Service Productivity: A Literature Review and Research Agenda

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Until now, there exists no universal approach for measuring the productivity of services. Various factors have different impacts on service productivity, ranging from the relationship between service providers and customers to service quality. So far, only some of these factors have been investigated in detail. The purpose of this paper is to describe, synthesize, evaluate, and integrate the results of prior research on service productivity by conducting a literature review. We selected 13 leading management and economic journals, covering the period of time from 1980 to date. We created an initial catalogue of existing approaches focusing on the measurement, validation, and controlling of service productivity. We categorize, consolidate, and discuss the relevant papers accordingly. Based on this, we highlight open issues and possible venues for investigation. As our final result, we develop an agenda for further research on the productivity of services.

1. Introduction

During the last decade, the service sector has been the fastest growing segment and represents a major and increasing part in the global economy (Russell, 2009). The significance of services for the prosperity of the world economy has been widely recognized (Vuorinen et al., 1998; Rai and Sambamurthy, 2006). For example, bundles of physical products and services are increasingly offered as an integrated solution to the customer (Spring and Araujo, 2009). Until recently, services have mostly been understood as value-enhancing “add-ons” for tangible goods. In contrast, the emerging service-dominant logic regards goods as mere appliances for service delivery (Lanza and Ude, 2010). A service involves at least two partners: a service provider applying competence and a customer that integrates the applied competences with other resources; therefore value is always co-created (Spohrer et al., 2007).

Smarter service systems serve customers better and create more opportunities for win-win, or benefit-benefit, interactions that result in value co-creation for both service providers and customers (Spohrer and Maglio, 2010). This pushes the focus on service science as an emerging discipline of high relevance to both practice and academia that fosters a cross-disciplinary approach to the study of service systems (Chesbrough and Spohrer, 2006). Understanding, creating, managing, and delivering successful services calls for systematic studies of managerial, technical, and social issues (Johnston, 1999; Johnston, 2005).

One major issue in the context of service science is how service productivity can be measured and assessed (Grönonos and Ojasalo, 2004). The measurement and the improvement of productivity are currently well established in the manufacturing sector...
(Den Hartigh and Zegveld, 2011), where productivity is defined as a ratio of the outputs of a production unit to its inputs. In contrast, measuring productivity of a service is not yet as well-developed or well-established. The assessment of service productivity is not trivial, as services (in contrast to manufacturing) may, to a large extent, be understood as co-creating configurations of people, technology, as well as internal and external stakeholders connected by value propositions and shared information. As a consequence, no universal definition of service productivity exists (Hilke, 1989; Maleri and Frietzsche, 2008; Reichwald and Möslein, 1995).

The present paper reviews the academic literature on the problems and issues of measuring as well as understanding productivity in the field of services. The purpose of this literature review is to disclose the current state of research on service productivity, and to develop a research agenda for future research activities in this area. In order to measure and evaluate the findings of our review, we created a catalog of prevailing approaches already applied in both research and practice. Categories that serve as necessary preconditions for the formation of the concept of service productivity are further investigated. The aim of this catalog is to show and categorize the current state of research in the field of service productivity. More specifically, the goals of this study are:

- to identify, categorize, and critically display the existing approaches used for measuring and evaluating the productivity of services;
- to provide an overview of the most important dimensions which influence service productivity, as well as to estimate their respective importance for the service productivity;
- to form a concept corresponding to the level of knowledge of the present work for services productivity.

The reminder of this paper is organized as follows. Section 2 introduces related work that provides the foundation for our analytical framework and categories. We then present the framework of our literature reviews in section 3, describe the literature review procedure, and present our findings in section 4. Finally, we summarize our findings and discuss future research directions.

2. Theoretical Background and Related Work

Until recently, the concept of service productivity has been conceptually underdeveloped (Corsten, 2001). Simply transferring the traditional concept of productivity from manufacturing and producing material goods to services is bound to fail because of the immateriality and intangibility of services (Corsten, 2001). Immateriality refers to both the intangibility of the output, as well as the heterogeneity of services. Furthermore, the integration and involvement of customers in the value creation processes is central to services (Lasshoff, 2006). This means that the customer is inevitably a key factor for service providers, which must also somehow be integrated and accounted for in the concept of services productivity. This is in contrast to the classical concept of productivity, where the customer usually is not an integral part during value creation and the business processes often are a closed system (Grönroos and Ojasalo, 2004). This implies that the quality of both material products and business
processes can neither be perceived nor be influenced by the customer during the value creation process.

