

# PRODUCTIVITY IN THE SERVICE SECTOR: A SERVICE CLASSIFICATION SCHEME FOR PRODUCTIVITY MEASUREMENT

**Jolanta Žemguliene**

Assoc. Professor, Department of Business,  
PhD Faculty of Economics  
Vilnius University  
Saulėtekio al. 9, LT-2040 Vilnius, Lithuania

**Abstract.** *The problem of service productivity discussed in the paper focuses on productivity measurement issues. The aim of the article is to elaborate criteria for the grouping of services as the reasoning for a deeper analysis of service productivity measurement. The research method is logical analysis of scientific literature. The criteria of customisation and tangibility of services have been suggested as a framework for productivity measurement interpretation.*

## Introduction

Productivity issues have attracted increasing interest amongst researchers during the last decade. Economic evaluation of the organization's performance usually concerns the relationship between production factors' inputs and product output. Changes in the structure of production and customer demands, especially in service industries, are leading to rethinking the concept of organization effectiveness. A broader interpretation of effectiveness depends on wider definitions of output and input. The value of service output depends on the utility, uniqueness, quality, convenience of service consumption, and the customer's participation is considered as an input to the production process. Changing the traditional views on output and input requires a relevant interpretation of productivity as a

concept of effectiveness. Traditionally, productivity as the amount of output in relation to resources used is considered as technical efficiency. However, interpretation of output as a customer value associates output to the overall goal of the organization, and productivity is seen to be the dimension of effectiveness.

A conceptual analysis of productivity in the service sector has not described productivity as a criterion of economic evaluation only; it has also developed a new approach to the concept of service productivity as compared to traditional productivity of mass production (Sahay, 2005; Vuorinen et al., 1998; Gronroos, 1990; Parasuraman, 2002). One of the key guidelines for the service productivity concept formulation focuses on the customer-oriented organization perspective. According to Adam et al.,

service output has to be seen as a value for the customer (Adam et al., 1995). The other guideline, as Jarvinen stated, is the quality of services, which matches the expectations of customers (Jarvinen, 1996). As Sahay has noted, both static and dynamic parameters should be used for the development of the productivity index (Sahay, 2005).

Research in service productivity shows attempts to discuss the concept of productivity and defines some productivity measurement instrument for service organizations. However, the measurement model in many scientific articles is based on case studies representing a particular sector of industry. Some authors have summarised that different types of services include different quantitative and qualitative dimensions, and it can cause measurement problems (Sahay, 2005). Vuorinen has encountered a dilemma of limited knowledge in developing measurement methods based on the service productivity concept (Vuorinen, 1998). In this respect, the service productivity problem, discussed in this article, focuses on measurement issues. Our approach is based on the elaboration of service grouping criteria for the purpose of productivity measurement as the way for structuring the productivity measurement problem.

The aim of the work was to elaborate criteria for the grouping of services for a deeper analysis of service productivity measurement issues in various service groups. The goal of the research was to substantiate the hypothesis that productivity measurement instruments should be defined for homogeneous groups of services.

The method of research is a logical analysis of scientific literature.

## **The content of service productivity**

Productivity is defined as the output and input ratio. Different inputs – raw materials, labour, capital – can be used in the denominator of this ratio. Output is measured by the amount of product (unit of service) produced by any of these factors of production. Therefore, the productivity of labour, capital or combined factors (total factor productivity) could be determined. Usually, the rise in productivity shows a potential availability of a larger quantity of services per unit of input. There are different levels of productivity measurement – those of the overall economy, industry, organization. Service productivity issues adopted in this article focus on the organization level productivity measurement problems.

Productivity measurement in an organization is a management control device which enables to identify the factors of productivity growth. Various aspects of productivity management are rooted in the way of production. Researchers state that productivity management in mass production organizations differs from that in service customized production organizations.

Productivity, effectiveness and efficiency are the criteria for the economic evaluation of the production process. Productivity is defined as the output–input ratio, therefore, productivity indicates the output per unit of input. Efficiency is considered to be a degree to which activity reaches the best possible result (a given quantity of output with a minimum quantity of inputs or largest possible outputs from a given quantity of inputs). The indicator of effectiveness is related to measuring the overall results of economic activity – a real output of

the production process is compared to the goal set for the organization. Effectiveness indicates the achieved degree of the organization's goals.

