The Productivity of Services: A systematic literature review

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While a firm’s ability to pursue a productive orientation has been posited as having positive performance effects (Slack et al. 2007), little is currently known about the concept of productivity in the field of service research. To that end, this paper focuses on the literature on productivity, efficiency and effectiveness, published since 1989 and conducted a review with the purpose of determining if and what contributions have been done to service research. This study on service productivity draws upon the analysis of literature from a systematic review perspective. The aim of this research is to adopt the systematic review approach of Tranfield et al. (2003) as a tool for highlighting an up-to-date landscape of the multifaceted dimensions of service productivity.

Introduction

In this paper, we review the academic literature on the understanding of productivity, efficiency and effectiveness in the field of service research. During the last decade, the significance of service industries to the prosperity of modern economies has been widely recognized (Vuorinen et al. 1998). Academic interest in issues relating to service research is significantly growing. Productivity, although critical for the sustained success of service organizations, has received relatively little service specific attention as distinct from the more general phenomenon of productivity as the input to output relation (Johnston & Jones 2004). Generally, the productivity of a process is related to how effectively input resources are transformed into value for customers. For the needs of manufacturers, there are widely used productivity concepts and measurements instruments.

This paper is devoted to taking steps toward closing three significant gaps in the literature on productivity, efficiency and effectiveness and its contribution to service research. First, there has been inconsistent usage in terminology within service research. Labels such as productivity, efficiency and effectiveness are used in different ways by different scholars, resulting in a limited collective knowledge accumulation about service productivity. In response, we propose clear definitions for key terms to provide much-needed conceptual clarity that may help advance the literature. In doing so, we seek to provide a categorization of productivity, efficiency and effectiveness, which explicitly recognizes that there are different kinds of configurations and each offers unique insights contributing to the field of service research. Second, there exists no published systematic literature review in the field of service productivity.
Third, the use of the productivity concept beyond operations management theory has been very limited, despite the potential to shed new light on diverse phenomena. On this account, we develop future research ideas aimed at extending and defining productivity thinking within service theory.

Theoretical base

The content of productivity

The uniqueness of productivity research relative to other research approaches can be highlighted by considering how it pursues the goal of operations management. Generally, operations management aims at ensuring that business operations are efficient in terms of using as little resources as needed, and effective in terms of meeting customer requirements (Markland et al. 1995). It is concerned with managing the process that converts inputs (in the forms of materials, labor and energy) into outputs (in the form of goods and services). Within this research area productivity is the most common measure of competitiveness (Russell & Taylor 2000). Therefore, productivity is defined as the ratio of what is produced by an operation to what is required to produce it (Slack et al. 2007).

The predominant input in productivity calculation is labor hours. According to the Bureau of Labor Statistics, even though labor is the only factor of production explicitly considered, comparisons of productivity over time implicitly reflect the joint effects of many other factors, including technology, capital investment capacity utilization, energy use and managerial skills. Thus, productivity statistics provided in government reports typically measure changes in productivity from month to month, quarter to quarter, year to year or over a certain period (Russell & Taylor 2000). Operations management assumes that improving quality by reducing defects will increase outputs and reduce input. In fact, virtually all aspects of quality improvement have a favourable impact on different measures of productivity. Improving product design and production process, improving the quality of materials and parts, improving job design and work activity, they will all increase productivity (Russell & Taylor 2000).

