector productivity is heavily dependent on fast developing technologies and automation (Gummesson, 1998). Customers, instead of interacting with a contact person, they transact using an automated teller machine or a computer. According to Normann (1991), there are five main reasons for using information technologies:

1. Reducing costs by substituting services officers for information technologies.
2. Standardizing services.
3. Increasing availability (24-hr access to services using appropriate machines or computers).
4. Linking customers into the service system.
5. Affecting customer and personnel relationships and behaviour.

Thus, service productivity =

$$\frac{\text{quality output X quantity output}}{\text{Quality input X quantity input}}$$

OR

Service productivity =

$$\frac{\text{customer perceived quality}}{\text{Tangible and Intangible elements,}} \times \frac{\text{service volume}}{\text{Labour, raw materials, capital}}$$

One of most important aspect of service productivity is quality not quantity. From the customer side volume of the service out put hardly significant. Suppose two hospitals providing the healthcare two patients .Can their productivity be truly compared if the service area coverage are different. Sometimes it is difficult to define what to measure. One can define indices to measure some aspects of productivity. For an instance more sales follow-ups or visits may not necessary result in more happy customers. There is need measure on those customers turn to the competitors due to poor service.

NEW CHALLENGES – SERVICE PRODUCTIVITY

Even though the competitive and cost pressure in the service increases, there is little empirical research with regard to cause/effect relationships and productivity related influence factors in service settings. This is one of the reasons why there is hardly any application-related engineering knowledge available at present for sustained improvement or increased productivity in the service sector. The management tools that have been successfully used to evaluate and manage the service productivity include the following; Standard Cost Systems, Comparative efficiency Analysis, Ratio Analysis, Profit and Return on Investment Measures, Zero-base Budgeting.

However, we do know that the "logic" of service work is different from the one of production work. Of course, this has an influence on the issues of productivity and value addition of service activities. The fact that the customer is more or less a component in the service providing process is one of the prime reasons for

the traditional input/output models for productivity mapping reaching their limits in the service sector. Just consider the consulting services of lawyer or doctor. Obviously the quality and productivity of the service decisively depend on the customer's collaboration, i.e. on his active contribution to service providing.

How can the input and/or output of a service be determined and made measurable? For example, how can you measure the productivity of a nurse? By the shortest time for a patient to check out of hospital? By the shortest time for him to check in again? Or is it about the sustained effect of provident care? These questions suggest that the quality of a service as perceived by the customer is a decisive factor for assessing the productivity. Eventually the customer's readiness to take on parts of the service process herself has also an effect on the overall productivity (e.g. self-service settings).

FIGURE 4 a: A FRAMEWORK FOR SERVICE PRODUCTIVITY

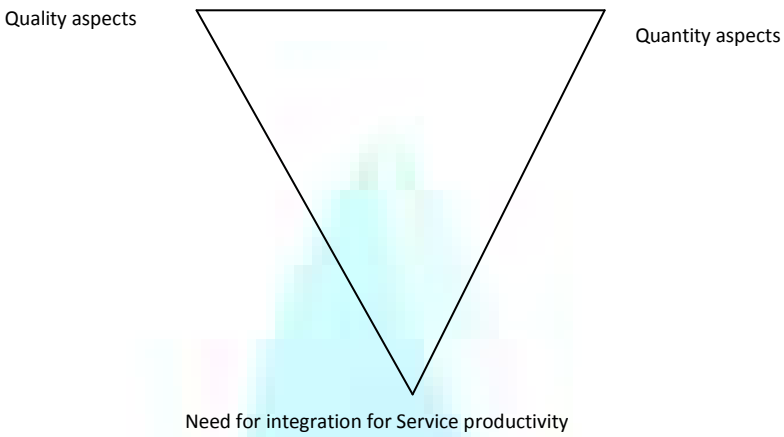
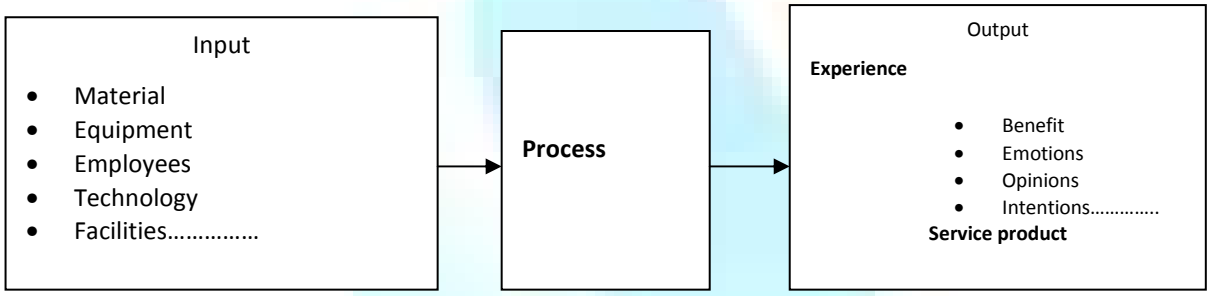


FIG.4 b: MEASURING INPUT-OUT MODEL IN SERVICES



The scientific challenge is to understand the interrelations between the service "event" as perceived by the customer (and by employees) and the design of productive working processes. This is the basis for the subsequent development of design concepts contributing to a substantial improvement of the productivity of services. It will only be possible to achieve a sustained increase in productivity if such concepts take the specific characteristics of service activities into due consideration and can be customised to the work requirements for each specific situation.

PRODUCTIVITY IMPROVEMENT TECHNIQUES

There are various techniques for productivity improvement. Usually they are established techniques under operation research, industrial engineering, management concept, and behavioural science. They are broadly classified into 5 categories.

1. TECHNOLOGY BASED TECHNIQUES. -CAD, CAM, robotics, computer added data processing, integrated information system, electronic data interchange, computer graphics, barcode and smart card technologies.

2. PEOPLE BASED TECHNOLOGIES-Individual and group incentives, job enrichment, enlargement and rotation, worker participation and empowerment, customer focused culture, learning curve and skills training, education and career development, management by objectives (MBO), Quality circles and zero defects.

3. PRODUCT (SERVICE) BASED TECHNIQUES –Value engineering, product standardisation and simplification, rapid product prototyping, concurrent engineering, service standards setting, product/service quality reliability, customer satisfaction evaluation, activity based costing (ABC).

4. PROCESS &TASK BASED TECHNIQUES- methods engineering, work measurement, job design, human factors, computer simulation, operation scheduling, quality assurance, and control, Total quality management, time compression, value chain analysis, planned preventive maintenance, business process re-engineering (BPR)

5. MATERIAL (& RESOURCE) BASED TECHNIQUES –inventory control, supply chain cycle, Just-in-time, materials Requirement planning (MRP), Manufacturing resource planning, material handling system, material reuse and recycling.

CONCLUSION

There is a difficulty in the measurement issues of service Productivity. It is difficult to measure because of intangibility of service. Service productivity wherein to evaluate output and input elements takes both qualitative and quantitative aspects. The most important factor in service productivity measurement is qualitative aspect. This paper attempts to explain the various aspects of service productivity. The most important element in the determination of productivity of service sector is quality. It is especially clearly revealed in determination of output. From the customer's view, the volume of the service output is hardly a significant issue, because the customer usually buys only one unit of output or one package of service and quality becomes the most important aspect of output. Determination of service output could be a difficulty task because of its intangible nature. One of the most effective ways of boosting productivity is investing to new technologies, which helps to reduce labour element of input and to reach higher values of productivity.

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