Productivity traditionally is viewed as a measure of efficiency – as a ratio between output and input, defined in terms of quantity or value (Vuorinen et al., 1998). Productivity and technical efficiency are distinct indicators of economic activity. According to Vuorinen, Jarvinen, Lehtinen, measurement of productivity and efficiency needs the different standards of comparison. Productivity is an actual output/input ratio. The efficiency ratio makes a comparison with the maximum level of output or the minimum level of input. Hence, according to the traditional concept of productivity, it cannot directly show the organization's ability to attain the goals. An organization can produce low customer value products with a high productivity; therefore, an increasing productivity does not mean an increase of effectiveness.

A broader concept of productivity in service organisations depends on a wider definition of output. Output shows the organization's capability to offer customer value, but not the number of units of service sold or customers served. Therefore, the measurement of productivity focusing on customer value has changed the meaning of productivity as the indicator of effectiveness. High productivity indicates the high value for customer, i.e. shows that enterprise meets the goal, since the main goal of an enterprise is to offer services of a high customer value.

The concept of productivity for mass production industry organizations emphasizes

different factors that increase the productivity. Customized production organizations – service organizations – require a broader approach to productivity.

The origin of services, operations and products is the main reason for a specific concept of productivity and measurement in this sector. The following differences of the concept of productivity in service operations as compared to mass production have been argued in scientific literature (Sahay, 2005, Vuorinen et al., 1998):

- a broader approach to the analysis of productivity – organization–customer perspective – must be applied for the analysis of service productivity. Productivity in manufacturing is usually analysed in the scope of organization. Customers are external elements for manufacturing organizations. However, a service customer is mostly involved in service operations by providing some input in service production and evaluating the output of a given service;
- the quality dimension of output and input must be operationalised to obtain a relevant measure of productivity. A valid representation of output must be defined by quality. While some difficulties with the heterogeneity of service units exist, it is possible to distinguish service units of nearly the same the quality level;
- service output should be evaluated from the customer's perspective. Customers evaluate a given service by quality. High quality service from the perspectives of the organization's manager and the customer could possibly be different. Consequently, the number of service package units sold identifies the level

of the demand for the quality services that a service organization produces. The customer, purchasing the service, suggests that the quality of service is acceptable.

A reliable measurement of service productivity presents a subjective element of quality of service output and input. The service provider imposes the quality of output by the customer's interpretation. There seems to be a problem of quality measurement in the way that both the quality and quantity aspects of output must be operationalised. In practice, the development of a measure of service productivity requires measuring the value of the output to the customer. Also, there are some conceptual problems. The quality and quantity of output cannot be operationalised at the same time because an improvement in service quality is always related to an increase of inputs/resources for the unit of output. Therefore, the productivity, or the amount of output per unit of input, decreases. However, in case of observable performance, the productivity ratio is perceived as an indicator of an actual performance and is used to compare the output–input ratios across unit and time. Hence, two related dimensions of output – quality and quantity – at the level of organization are reasonable as the indicators of actual performance. According to this interpretation of output, the service productivity definition formulated by Jarvinen et al. is meaningful: service productivity is the ability of a service organization to use its inputs for providing services with a quality matching the expectations of customers (Jarvinen et al., 1996). The concept of productivity gives the reasoning for the

attempts to operationalise the measurement of service productivity. However, due to the complexity of inputs and outputs, problems occur when considering the valid and reliable service productivity measures. The nature of the service operations and products is the main factor of the complexity of service inputs and outputs. Therefore, a classification scheme of services according to the nature of service processes and products could help to operationalise service productivity measures.

### **Service classification scheme for productivity measurement**

Service sector industries differ in service operations and products. Because of its origin, the concept of productivity in the of context different groups of services should be interpreted more broadly. A framework is needed to understand service processes for the definition of the dimensions of service output and input. We suggest the criteria for grouping services for the purposes of productivity interpretation:

- customisation of services. When the service offered is standardised, the volume of service output may be determined by summarising standard units. The output may consist of unique service packages, therefore, the output should be determined using some proxy measures or weights of different outputs/service packages;
- intangibility of services. The output of service is provided to a large extent intangibly. There are services in which the material element is a significant element of a service package (for example, restaurant services). The intangible out-

come of a service is difficult to define. According to the interpretation of productivity concept in the service context, the aspect of quality should be included in the analysis of the output and input of service operations. The service quality has usually been operationalised as an object of customer perception.