Problematic in this context is the general approach towards productivity as an umbrella concept including efficiency and effectiveness. In order to develop a model of service productivity it is important to provide some clarity and distinction between these terms (Johnston & Jones 2004). Efficiency and effectiveness should be treated as related but separate concepts. Efficiency describes the degree to which an activity generates a given quantity of outputs with a minimum consumption of inputs, or generates the largest possible outputs from a given quantity of inputs (Johnston & Jones 2004). Effectiveness, in turn, indicates the ability to attain a goal or a purpose. Effectiveness relates the output to the goal set for the operation, whereas efficiency relates the output to the resources used (input). Efficiency is about doing things right and effectiveness is about doing the right things. There exists a clear distinction between effectiveness and productivity: effectiveness is tied to the ability of an organization to attain its specified objectives, whereas productivity concerns the relationship between outputs and inputs (Vuorinen et al. 1998). Despite its apparent benefits, the productivity function faced a series of critiques in the late 1980s. Blois argued
that increasing productivity is not a sufficient condition for enhancing an organization’s effectiveness. In fact, productivity may be increased at the cost of effectiveness in meeting the goals set for the organization (Blois 1984). Efficiency is a common but loosely defined concept in the business disciplines. It may be seen as a quantitative (technical efficiency) or a value (economic efficiency) concept. Technical efficiency may be considered synonymous with productivity as a ratio between output and input, although efficiency has sometimes been defined as the inverse to productivity. When efficiency is defined in value terms, one tries to make compatible the effects of various input and output factors in the production process (Grönross & Ojasalo 2004). This interpretation has led to formulations in which efficiency is seen as costs per product. Technical efficiency and productivity may be defined as distinct concepts by taking the standard of comparison as a frame of reference: in the case of a productivity ratio, the aim is to compare the output-input ratios across units and time, whereas in the case of an efficiency ratio, the comparison is made against a predetermined standard or ideal. If a meaningful interpretation can be given to ideal performance, it is reasonable to perceive an efficiency ratio as an indicator of the extent to which actual performance has achieved the ideal level (overall efficiency) or the best observed performance (Frei & Harker 1999). According to the basic principle of economic rationality, the purpose is to achieve a given result with minimal resources or to get the maximum result with a given set of resources. However, given the variety of definitions that describe performance in the production of services, we assume that comprehensive understanding is needed. Given the importance of the productivity concept to scholars and service organizations, there is a need to summarize extant knowledge about this concept as the foundation for setting the stage for further advances.

The content of services

While comparing productivity between service and manufacturing operations, one of the basic claims has been that the special characteristics of services demand a more holistic approach including a customer-orientation to productivity (Blois 1984). More specifically, several researchers have argued that quality and productivity cannot be dealt with separately in the case of services (Djellal & Gallouj 2008) (Grönross & Ojasalo 2004). Despite the emergence of productivity as a central concept for service researchers, little agreement exists about the definition and nature of service productivity (Nachum 1999a) (Anderson et al. 1997). Consequently, there seems to be a growing need for a thorough analysis of the productivity concept in the context of services.

Whereas the bulk of traditional service research has mainly focused on the identification of characteristic differences between goods and service (Lovelock 1991a), recently the goods dominant logic considers services as type of (intangible) goods, which implies differences between tangible goods and services in terms of production and distribution practices (Vargo & Lusch 2008), (Vargo & Lusch 2004).

Productivity as a concept is used to manage production efficiency in manufacturing. In services, for example, due to the nature of service production processes as open systems and the participation of customers in those processes, such a productivity concept is too limited (Grönross & Ojasalo 2004). Normally, only measurements of partial productivity are obtained and no control of the overall productivity and its effects on the economic results of the service provider and on customer value is exer-
cised. What appears to be improved productivity in terms of better production efficiency may turn out to have a negative effect on perceived service quality, customer value and, in the final analysis, on the economic result of the firm (Ojasalo 2003) (Parrasuramam 2002).

Services are carried out in an organizational setting, which always refers to embodied and especially emotional situations (Küpers 1998). This influence of embodiments, emotions and the phenomenological significance of ways of expression on the service productivity has not been a key focus in service productivity research so far (Lasshof 2006) (Gummesson 1998). Therefore, the complexity of the relationship between service provider and customer can be identified as an essential characteristic of service processes (Ojasalo 2003). Rather than specifying a single type of relationship from the service providers perspective the service process can be divided into three separate processes (Grönross & Ojasalo 2004).

• producing the service in isolation (back office);
• producing the service in interaction with the customer (service encounter);
• the customer produces the service in isolation from the service provider (using the provided infrastructure only).

Thus, all participants involved in either kind of these service processes are first and foremost embodied beings, who are embedded in a specific service system. The most fundamental way in which service providers are involved concerning these service systems is their perceptual interaction. Especially the perceived quality and image of service companies depend on the engagement and performance of the service providers (Verbeke 2004) (Grandey et al. 2002).

The problems of using a traditional productivity concept in services discussed above and highlighted the necessity of developing a productivity concept, which is geared towards the nature of services. Managing productivity should be seen as a mutual learning experience, where the service provider and the customer are aligning their resources and production and consumption processes to each other. In summary, it can be said that measuring productivity as an efficiency issue may be less appropriate in services but rather to see service productivity as a profitability concept.

