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Quality versus productivity in service production systems: an organisational analysis

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The study presents an organisational analysis into the linked issues of service productivity and perceived service quality. The operations management literature postulates that a trade-off exists between service productivity and perceived service quality, an assertion which is supported by evidence from managerial experiences and other academic researches. However, is it possible to prevail over the trade-off between productivity and perceived quality? Further, what is the effect of the trade-off on company profitability? To respond to these questions, a retrospective longitudinal study is performed, based on analysis of data collected from 52 offices of a major European banking group over the years 2010–2011. A first analysis verifies the existence of the trade-off. A second then examines the suitability of the employee incentive system intended to overcome the trade-off. Finally, a multiple linear regression model is developed in order to verify whether service productivity and perceived service quality impact on company profitability, and to what extent.

Keywords: service production systems; service science management and engineering; service productivity; perceived service quality; employee incentive system

1. Introduction

Over recent years, the service sector has recorded impressive growth, to the extent that its contributions to global gross domestic product (GDP) now exceed those from other economic sectors (Ostrom et al. 2010). Parallel to this growth, there is an ongoing shift from a production-oriented perspective, focused on producing goods or on providing services, to a perspective in which the customer is seen as central. Many companies are shifting their product-oriented business models to a service-oriented direction. As a result, changes in organisational infrastructures, processes and measurement systems must be implemented, and there is a new necessity to ensure quality of service. Moreover, the competition between companies requires that they increase their technical efficiency (TE), while also improving service productivity (Costa 2012; Ostrom et al. 2010).

Service productivity and perceived service quality are both critical success factors for companies (Marinova, Ye, and Singh 2008). Thus in its operations, a service provider must achieve both the highest perceived service quality (HPSQ) and TE (Grönroos and Ojasalo 2004). A service provider characterised by both the HPSQ and TE is then an efficient service provider (ESP). However, for an ESP, an increase in productivity also causes a reduction in the quality perceived by customers. For example, an efficient medical centre (ESP) can improve its productivity only by diminishing the time devoted to each medical service; but, in this way, it can reduce the perception of medical quality on the part of its patients. In effect, assuming that TE exists and, therefore, that no technological, organisational and business model innovations can occur in the short run, an increase in medical centre productivity can only be gained by reducing the time devoted to its medicals (service units) and, consequently, by reducing customers' perceived quality (Calabrese 2012). An ESP is thus characterised by a trade-off between service productivity and perceived service quality, and indeed certain case studies based on managers' experiences and academic research appear to confirm the existence of this trade-off (Grönroos and Ojasalo 2004).

Achievement of improved perceived service quality would require an increase in service inputs and, therefore, a productivity reduction; similarly, improvement in productivity, obtained either through increased outputs or reduced inputs, could lead to either deterioration of service accuracy or higher execution times and, consequently, decrease the perceived service quality (i.e. Fornell, Rust, and Dekimpe 2010; Grönroos and Ojasalo 2004; Marinova, Ye, and Singh 2008).

The trade-off between service productivity and perceived service quality is one of the main strategic problem service companies are facing in the current era. In implementing strategies to improve companies' profitability, managers must

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first be aware that such a trade-off can occur, and of its potential consequences (Grönroos and Ojasalo 2004; Ostrom et al. 2010); therefore, the first aim of this paper is to empirically confirm the existence of the trade-off.

The most reliable studies concerning the trade-off originate from the fields of operations management and service management; however, though some authors have called for interdisciplinary approaches to service research (Ostrom et al. 2010), few studies actually connect the operations and service management topics (Calabrese and Scoglio 2012; Heineke and Davis 2007). The current study is at the intersection of several disciplines, merging contributions of service management, operations management and human resources (HR) management.