Managing a service is different from managing goods and materials (Rust and Chung, 2006). This is mostly due to the fundamental nature of a service – a service is immaterial and relies on integrating customers' inputs. Essentially, services management is concerned with managing interactions of humans (Chase and Dasu, 2001). In the context of service management, the following five characteristics are important aspects for assessing and measuring service productivity:

- **Managing demand**: How related are customer demand and service productivity (Grönroos and Ojasalo, 2004)? Because services cannot be produced make-to-stock, predicting customer demand might be essential for assessing service productivity.

- **Managing services**: How related is well-structuredness and degree of standardization of a service to service productivity (Lillrank, 2003)? Service providers need to be able to provide customers with transparency regarding service levels and service quality.

- **Gathering input and output**: How important are input and output measurement for service productivity? Especially the output of a service is hard to measure (Grönroos and Ojasalo, 2004).

- **Service management is important for service productivity**: Is service productivity unrelated to quality? Service science has not created a parsimonious, general and universal framework or concept for service productivity, yet. This is especially the case with regard to the relation of productivity and quality.

Regarding the relationship between service productivity and service quality, some researchers are of the opinion that productivity and quality are inseparable (Grönroos and Ojasalo, 2004; Gummesson, 1998), whilst others argue that productivity is independent from quality and can be used as an expression of qualitative yield that is detached from the quantitative result (Lasshof, 2006; Nachum, 1999). Nevertheless, all researchers agree that the customer determines the quality of a service (Lasshof, 2006; Grönroos and Ojasalo, 2004). To make the problem even more complicated, a large number of different factors exist that are supposed to have an impact on service productivity. Depending on the service process in focus, several different factors might be crucial to determine service productivity, ranging from the relationship between service providers and customers to service quality. Only a few of existing factors representing service productivity have so far been subjected to research and analysis.

Two main conceptualizations of service productivity exist throughout the literature, which are exemplified by the models of Grönroos and Ojasalo (2004) and Lasshof (2006) respectively. The concept of Grönroos and Ojasalo (2004) is based on the specific characteristics of the service process, where service productivity is regarded as a function of several factors of influence. The productivity of a service is determined by how much the service supplier maintains the cost efficiency of his internal structures (internal efficiency) and resources in the balance and in steering to the quality perceived by the customers (external efficiency) and to the capacity utilisation (capacity efficiency) (Grönroos and Ojasalo, 2004).
shows service productivity according to Grönroos and Ojasalo (2004) as a function of internal efficiency, external efficiency, and capacity efficiency. Grönroos and Ojasalo (2004) maintain that it is meaningless to develop a service productivity concept based on the management of internal efficiency and quantity of output only: “Because of the characteristics of services and the service process, the management of external efficiency of the output (how service quality is perceived) has to be an integral part of a service productivity concept” (Grönroos and Ojasalo 2004, p. 417). A purely quantitative approach is not performance-related for the evaluation of a service and does not describe how effective a service contribution is. This means that the quality of the results is the focus. Service productivity is understood mainly from the point of view of the service provider; however, customer satisfaction plays a central role. The better the perceived quality (as perceived by the customer – is the customer satisfied or not?) that is produced using a given amount of inputs (service provider’s inputs and customers’ inputs), the better the external efficiency is, resulting in improved service productivity (Grönroos and Ojasalo, 2004).

A contrast to this model is exemplary given by the conceptualization presented in the work of Lasshof (2006). The main difference is that service productivity is mainly seen not from the service provider’s but from the customer’s perspective. Following Lasshof (2006), service productivity from the client’s point of view is considered to be independent of the quality component and as a measure for assessing the efficiency used, so that the efficiency is referred to as a generic term for productivity.

Figure 2 illustrates the relationship between efficiency and productivity on the one hand, and, on the other hand, the relationship between productivity and the customer’s influence. Because the customer is a critical successful factor for the service...
provider, concurrent pursuing of the effectiveness and the efficiency must be guaranteed (Lasshof, 2006). Lasshof (2006) further suggests a consideration of productivity requires, at the same time, a focus on effectiveness in the form of customer satisfaction. An increase of both variables simultaneously leads to a competitive advantage. This concurrent pursuing expresses a concern with the efficiency, the effectiveness, and the productiveness as independent dimensions, which can be evaluated separately from each other (Lasshof, 2006).