Given the importance of the service productivity concept to organizations, there is a need to summarize extant knowledge about this concept as the foundation for setting the stage for further advances. Therefore, it is crucial to identify the existing literature on service productivity to shed some light onto the complex field of service productivity. In order to achieve this aim we conducted a systematic literature review, which consolidates past accomplishments and to sets the stage for future developments.
Systematic Literature Review

Methodology

In order to fully map the prior research in the field of service productivity, we conducted a systematic literature review. As mentioned above the traditional ‘narrative’ reviews often lack rigor and in many cases are not undertaken with the required accuracy (Pittaway et al. 2004) (Marr et al. 2003). In this study, we applied a method similar to that described in Tranfield et al. (2003), which uses the principles of systematic review methodology that are used in medical science in order to counteract bias and produce transparent. It is also applicable for high-quality and relevant literature reviews in management research.

Conducting a systematic review means adopting a replicable, scientific and transparent process, minimizing the bias through exhaustive literature searches of published and unpublished studies and providing an audit trail of the reviewers decisions, procedures and conclusions (Cook et al. 1997). Thus, it is very important to ensure that the review is both methodical and replicable.

Therefore, this systematic review will follow the three stages outlined by Tranfield et al. (2003): First planning the review; second conducting the review and third reporting and dissemination. The overall process of the review is summarized in Fig. 1.

![Fig. 1: Summary of the systematic review process (following (Thorpe et al. 2005))](image-url)
Step A: Planning the review

Prior to the beginning of the review, a review panel was formed with experts in the areas of both review methodology and theory. The review panel helped to direct the process through regular meetings and resolved upcoming disputes over the inclusion and exclusion of studies.

Defining the objectives and preparing the proposal

At the beginning of the systematic literature review stood an iterative process of definition, clarification, and refinement. Therefore, it was important to the authors and reviewers to consider cross-disciplinary perspectives and alternative ways in which the research topic has been tackled previously. This first overview included a brief summary of the theoretical, practical and methodological history debates surrounding the field service productivity.

Developing the protocol

The protocol for any literature review ought to contain a conceptual discussion of the research problem and a statement of the problem's significance rather than a defined research question (Tranfield et al. 2003). The aim is to produce a protocol that does not, on the one hand, interfere the researcher's ability to be creative in the literature review process, but, on the other hand, ensure that the review is less open to researcher bias than a more traditional narrative reviews (Tranfield et al. 2003) (Phelps et al. 2007). Condensed a systematic review enables scholars to provide an audit trail of search terms and reasons for including/excluding articles (Lee 2009).

Step B: Conducting the review

Stage one: Define search words and time period

The systematic search began with the identification of keywords, regarding the productivity of services on the scoping literature study and on their prior experience. The list of keywords was completed in a brainstorming session with other academic researchers and afterwards grouped into search strings. A search string is by definition a list of root concepts and key words linked by operators such as AND or OR. The following list shows the used search terms, which were linked by the Boolean operator OR:

- productiv* / productivity / productiveness
- effectiveness / efficiency
- outcome / performance / capability / fruitfulness
- measur* / measurement / meter / gauging

The search with this root search string was always accomplished in connection with service*(through Boolean phrase AND).

To cover an appropriate time period all scholarly articles from January 1989 until June 2010 were considered.
Stage two: Selection of biographical databases

A number of key bibliographical databases were selected for this search: EBSCOhost; ABI Proquest; Business Source Premier; Science Direct; Web of Science (ISI Web of Knowledge); JSTOR database and Emerald. The database with the greatest coverage coupled to functionality and full article access were: EBSCOhost and Web of Science (ISI Web of Knowledge). These bibliographical databases were chosen and reviewed using the search strings identified in step one. Therefore, the search was conducted in title, abstract and keyword search.

Stage three: Filtering of the articles

The results of a first search, conducted at the EBSCOhost database with the search string in the defined time period, lead to 92148 hits. In order to assess the relevance and size of the literature and to state clearly the focus of the research study, the scope of the literature review process have to be delimited further by other factors. Tranfield et al. (2003) state regarding this problem: “…management researchers usually rely on the implicit quality rating of a particular journal, rather than formally applying any quality assessment criteria to the articles they include in their reviews (i.e. refereed journals are ‘better’ than practitioner journals)...”. So the initial assessment criteria for including studies into the literature review were: the specifically relation to services, theoretical and empirical studies, quantitative and qualitative studies and studies which were published in academic or high quality business journals. To estimate the quality of journals the ranking of the German Academic Association for Business Research (VHB) has been used. The ranking of the journals are subdivided in different groups. In order to the relevance of the research theme the review team decided to conduct the search in all Journals ranked A to D in two groups “General business studies” and “Service and Trade Management”. These two subgroups cover together a range of 80 journals.