The service sector and the area of service research are currently undergoing many changes. Many service companies are becoming more unstructured and, as a result, a number of traditional operations management techniques are less effective in improving their performances (Lee et al. 2011). Accordingly, some of the leading management literature has called for investigation of the impact of incentive systems on employees' engagement in solving the companies' strategic problems (Chinga, Choia, and Huang 2011), including the problem of the trade-off between productivity and quality (e.g. Calabrese, Costa, and Menichini 2013; Floyd et al. 2011; Ostrom et al. 2010). Moreover, the establishment of global service providers and the growing number of geographically dispersed teams make it necessary to study the effectiveness of employee incentive systems in generating both TE and consistent levels of quality (Heineke and Davis 2007; Ostrom et al. 2010; Wang et al. 2011). Lastly, companies are increasingly adopting managerial incentives that reward achievement of productivity and quality targets (Ferreira, Marques, and Azevedo 2011; IBA report 2010). Given this overall context, the second aim of this research project is to investigate if an incentive system, by rewarding both productivity and quality targets, can overcome the trade-off or if the incentive effects are, instead, limited by the trade-off.

Finally, productivity increases may result in improvements in company profitability (Capece et al. 2008; Costa et al. 2012; Biondi et al. 2013), while at the same time high service quality increases the likelihood of customer loyalty, customer repurchase propensity and, again, company profitability (Yee, Yeung, and Cheng 2011). In other words, both customer-perceived quality and service productivity may impact on company profitability (e.g. Liua, Shahb, and Schroeder 2012; Ostrom et al. 2010; Yee, Yeung, and Cheng 2011). Therefore, the third aim of the current research is to investigate the links existing between service productivity, service perceived quality and company profitability. In particular, by developing and employing a statistical model, the study assesses the impact of both customer-perceived quality and service productivity on company profitability.

The paper is organised as follows. The next Section 2 provides a review of the relevant literature concerning the issues of service quality and service productivity, and specifically notes the main studies useful for developing the research hypotheses. The subsequent Section 3 describes the data collection and analytical methodologies for studying the relationships between service productivity, customer-perceived quality and company profitability. The Section 4 presents the results, and it is followed by a discussion of their practical implications, their limitations and by suggested future areas for research. The final Section 6 provides a summary of conclusions.

2. Literature review and development of hypotheses

2.1 Theoretical basis of the trade-off concept

Over the past three decades, there has been extensive research concerning perceived service quality, which can be understood as the customer's judgement of service superiority or excellence and 'the consumer's overall impression of the relative inferiority/superiority of an organisation and its services' (Bitner and Hubbert 1994). There has also been intense research on the topic of productivity, which can be defined as the ratio between outputs produced through a production process and the inputs used for producing such outputs. Such a definition of productivity has implications for the concept of TE, specifically the deduction that 'outputs increase, equal inputs' and 'inputs decrease, equal outputs' are both proxy indicators of TE improvement (Calabrese 2012). The definition of productivity relies on the postulation of constant quality of outputs (Grönroos and Ojasalo 2004): productivity improves only if the quality of the increased number of outputs, equal inputs, is invariant with respect to the output quality before an increase in productivity occurs. In the manufacturing field, both technological innovations and learning processes could cause such a condition and validate the assumption of constant quality. But ESPs face a clash between service productivity and perceived service quality, and are also driven by two conflicting strategic goals: efficient allocation of organisational resources (OR) on the one hand and 'valuable customer' satisfaction on the other hand (Anderson, Fornell, and Rust 1997; Fornell, Rust, and Dekimpe 2010). Assuming that no technological, organisational or business model innovations can occur – as is typical in the short run – then an increase in an ESP's productivity can only be gained by decreasing its orienta-

tion toward customers and, consequently, only by deteriorating customer-perceived quality (Calabrese 2012; Grönroos and Ojasalo 2004).