Figure 2: Service Productivity Model according to Lasshof (2006).

Figure 3 compares these two different views of service productivity. The one conceptualization of service productivity considers productivity as a component of efficiency, without neglecting effectiveness in the form of customer satisfaction. Consequently, productivity is used as a quantitative expression for yield and is detached from the qualitative component result (Fig. 3b, Lasshof, 2006). On the other hand, the other perspective understands productivity as a single measure that integrates both effectiveness and efficiency in itself (Fig. 3a, Grönroos and Ojasalo, 2004). According to this view, productivity cannot be detached from the quality.

a) 

Fig. 3: Comparison of different Service Productivity Concepts
These two fundamentally different views in the existing body of knowledge serve us as a starting point with respect to the categorization of our literature review. We consider the distinction of the underlying model as a key category.

3. Framework for Analysis

Our review is guided by the question which specific performance factors of measurement and validation of service productivity can be identified throughout the whole added value process. Therefore we created an initial catalogue of existing approaches focusing on the measurement, validation, and controlling of service productivity. The review investigates the categories that serve as necessary preconditions for the formation of the concept of service productivity. The aim of this catalog is to show and categorize the current state of research in the field of service productivity. It consists of categories we identified as key factors with respect to service productivity in the two different existing service productivity models (Grönroos and Ojasalo, 2004; Lasshof, 2006).

The following constructs were thereby created: (1) service management, (2) customer satisfaction, and (3) quality. In the frame of service productivity, it is worth investigating to what extent the constructs service management, customer satisfaction, and quality can be separated from each other. Besides, only few researchers have investigated the nature and the extent of the relation between customer satisfaction and quality (Hennig-Thurau and Klee, 1997). For instance, Cronin et al. (2000) assumed that the subjective quality assessment can be equated with customer satisfaction. However, there are only few empirical studies addressing this issue and indicating that a direct relationship between these constructs is weak or even nonexistent (Hennig-Thurau and Klee, 1997).

Our literature study is primarily based on an investigation framework that we created for the classification of the selected literature. First, we examined the classification schemes of similar studies of the “state of the art” and adapted relevant categories for the present study (Urbach et al., 2009; Pahlke and Beck, 2010). The resulting framework comprises two categories: “data basis” and “data analysis”. The category “data basis” refers to the used empirical or non-empirical research methods that the examined papers applied to gather data (e. g., conceptual paper, case study, survey and so forth). If an empirical research method was used, the category “data analysis” gives the methods and tools that have been used to investigate the data (e. g., structural equation modeling, factor analysis and so forth). Afterwards we complemented this with our three main categories: “service management”, “customer satisfaction”, and “quality”. Fehler! Verweisquelle konnte nicht gefunden werden. gives an overview of the categories.
4. Literature Review

4.1. Literature search process

We conducted a literature review following the approach of Webster and Watson (2002). In the first step we selected a detailed list of journals from the VHB Jorqual2 ranking (stage S0). The list consisted of a total number of 666 journals. We then identified journals according to their specific field (stage S1): university management, logistics, manufacturing, marketing, service management and retail management, electronic commerce, as well as small and medium-sized companies. The remaining 174 journals were selected based on their rankings A+ and A (stage S2). The selection was also investigated in consideration of our research topic. Consequently, this restriction leads to eight relevant journals. Besides the eight relevant journals, we included three well-known German journals and two other additional journals from service science, rated as being in a category lower than A (stage S3). The following table gives as an overview all of the 13 identified sources that were analyzed for themes relevant articles.
Afterwards, we identified topic-related papers from the selected literature sources. An initial list of papers was generated using the key words “productivity” and/or “service” to search for titles, abstracts, and keywords via electronic database search. This way, we identified 971 papers containing the terms “productivity” or “services”. We then subjected these papers to a content-based analysis. We manually reviewed the papers of the initial list and selected only those papers that primarily deal with service productivity. The resulting 65 papers were afterwards classified according to the criteria of the catalogue (cf. Figure 4). Figure 5 gives an overview of publication outlets and publication timeline for these 65 papers.

### 4.2. Analysis and Results

We identified a total of 65 relevant articles for the in-depth analysis. These studies discuss the measurement, validation, and evaluation of service productivity. The inspected papers were classified according to the applied investigation framework as defined in Section 3.