The conducted search elicited over 3250 references. Evaluating the title and abstract of the publications by relevance (present of service productivity) and the teams ‘a priori’ knowledge enabled the team to reject approximately 2900 articles. The reviewers then looked independently the remaining papers and further reduced the amount to a list of 56 relevant studies in the end. These studies were cross-checked by the reference section, which led to a list of 104 additional studies. These were reviewed again independently and 24 studies were included in the literature review. Before accepting a paper into the review the authors checked for repeated studies to ensure there is no duplication; for example if the same study is published in two different journals with different first authors, only one study would be included in the review; usually the most comprehensive study or the most recent study. The different stages involved in the selection process are shown in Table 1.
Table 1: Studies reviewed and validated

<table>
<thead>
<tr>
<th>Selection Process</th>
<th>Nb. studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies extracted from database</td>
<td>&lt;3250</td>
</tr>
<tr>
<td>Hits based on Title and Abstract</td>
<td>281</td>
</tr>
<tr>
<td>Studies- full version available</td>
<td>264</td>
</tr>
<tr>
<td>Studies selected by independent researchers</td>
<td>56</td>
</tr>
<tr>
<td>Studies identified by cross-references</td>
<td>104</td>
</tr>
<tr>
<td>Studies selected out of cross-references by independent researchers</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total Number of Studies</strong></td>
<td><strong>80</strong></td>
</tr>
<tr>
<td>Articles</td>
<td>74</td>
</tr>
<tr>
<td>Monographs</td>
<td>4</td>
</tr>
<tr>
<td>Reports</td>
<td>2</td>
</tr>
</tbody>
</table>

**Stage Four: Analysis of the articles**

**Temporal view of publications**

Fig. 2 shows that over the last 20 years there is an increase in published papers covering the productivity of services. The recent increase may be a reflection of a growing awareness of the importance of service productivity. Alternatively, this increase may just match a general rise in published papers in service science.

![Fig. 2: Number of papers included in the review by three years intervals](image)
Sources of publications

The total amount of the 74 as relevant identified articles was published in 31 academic journals. Of which the majority (46%) were found in four academic journals. Therefore, 19% of the articles were published in the Service Industries Journal, 15% in the International Journal of Service Industry Management, 7% in the Management Science and 5% in the Journal of Business Research. Table 1 gives a breakdown of where the 74 articles are published.

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Nb. of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Industries Journal</td>
<td>14</td>
</tr>
<tr>
<td>International Journal of Service Industry</td>
<td>11</td>
</tr>
<tr>
<td>Management Science</td>
<td>5</td>
</tr>
<tr>
<td>Journal of Business Research</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 2: Publication sources of included articles (34 out of 74 articles are published in 4 journals)

Type of study

Fig. 3 shows that out of the 80 studies, 61% are empirical, i.e. findings are based on direct evidence or experiment. The 25% theoretical or conceptual studies are based on an understanding of the field from experience or reference to other related work. Only a smaller number of studies (14%) are either reviews of literature (11%) or reports (3%).

Data collection methods used in the empirical studies include: surveys and questionnaires, field studies, structured interviews, case studies, focus groups and data reviews.
Out of the 48 empirically studies 57% base on secondary data or re-examine empirical work of other authors just 20 studies (43%) base on primary data (see Fig. 3). In this primary studies different research strategies, such as quantitative (45%), qualitative (40%) and mixed approaches (15%), where used.

Fig. 4: Data origin in empirical studies

**Geographical and service sector distribution of papers**

The papers reviewed are also analyzed according to the countries that feature within the studies. This analysis shows that a high percentage of the empirical studies are concentrated on work carried out in the USA (25%) and the United Kingdom (19%), as shown in Fig. 5: Countries represented in the empirical studies. One study even compares the productivity of different service sectors in different time periods in the UK to the USA [23]. Overall most countries, except the USA, the United Kingdom, the Scandinavian countries and Spain, are not well represented. Thus, it is clear that when we synthesize findings from all these studies we are giving a predominantly Western view of the productivity of services.