Once it has adopted a planned production capacity to optimally meet the market demand (capacity efficiency), the performance of an ESP will be permanently characterised by the described trade-off. Its performance is a function of the HPSQ and the highest service productivity (HSP), as shown in Equation (1):

$$\text{ESP Performance} = f(\text{HPSQ}; \text{HSP}) \quad (1)$$

where, in the short run, $\text{HPSQ} \times \text{HSP} = k$, and k is a constant. Indeed, the equation $\text{HPSQ} \times \text{HSP} = k$ indicates the inverse relationship between service quality (HPSQ) and service productivity (HSP); it is, for an ESP, the formal representation of the trade-off under study (Calabrese 2012).

This raises a question: what are the assets that can generate both HPSQ and HSP? In service production studies, two main clusters of assets are identified as responsible for both service quality and productivity: HR and OR. HR encompasses abilities, competences and motivations of both employees and customers (customers share service provision with front-line employees); OR refers to technical, organisational, technological and efficiency drivers, for example technical devices, organisational climate, information technologies, business process re-engineering or business models innovations (Calabrese 2012; Canzano and Grimaldi 2012; Yee, Yeung, and Cheng 2011). In reality, the performance of ESPs depends on both human resources performance (HRP*) and organisational resources performance (ORP*), where the asterisks (*) stand for a condition of compatibility with organisational and HR efficiency, thus Equation (1) becomes:

$$\text{ESP Performance} = f(\text{HPSQ}; \text{HSP}) = f(\text{HRP}^*; \text{ORP}^*) \quad (2)$$

where HPR* and the ORP* can be, respectively, measured by labour productivity (the ratio of total transactions to total number of employees) and by multifactor productivity (the ratio of total output to a subset of inputs, such as materials, capital, etc.) (Calabrese 2012).

Consistent with Equations (1) and (2), and placing 'perceived service quality' on the horizontal axis and 'service productivity' on the vertical axis, the different performances of service providers can be classified through application of the service performance matrix (SPM) indicated in Figure 1 (Calabrese 2012):

According to the matrix classification criteria, a failing service provider is inefficient and provides low service quality; in order to improve its performance, it has to act both on HR and OR. A high productivity service provider,

SERVICE PRODUCTIVITY	HIGH	C. <i>HIGH PRODUCTIVITY SERVICE PROVIDER</i> <i>(HUMAN RESOURCES PROBLEMS)</i>	D. <i>EFFICIENT SERVICE PROVIDER</i> <i>(HIGH EFFICIENCY & QUALITY)</i>
	LOW	A. <i>FAILING SERVICE PROVIDER</i> <i>(LOW EFFICIENCY & QUALITY)</i>	B. <i>HIGH QUALITY SERVICE PROVIDER</i> <i>(ORGANIZATIONAL PROBLEMS)</i>
		LOW	HIGH
		PERCEIVED SERVICE QUALITY	

Figure 1. SPM (Calabrese 2012).

even if characterised by high efficiency, will provide its customers with low perceived quality due to problems in HR management. On the other hand, a high quality service provider, even if inefficient, it is able to provide its customers a high service quality. Lastly, a true ESP is characterised by TE and provides its customers with the highest service quality.

According to Equations (1) and (2), once the existence of an ESP is considered to occur, that is once TE has been assumed, it is implicitly postulated that OR is fixed: to put it better, it is not possible to use OR to simultaneously increase both service productivity and service quality. Such an assumption, especially in the short run, is sufficiently realistic; therefore, a focus on HR and on leveraging their motivation is the only possible variable to consider for overcoming the trade-off between service productivity and perceived service quality, as presented in Equation (3):

$$\text{ESP Performance} = f(\text{HPSQ}; \text{HSP}) = f(\text{HRP}^*; \text{ORP}_{\text{cons}}^*) \quad (3)$$

Here, $\text{ORP}_{\text{cons}}^*$ is a constant parameter indicating the fixed OR performances of a company, with the subscript 'cons' indicating that unlike the ORP^* of Equation (2), $\text{ORP}_{\text{cons}}^*$ does not vary (Calabrese 2012).