The results for the “data basis” category are shown in Fehler! Verweisquelle konnte nicht gefunden werden. According to our research approach, we classified 52 papers as empirical and 13 papers as non-empirical papers. The 13 non-empirical papers are primarily based on systematic library research (11 papers) rather than on speculation (2 papers). The non-empirical papers were not categorized in more detail because the focus is on the consideration of empirical studies with regard to service productivity. Of the 52 empirical papers, 36 papers deal with surveys, 7 papers with interviews and 4 papers with case studies. Furthermore, 7 papers could not be as-
signed to any of these categories. These findings clearly show that survey research is the dominant research method in the identified papers. This might be because survey-based instruments are easier to distribute and because a under-developed concept such as service productivity might lend itself more to perception-based measures. Also, customer satisfaction and quality are not easily directly observable. Both qualitative, in-depth studies and other quantitative methods such as controlled experiments are under-represented. This might indicate a bias in the empirical studies.

In the next step, we analyzed and summarized the chosen methods for data analysis of the 52 empirical papers. Fehler! Verweisquelle konnte nicht gefunden werden. shows that within the category of data analysis, a total of 22 papers were assigned to structural test methods, 5 papers to discovering methods, and 12 papers to the category “both methods”. Moreover, 13 papers could be assigned to none of these categories. One may observe that test methods are more dominant than discovering methods. This complements the dominance of survey-based studies.

Fehler! Verweisquelle konnte nicht gefunden werden. summarizes the findings for our main categories “service management”, “customer satisfaction”, and “quality”. The in-depth analysis of the 52 empirical papers based on the essential categories shows that a high number of the empirical studies are focusing on either customer satisfaction (20), quality (17), or service management (9) as being a determinant factor for service productivity. Only two papers are mixed approaches.
The 20 papers of the first category see customer satisfaction as determining quality, which in turn determines service productivity (e.g., Bolton and Drew, 1991). In contrast, the 17 papers of the second category see quality separated from customer satisfaction (e.g., Chenet et al., 2000), where service productivity always includes a qualitative component.

Finally, we summarize the main classification results in Figure 9 with regard to topics in time. The papers reviewed were published between 1980 and 2010. A first increased interest in evaluating service productivity appears in the period between 1996 and 2000 (18 papers). A next spike can be observed between 2001 and 2005 (16 papers) and from 2006 up to 2010 (17 papers). This seems to indicate an increased interest in service productivity and pointing to the relevance of the area.

5. Discussion and Conclusion

This paper gave an overview of the existing literature with regards to measurement, validation, and controlling of service productivity. We highlighted which approaches of validation exist, which research designs are used in empirical studies, and what underlying models or theories are applied throughout the literature dealing with service productivity. According to our results, different performance factors can be assigned to different phases of a service process. Furthermore, productivity of services
is more than the relation between output and input. The concept of productivity must include the effectiveness in terms of customer satisfaction and quality. Service productivity therefore requires both measures of efficiency – how effectively input resources are transformed to outputs in the form of services – and measures of effectiveness – how well the quality of the service process is perceived – because a service process will not be productive if it is only efficient but not effective, or if it is effective but not efficient (Rutkauskas and Paulavičienė, 2005; Vuorinen et al., 1998).

Therefore we conceptualize service productivity as a function of efficiency, effectiveness, and demand. The focus is on the concepts of customer satisfaction and quality, where we also investigated to what extent both concepts can be separated from each other. Our results indicate that customer satisfaction and quality are not identical constructs. From this process of literature search and elimination, we found 52 empirical papers. Of these 17 articles identified quality as the decisive factor of service productivity, whereas 20 articles confirmed that customer satisfaction is the dominant factor. To sum up, our results show that service productivity and service quality should not be managed in a separate process. In services, quality and productivity are truly two sides of the same coin (Gummesson, 1998).

There were two limitations with respect to the analysis and data that may affect the accuracy of the results. The first limitation is that our study was based on a limited number of journals as a publication source. This might have also lead to missing a series of relevant studies. The second limitation is the objectivity of the selection process and in addition to this our search strings are not capable to identify all relevant articles.

The results of the present literature review reveal the need of valid measures and instruments for assessing and evaluating the service productivity. Additionally, it is necessary to build a framework for understanding and analyzing the service productivity, which allows companies to evaluate and measure service productivity.

The next step within our service productivity research program is to conduct an empirical study based on interviews with project managers from service management. On this basis, we would be able to proceed with explanatory as well as prescriptive research on service productivity.

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