Fig. 5: Countries represented in the empirical studies
The industrial focus of the studies included is presented in Fig. 6. The sample of studies in the review is more or less balanced toward the different service sectors. In particular the finance sector (banks and accounting), tourism sector (hotels, travel agents and tour operators) and the retail service (grocery stores and fast food restaurant) have been the object of investigation. However, most studies (31%) cover and compare multiple service sectors.

![Fig. 6: Service sectors analysis of studies reviewed](image)

In summary, a number of key points can be made for the conducted review. First, the evidence based of this literature review is somewhat dominated by empirical studies. Therefore, the empirical studies are mostly based on secondary data. The methodologies of productivity measurement are diverse. Primarily, the following two techniques are used: Index measurement and linear programming. The most prevalent concept, within the index measurement, is the Total Factor Productivity. Basically this model proposes measuring productivity as a ratio of output to different inputs (Craig & Harris 1973). The approach of linear programming constructs a production frontier and evaluates each input's contribution to the productive process based on past performance data. The most prevalent programming technique used in the reviewed studies is the Data Envelope Analysis (DEA). DEA is a flexible, non-parametric estimation procedure which identifies the contribution of a set of inputs for achieving the maximum quantities of a given set of outputs. This approach does not require price data on inputs and products, quantities of inputs can be directly utilized (Banker et al. 1989) (Norman & Stoker 1991) (Sherman 1984). In particular 27% of all empirical studies and yet 44% of all studies based on secondary data have been evaluated by a data envelopment analysis. The disadvantages of DEA are two-fold. First, it requires a fairly large series of data so that the optimization can be estimated with a more general set of benchmarks. Second, being a non-stochastic procedure, tests of statistical significance are harder to develop (Singh et al. 2000).

Furthermore, many studies (9%) concerning the “Productivity Paradox of Information Technology”. This phenomenon describes the situation in which large investment into communication technology has not led to productivity gains (Nachum 1999b). In the short run, increased input devoted to the acquisition of new knowledge decreases productivity because the productivity measure reflects increased input without a corresponding increase in output (Lehr & Lichtenberg 1998).
Finally, the research to date lacks some depth in terms of the very limited number of studies based on primary data. The research is also fragmented as it is spread across a large number of authors, journals and disciplines. The main conclusion, which can be drawn from the sample used in this systematic literature review, is that the subject area requires some prioritization by a ‘critical mass’ of academics over a prolonged period if the evidence base is to be improved and expanded.

Step C: Reporting the review

Finally, a systematic review should make it easier for academics and practitioner to understand the research by synthesizing extensive primary research papers from which it was derived (Tranfield et al. 2003).

Therefore, the presented database should be used to highlight the up-to-date landscape of the multifaceted dimensions of service productivity in the next step. On that account the report of the literature review should be structured as follows: First, the existing theoretical approaches should be reviewed and be reflected in an overview. Second, the term of service productivity should be conceptualized in order to explore the extent of influencing factors and interdependencies on the productivity of services. Finally, managerial implications and key issues for the management of service productivity should be summarized.

Theoretical Lenses in Service Productivity Research

Researchers studying service productivity have drawn on a wide range of theoretical lenses commonly used in service research. The following section summarizes the most common theories used in service productivity research. In many studies, researchers chose to integrate two or more theoretical lenses to examine the issue under study.