The starting point of this study is the assumption that in modern-day organisations, HR are partially unemployed, that is they are not fully committed to organisational goals. The contribution of HR to the achievement of company targets is in fact limited by the duties required in their tasks and functions, or through the behaviours and performances elicited by incentives to which they are subject. In service companies, the 'partially unemployed' assumption is particularly critical because HR (especially front-line resources) are themselves responsible for producing the service outcomes (Calabrese 2012).

Given these considerations and in order to answer the first research question, the following hypothesis is formulated:

H₁: A trade-off between customer-perceived quality and service productivity can be detected for an efficient service provider.

2.2 Employee incentive systems and the productivity-quality trade-off

The solutions to the trade-off between productivity and perceived quality will of necessity be different for the various typologies of ESPs: routine services, characterised by low HR intensity, can mainly employ operations management techniques; services characterised by high HR intensity are instead more suitably managed according to incentive plans (Calabrese 2012). The current analysis examines a high-intensity HR service (banking company) and its incentive plan.

Both academicians and practitioners have called for research into new ways to overcome the productivity-quality trade-off (Calabrese 2012; Grönroos and Ojasalo 2004; Mittal et al. 2005). The solutions thus far presented by scholars include application of information and communications technologies (ICT) (Anderson, Fornell, and Rust 1997), continuous employee training (Grönroos and Ojasalo 2004) and incentives leveraging the intrinsic motivation of front-line employees (Calabrese 2012), to mention only a few.

The current study is focused on ESPs and therefore, like other researches in the field, it implicitly postulates that OR is fixed; HR is the only variable that can be considered for investigating the trade-off between perceived service quality and service productivity. Moreover, observing that service delivery and consumption are simultaneous, current HR research literature focuses on the agents of such service provision, meaning the front-line employees and the customers, and on their interaction during the service encounter (Chen 2009). Accordingly, current studies examine both the customers, by measuring their perceptions of quality, and the employees, by measuring their productivity (Yee, Yeung, and Cheng 2011).

An incentive system enables a company to engage employees in solving its strategic problems (Floyd et al. 2011) and create value for both customers and shareholders (Luo, Wieseke, and Homburg 2011). Moreover, an incentive system determines organisational justice and employee performance (Burney, Henle, and Widener 2009), and can link performance measurement systems and company profitability (Azofra, Prieto, and Santidrian 2003). As a consequence, it is worth investigating whether an employee incentive system, through rewarding the achievement of both TE and of service quality targets, is able to overcome the trade-off (Anderson, Fornell, and Rust 1997; Marinova, Ye, and Singh 2008). Thus, to respond to the second research question, the following hypotheses are formulated:

H₂: the service productivity of an ESP can be increased by an incentive system aimed to reward employees' productivity;

H₃: the perceived service quality of an ESP can be increased by an incentive system aimed to reward employees' commitment toward service quality targets;

H₄: for an ESP, the trade-off between customer-perceived quality and service productivity can be overcome by an incentive system aimed at rewarding both employees' productivity and their commitment toward the achievement of quality targets.

In the current literature, the understanding of the relationship between HR and service quality is quite clear and well-founded. However, the relationships between a typical HR subject (such as motivational effects of incentive systems) and a typical operations management topic (such as productivity) require further insight. Indeed, according to Boudreau et al. (2003), operations management and HR motivation are necessarily related fields, and it is worthwhile to take a contextual approach in considering HR incentives and operations management problems (e.g. productivity). Further, since employees respond differently to different incentives, and given the case of an incentive system that rewards both productivity and perceived service quality, it will be useful to study which incentives dominate the other.

2.3 Incentive systems and profitability

The last research area addressed, in the current study, concerns the question of the links that exist between service productivity, perceived service quality and company profitability.