Table 1 summarises our view on the classification of services for the purposes of productivity interpretation.

Service customisation underlines the nature of service output and input. When the service consists of a standardised service package, the volume or amount of output may be determined by the amount of service packages sold/provided. A practical measurement requires a single measure of service output. However, the approach to service as a process suggests an interpretation of output as a process. There is a distinction among activities, outputs and outcomes. Activity indicators could be considered as a measure of output, e. g., the number of procedures, the amount of customers' applications handled, the amount of consultations supplied to customers. Output could be also linked to a combination of different activities that result in a complete solution

of a customer's problem. The outcome of service is a change in customer's utility, attributed to the service provided.

The volume of the output of standardised services could be measured by counting the number of outputs. The dimension of quality should be included while measuring quality-adjusted or quality-weighted output volume. The value of output could be determined by output unit prices.

Practical measurement problems arise when a service offer is customised for the individual client and consists of unique service packages. Therefore, it is hard to distinguish homogeneous service units and activities. In this case, activities will need to be used as proxy measures of output. Weighting activities by cost of activity and using their quality adjustment measures are important since this method defines service output by its quality level.

Measurement of service outcome as a service output dimension is problematic for both standardised and customised services. The precise definition of output as a value for customer suggests that the use of outcome as an output dimension should be preferred. However, this type of measure requires linking the outcome of service activi-

*Table 1. Classification of services for the purpose of productivity evaluation*

<b>Customisation of services</b>	Standardised service output	Output may be determined by summarising standard units
	Customised service output	Output is usually determined using some proxy measures or quality-adjust measures of output
<b>Tangibility of services</b>	Tangible elements prevail	Output attributes can be determined before the purchase of service by the customer; the customer is able to evaluate the output
	Intangible elements prevail	Output attributes cannot be easily determined before or even after a purchase of service; customers find it difficult to evaluate the service output

ties to the customer's utility improvement. There are limited data to allow for this type of measurement because customer's utility changes depend on numerous factors.

Inputs include resources used in service production – labour, capital, intermediate goods. These inputs are combined in the activities. Activities should be linked to service output, therefore, it is possible to measure the amount of resources used for a number of service outputs. For standardised services, linking the service output to inputs is a relatively simple task. However, for customised services it is more complicated. In the case of unique service package offered to a single customer, the number and assortment of activities per single output varies. Therefore, activities will need to be used as a proxy for output, and input will be assigned to activity.

The technical aspects of productivity measurement cover the issue of productivity as a static measure at a certain moment. Various factors may affect the amount of inputs and change the result of output productivity. Productivity development factors should be specified for the particular service organisation analysis. Some general factors determining a improvement have been identified. Baumol's theory stresses the labour-intensive nature of service operations (Baumol, Towse, 1997). Therefore, labour-saving innovations associated with technological changes, capital intensity, research intensity, improvement of skills of workforce are variables related to the growth of the productivity in services (Baumol, Towse, 1997; Vuorinen et al., 1998, Sahay, 2005). The factors increasing the volume of input are as follows:

- investment into electronic data processing and electronic data transfer to the customers;
- investment into the improvement of the systems of service encounter;
- introduction of means of increasing access time for the customers.

The factors decreasing the volume of input:

- investment into technology of automated service environment;
- investment into electronic channels of data transfer;
- improvement in the system of service operations (as a decentralised system of offices for the customer service, structuring of the organisation into back-office and front-office processes);
- improvement in personnel management.

The intangibility attribute of service makes the measurement of service output difficult, as the service output should be seen from the perspective of the customer. Evaluation of an intangible object is often seen to be problematic for the customer due to the lack of the customer's ability or knowledge about service processes and objectively defined quality dimensions. As such, service quality approach stresses different output quality dimensions. Some authors divide the characteristics of a service product into attributes that could be evaluated by the customer and dimensions that cannot be properly evaluated by the customer. Therefore, a framework for understanding how consumers evaluate different types of products is provided. There are three categories of service characteristics: search, experience and credence (Lovelock,



Wright, 1999). Customers evaluate a product before purchasing it by search attributes. Experience attributes can be evaluated by getting through the service process and experiencing service offering. Credence attributes of service cannot be evaluated by the customer (service is too complicated and requires professional knowledge). Characteristics of service output as a measure of two dimensions of customer value and quality level make the productivity measurement difficult. Services with dominant tangible elements include more experience and search attributes, and the measurement of a service value for the customer is a technical assignment. Services with dominant intangible processes include mostly credence attributes, therefore, the valuation of service output by the customer tends to be a conceptual problem.