We summarize the key features of each conceptual article in Appendix 1. When reviewing conceptual articles, we examined the theoretical base as well as capturing an understanding of how the work contributes to knowledge about the service productivity concept. Research in service productivity has been criticized for lacking adequate theoretical bases (Shafti et al. 2007) (Grönross & Ojasalo 2004); however, we found that research surrounding the service productivity construct is theoretically rich, embracing a multitude of theories, including knowledge management theory, resource based management capacity theory, relationship theories and operations theory. Our review of conceptual works suggests that the service productivity construct holds a great promise as basis for theory building. For example, Drucker (1991) developed a theory of knowledge circles and productivity development. Such approaches could be used to build theory on other service productivity-related processes, such as knowledge management for employees and clients. Anticipatory, other forms of theory building can be used to move this research stream forward. For example, the productivity output depends on capacity management, quality management, and resource productivity or efficiency management (Armistead & Clark 1994) and is related to the Penrose assumption (1954) of management capacity. Different definitions of service productivity in the literature (i.e., intellectual capabilities (Quinn et al. 1996) vs. dependency of service-good combinations (Reichwald & Möslin 1995) vs. phenomenology/expression (Küpers 1998) vs. client-service provider interaction (Gummesson 1998)/(Parasuramam 2002) may be an appropriate aspects to creating new theory.
Adding another aspect to existing conceptual frameworks to develop more complex theoretical models is another fruitful avenue for future research. For example, Klassen et al. (1998) show, that productivity measurement in concert with efficiency measurements provides a stronger basis for evaluation than using productivity alone. They suggest that efficiency and productivity measures may have less meaning in services in which transaction size may not accurately reflect the value of the service (e.g. financial service). Another possibility is considering how client activities (e.g., time, quality and value added inputs) can moderate service productivity (Martin et al. 2001). Therefore service productivity highly depends on customer knowledge, experience and motivation (Ojasalo 2003). Johnston & Jones (2004) argue that it is important to understand the relationship between operational and customer productivity. In their model customer productivity includes satisfaction as one output variable. Other authors like Anderson et al. (1997) or Gummesson (1998) have separated service quality or satisfaction from productivity. Hence, (Grönross & Ojasalo 2004) define service productivity as a function of internal efficiency; external efficiency and capacity efficiency. In their model service productivity is defined as total revenues of the service divided by total costs of the service. A third possibility is building a theoretical framework for understanding and analyzing the productivity of service workers in a system. Dobni (2004) argues that service productivity is most likely to be improved if it is managed in a systematic way. Given this approach, Das, Sidhartha R.; Canel (2006) show that the designing of a service process might be the foundation for improving service productivity.

From a strategic perspective (Djelal & Gallouj 2010) identified three generic service productivity strategies: First, assimilation strategies achieve productivity gains by making the service as tangible as possible and minimize the degree of interaction with the customer. Second, differentiation strategies try to implement rationalizations methods for services (e.g. standardization, formalization of procedures and routines). Third, integration strategies combine these two strategies by using a variety of arrangements.
Conclusion

We started this article by noting the importance of service productivity in today’s business landscape. The service productivity phenomenon is a relatively new research area in the widely researched field of operations management and service research, and researchers from different domains have started to address a broad set of research questions through a wide range of theoretical lenses, leading to a certain level of fragmentation of the service productivity literature. Most of the articles were published between 2004 till 2006. The objectives of this article were to review the existing service productivity research, organize major findings by key research areas, and develop a research agenda by identifying existing gaps in the present understanding and highlighting future research opportunities.

The review of the service productivity literature suggested that the existing body of research can be organized around a conceptual map comprising different major research areas each representing important aspects. These areas are knowledge management, operations management, management capacity/resource based perspective, customer/client perspective and system and interaction perspective. Therefore, we argue it is important to understand the perspective of operational and customer productivity and the relationship in between. Although the interest among service scholars in the service productivity phenomenon has grown significantly in the past few years, many of the theoretically and empirically relevant and interesting issues in these three research areas have not yet been investigated or have only been addressed peripherally. Although the intention of this research effort was to present a complete as possible review, there are some limitations to this study. Most important, the literature search process was somewhat driven by a specific focus on service productivity and not productivity in general. Nevertheless, we are confident that this review covers the majority of the studies that are at the core of the research issues related to service productivity. We summarize that the contribution of this article rests in three areas: (a) the development of a conceptual map of the service productivity literature comprising different research areas, (b) a review of the existing service productivity research and discussion of major findings in each key research area, and (c) the development of an agenda for future research. Overall, the relatively new field of service productivity represents an exciting and promising area of research that is rich of further research opportunities.
Appendix 1