Usually an increase in productivity will permit a company to produce its outputs more efficiently and thus improve its profitability. However for a service company, the trade-off between productivity and perceived quality limits the possibility of leveraging productivity to increase profitability (Anderson, Fornell, and Rust 1997; Fornell, Rust, and Dekimpe 2010). Indeed, because of the trade-off, cost savings achieved by productivity improvements are offset by revenue losses due to customer dissatisfaction: an increase in ESP productivity can, in the long run, lead to lowering both customer satisfaction (CS) and customer loyalty, and consequently company profitability (Anderson, Fornell, and Mazvancheryl 2004; Fornell, Rust, and Dekimpe 2010). At the same time, the delivery of high service quality, despite its negative impact on productivity, may be a factor in enabling profitability increase (Fornell, Rust, and Dekimpe 2010).

Following these leads, the final aim of the current study is to compare the relationships existing between customer-perceived quality, service productivity and company profitability. Thus, the following hypotheses are formulated:

H₅: an increase in service productivity allows increase in company profitability;

H₆: an increase in perceived service quality allows increase in company profitability.

3. Methodology

3.1 Research setting

This paper examines the trade-off between service productivity and quality in the context of an actual organisational setting, and investigates how the trade-off is either shaped by the organisational dynamics of the company or itself shapes these dynamics. The case selection, research design and data collection are approached through a specific research protocol that defines: the research aim (to investigate the trade-off between perceived service quality and productivity), the dimensions to measure (customer service and service productivity), the data to gather (CS index and front-line employee productivity), the measurement methods to employ (the American Customer Satisfaction Index (ACSI) for measuring CS; on-site service times and employee numbers for measuring service productivity), the informants to select (the CS office and HR office) and the time to consider (the two year period 2010–2011). Finally, a picture of the company hierarchy and of its organisational roles is known (Yin 2009).

To conduct the examinations of the defined topics, a retrospective longitudinal study is performed. The unit of analysis is the individual bank office. Accordingly, the study collects and analyses data from 52 bank offices of a major European banking group (approximately 6% of the total company offices) for the years 2010 and 2011. For each office, the study obtains longitudinal and monthly data about employee incentive system, service productivity and CS. In total, 179 employees and 255,702 commercial transactions are considered.

It is quite common to use operations management techniques for improving operational efficiency in the banking sector (Cook, Seiford, and Zhu 2004). Banking operations are characterised by a large number of routines and measurable processes, and consequently operations management techniques are an effective approach to employ for pursuing both cost cutting and efficiency improvement (Lee et al. 2011). However, since banking operations are characterised by several unstructured tasks, exclusive reliance on operations management techniques for achieving improved efficiency can actually be ineffective: productivity must necessarily be matched with perceived service quality (Calabrese 2012;

Roth and Menor 2003). Therefore, a joint analysis of perceived service quality, banking productivity, employee incentive systems and profitability is of undeniable interest.

3.2 Data collection

In order to test the hypotheses presented, the study collects and analyses data about CS, service productivity, employee incentives and company profitability. The banking group under examination classifies its bank offices into five groups, according to both their performance and employee numbers. Moreover, the bank offices are further divided into two distinct socio-economic and geographical areas (Northern Geographic Area, NGA; Southern Geographic Area, SGA). The current study examines the group identified as 'Cluster 5' offices (composed of 13 NGA and 16 SGA offices), which is the group with performance indicators closest to the average value of all bank. Since the number of offices belonging to this cluster is insufficient for robust statistical analysis, the bank offices belonging to the top performing group ('Cluster 1', characterised by the highest degree of both CS and service efficiency) are also selected (a further seven NGA and 16 SGA).