## Conclusions

Service productivity is a multidimensional concept. The challenge faced by practitioners in productivity measurement is to define a comprehensive unit of measurement considering the main issues of the service productivity concept. Authors have argued on the following productivity concept formulations featuring the origin of service operations and products: the organization–customer perspective; operationalisation of the quality dimension of output and input; the customer value approach to service output.

The concept of productivity gives reasons for the attempts to operationalise the measurement of service productivity. Considering reliable and valid productivity measures for the evaluation of a

service operation process, the problems occur due to the complexity of inputs and outputs. A reliable measurement of service productivity presents a subjective element of the quality of service output and input and the dimension of a perceived customer value.

The complexity of service inputs and outputs results in service productivity measurement problems. Therefore, a classification framework of services according to the nature of service process and products could help to operationalise service productivity measures. We suggest the criteria for grouping services for the purpose of productivity interpretation – customisation and tangibility of services. A standardised or customised service offer expresses different features of a service product (output), therefore, different dimensions should be determined for the evaluation of inputs and outputs. Services with the dominant tangible or intangible elements represent different issues for the evaluation of the customer-perceived value of service. In spite of the discussions in the scientific literature (Sahay, 2005; Nachum, 1999; Vuorinen et al, 1998), based on case studies representing some service industry sector or even particular service, we suggest that further attempts to discuss the practical issues of service productivity measurement should be focused on the elaboration of the productivity measurement models for different groups of services by customisation and tangibility.

When analysing service productivity issues, the author encountered the problem of the level of generalization. We wanted to develop a viable framework for productivity measurement, based on the generalization

of output/input characteristics; however, the complexity and diversity of service operations allows service-specific measures, and all criteria for grouping seem to be beyond

our reach. This argument calls for the further research efforts in developing productivity measurement instruments defined for homogeneous groups of services.

## REFERENCES

1. Adam K., Johanson M., Gravesen I. (1995). Service productivity; a vision or search for a new outlook. The Ninth World Productivity Congress, Istanbul, June.
2. Baumol W.J., Towse R. (1997). Baumol's Cost Disease: The Arts and Other Victims. Aldershot:Edward Elgar.
3. Dawson D., Gravelle H., Mahony M.O., Street (2005). Developing new approaches to measuring NHS outputs and productivity. Paper prepared for the UK Department of Health, University of York.
4. Eurostat (2001). Handbook on Price and Volume Measures in National Accounts. Luxembourg: Office for Official Publications of the European Communities.
5. Gronroos C. (1990). Service Management and Marketing. Lexington Books, Lexington, MA.
6. Gummesson E., Lehtinen U., Gronroos C. (1997). Comment on Nordic perspectives on relationship marketing. *European Journal of Marketing*. Vol. 31. No. 1. P. 10–16.
7. Johnston R., Jones P. (2004). Service productivity: Towards understanding the relationship between operational and customer productivity. *International Journal of Productivity and Performance Management*. Vol. 53. N 3. P. 201–213.
8. Jarvinen R., Lehtinen U., Vuorinen I. (1996). The change process of industrialisation, electronising service channels and redesigning organisation in the financial sector from the productivity viewpoint. Second International Research Workshop on Service Productivity, April 18-19, Madrid.
9. Lovelock Ch., Wright L. (1999). Principles of Service Marketing and Management. Prentice Hall, New Jersey.
10. Nachum L. (1999). Measurement of productivity of professional services: an illustration on Swedish management consulting firms. *International Journal of Operations and Production Management*. Vol. 19. No. 9. P. 922–949.
11. Parasuraman A. (2002). Service quality and productivity: a synergistic perspective. *Managing Service Quality*. Vol. 12. No. 1. P. 6–9.
12. Sahay B.S. (2005). Multi-factor productivity measurement model for service organisation. *International Journal of Productivity and Performance Management*. Vol. 54. No. 1. P. 7–22.
13. Vuorinen I., Jarvinen R., Lehtinen U. (1998). Content and measurement of productivity in the service sector. *International Journal of Service Industry Management*. Vol. 9. No. 4. P. 377–396.