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Referring theories</th>
<th>Definition of Service Productivity</th>
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<tbody>
<tr>
<td>Drucker (1991)</td>
<td></td>
<td>Raising the productivity of knowledge and service work is essential.</td>
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<tr>
<td></td>
<td></td>
<td>According to all the experience we have, the resulting productivity increases will equal, if not exceed, whatever industrial engineering, scientific management, or human relations ever achieved in manufacturing. In other words, they should give us the productivity revolution we need in knowledge and service work.</td>
</tr>
<tr>
<td>Colin./ Graham, (1994)</td>
<td>(Chase &amp; Bowen 1991); (Heskett et al. 1990); (Lovelock &amp; Young 1979); (Rhyme 1988)</td>
<td>Operations managers in a service organization will either succeed or fail in the process of balancing quality of service and resource management, expressed in terms of resource productivity, depending on their skill in managing capacity to match demand. There is an interaction between capacity management, quality management, and resource productivity or efficiency management which is at the heart of the planning and control process for operations management in services.</td>
</tr>
<tr>
<td>Reichwald./ Möslein (1995)</td>
<td>(Brynjolfsson 1991); (Picot &amp; Gründer 1995)</td>
<td>The productivity of industrial services and the provision of goods are interdependent factors. They are the result of rationalization processes which were concentrated only on the production of goods. Hence, the comparison between developments of productivity in manufacturing and services is characterized by systematic distortions.</td>
</tr>
<tr>
<td>Quinn./ Anderson/ Finkelstein, (1996)</td>
<td></td>
<td>The productivity of a modern corporation or nation lies more in its intellectual and systems capabilities than in its hard assets. Intellectual and information processes create most of the value-added for firms in the large service industries.</td>
</tr>
<tr>
<td>Küpers (1998)</td>
<td></td>
<td>The extension of expressing feelings like sympathy, joy, satisfaction, dissatisfaction, embarrassment, influences the productivity of the service process in an essential way. In order to work out how emotions play a key role in organizational and customer-related activities, a phenomenology of working life is required.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Focus/Definition</td>
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<tr>
<td>Gummesson (1998)</td>
<td>Focus on the relationships between service providers and customers as these stand out in the service encounter and the service production process. Productivity is a ratio between output and input. The more we can reduce the input keeping up output, the better is our productivity. Measurements of productivity are often ambiguous and inadequate.</td>
<td></td>
</tr>
<tr>
<td>Klassen/Russell/Chrisman, (1998)</td>
<td>Productivity measurement in concert with efficiency measurement, providing a stronger basis for evaluation than using productivity alone. Productivity cannot be defined by only one measure, but may include any measure relating output value to input value. An overall productivity measure for individual firms is usually defined as output value/input value with outputs and inputs measured in dollars. To meet the needs of individual operating units in a firm, adjustments can be made by calculating productivity of various input and output factors.</td>
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<tr>
<td>Martin/Horne/Chan (2001)</td>
<td>Focus on client productivity as any measure of service productivity must include some component that focuses on the client side of the service encounter. Client productivity defined. In this context, high &quot;client productivity&quot; can be regarded as timely, quality and value-added inputs (e.g. data diagnosis or critical decisions) made to consulting projects for transformation of such into achievement of preset common objectives (other things being constant).</td>
<td></td>
</tr>
<tr>
<td>Parasuraman (2002)</td>
<td>Conceptual framework for understanding the interlinkages among service quality and the various components of the company-customer perspective of productivity. Definition productivity from the customer’s perspective defined as the ratio of the service output experienced by a customer to the inputs provided by that customer in service production.</td>
<td></td>
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<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Reference(s)</td>
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<tr>
<td>Ojasalo</td>
<td>2003</td>
<td>(Fuchs 1968); (Lovelock &amp; Young 1979); (Bateson 1985); (Grönroos 1990); (Ojasalo 1999)</td>
</tr>
<tr>
<td>Johnston/Jones</td>
<td>2004</td>
<td>(Johnston 1989); (Lovelock &amp; Young 1979); (Martin et al. 2001)</td>
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<tr>
<td>Grönroos/Ojasalo</td>
<td>2004</td>
<td>(Chase &amp; Haynes 2000)</td>
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<td>Dobni</td>
<td>2004</td>
<td>(Blumberg 1994)</td>
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<tr>
<td>Author (Year)</td>
<td>Productivity as process objective that are derived from the overall organizational objectives.</td>
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<tr>
<td></td>
<td>Design of service processes = foundation for improving overall customer service, service quality, and productivity</td>
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<tr>
<td></td>
<td>The design of service processes begins with a statement of process objectives that are derived from the overall organizational objectives. These process objectives may include customer service, service quality, productivity, etc.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Three generic service productivity strategies:</th>
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<tbody>
<tr>
<td></td>
<td>First, assimilation strategies achieve productivity gains by making the service as tangible as possible and minimize the degree of interaction with the customer.</td>
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<td></td>
<td>Second, differentiation strategies try to implement rationalizations methods for services.</td>
</tr>
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<td></td>
<td>Third, integration strategies combine these two strategies by using a variety of arrangements.</td>
</tr>
</tbody>
</table>
References


Fuchs, V., 1968. The service economy.


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We agree that the submitted paper is published as Working paper.