A high perceived service quality is the determinant of CS, therefore CS is a synthetic proxy of the perceived service quality construct (i.e. Chen 2009; Hu, Kandampully, and Juwaheer 2009; Kuo, Wu, and Deng 2009). Measures of CS are known generically as CS indexes (Cronin, Brady, and Hult 2000; Fornell, Rust, and Dekimpe 2010). In the banking company under study, data on CS are collected according to ACSI rules (Fornell et al. 1996). ACSI is based on a cause and effect model and employs partial satisfaction indexes (expectations, perceived quality and value) that compose an overall CS index, with scores ranging from 0 to 100. The current study relies on data on CS that are collected on a monthly basis for the years 2010 and 2011, for the 52 selected bank offices. The company gathers the data for each office by computer-assisted telephone interviews. In the bank's wage system, up to 30% of additional employee pay is linked to the CS score (0–100), which is one of the motives for collecting such data.

The indicators for measuring service productivity are typically indicators of partial productivity, with the most commonly used indicator being labour productivity (Grönroos and Ojasalo 2004). Labour productivity is the ratio between a measure of output (e.g. sales, gross value added, profit and gross output) and a measure of labour intensity (e.g. number of employees, man-day worked, man-hour worked). The labour productivity indicator is restrictive: it is based on the assumption that, for services, labour is the most important production factor and that other factors, such as capital and ICT, can be neglected (Higón et al. 2010). Such an assumption is sufficiently strong to be accepted without further correction and, to further overcome the potential restriction of labour productivity, an ESP as the subject of analysis is selected; thereby, the effects of both physical capital and ICT on productivity are indirectly considered. The selection of an ESP ensures that the effects determined by the incentive system are in fact not biased by company inefficiency. An ESP can be identified by its cost/income ratio (Grönroos and Ojasalo 2004), meaning the ratio between operating costs and gross financial margin. The biggest European banks have an average cost/income ratio of 61.9% (IBA 2010). The lower the value expressed by the cost/income ratio then the greater is the overall efficiency of a service provider. Thus in order to examine an efficient service company, the study deals with the banking group having the lowest cost/income ratio (approximately equal to 58%), meaning that it is also the most efficient European banking group.

Two types of productivity can be measured in banking: front-line productivity and commercial productivity. The current study collects and analyses data on front-line productivity. Specifically, labour productivity (front-line productivity) is assessed on the basis of monthly data on the number of transactions and number of front-line employees. The front-line productivity for each office is measured by the ratio outputs/inputs, according to Equation (4):

$$P_{i,t} = NT_{i,t}/NE_{i,t} \quad (4)$$

where, $P_{i,t}$ is the i branch productivity at time t ; $NT_{i,t}$ is the number of transactions of branch i at time t ; $NE_{i,t}$ is the number of front-line employees of branch i at time t . In the bank under examination, this measure of productivity determines up to 10% of total wages.

Finally, in the bank under examination, the profitability of each bank office is assessed monthly by the intermediation margin (defined as the sum of net fee and commission income and income from financial service activities, net interest income and other financial items). Therefore, in order to measure bank office profitability, the current study also gathers data concerning this indicator.

4. Results

The bank offices of Cluster 1 (including NGA and SGA) have an average number of transactions that is higher than that for the offices of Cluster 5 (+30 and +38% for NGA and SGA, respectively; Figure 2). The number of monthly transactions also shows a seasonal fluctuation for both clusters examined (Figure 2).

CS indexes show, for all the bank offices under study, a quite uniform customer-perceived quality ($74.62 < CS < 81.23$; Figure 3).

The productivity indexes increased over the two years under examination (2010–2011), due to both increase in transactions (+6%) and reduction in employees (−50%) (Figure 4; Table 1).

In order to test hypothesis H_1 , a correlation analysis is performed for all 52 branches. Correlation analysis permits verification of the type of relation that exists between CS and service productivity variables. It is performed by comparing the monthly rate of change of both CS and service productivity indicators. The correlation analysis shows that for 78% of the offices under study (40 branches; 43.47% in NGA and 56.52% in SGA), it is possible to confirm the existence of the trade-off between productivity and CS. The existence of the trade-off (H_1) is proved by a negative correlation between productivity and CS, with all r^* values:

$$-0.60 \leq r \leq -0.17$$

*Statistically significant, at least $p \leq 0.05$ level.

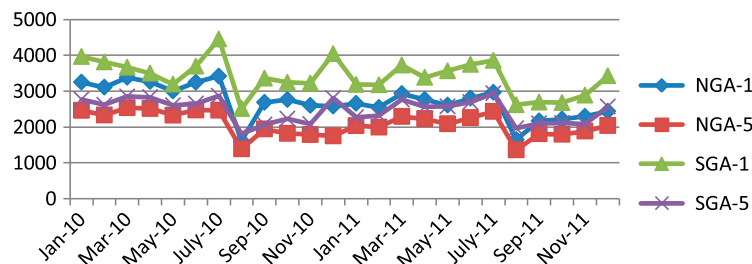


Figure 2. Number of transactions for all bank offices on 2010–2011.

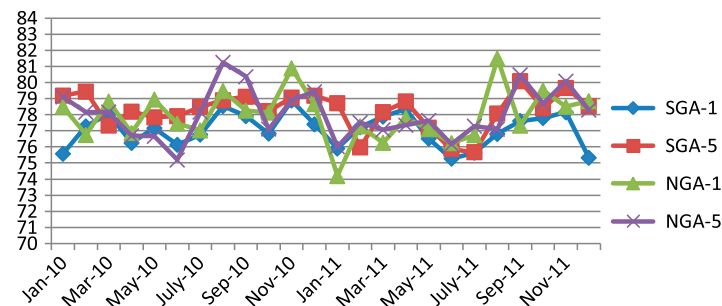


Figure 3. CS for all bank offices on 2010–2011.

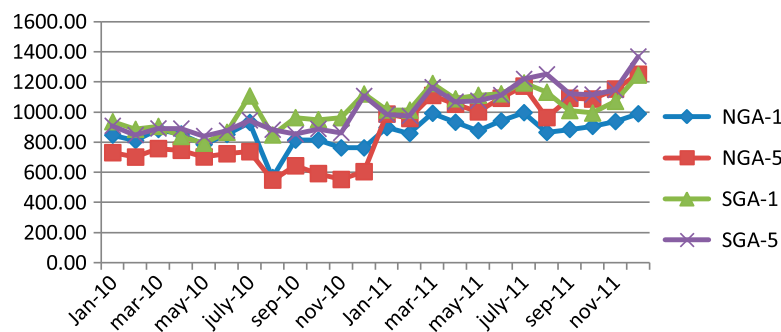


Figure 4. Service productivity for all bank offices on 2010–2011.

Table 1. Percentage of productivity variation on 2010–2011.

	NGA cluster 1 (%)	NGA cluster 5 (%)	SGA cluster 1 (%)	SGA cluster 5 (%)
Percentage variation of transactions in 2010–2011	–14	–4.9	–6.4	–8.9
Percentage variation of front-line employees in 2010–2011	–20	–31	–11	–18
Percentage variation of productivity in 2010–2011	14	61	18	26

The relationship between service productivity, CS and the incentive system of the bank (H_2 , H_3 and H_4) is investigated by means of a trend analysis based on the specific data and observations. Firstly, the incentive system of front-line employees rewards productivity (up to 10% of wages); moreover, in the course of the period under examination (2010–2011), the bank increased potential rewards for achievement of CS targets from a 10 to 30% share of the employee's total rewards. The trend analysis examines the effects of both of these productivity and CS incentive systems over the period. The analysis shows a productivity increase, thus supporting H_2 . In fact, the joint trend analysis of both overall and intragroup productivity shows a productivity increase (Table 1), due to employee reduction in both 2010 and 2011.

We might also expect to observe an increase in CS, due to the influence of the CS incentive system. However, the results provided by the trend analysis, summarised in Table 2, show a slight decrease of CS indexes for all the bank offices.

This decrease in CS seems to prove the ineffectiveness of the incentive system; however, the joint analysis of both CS and labour productivity demonstrates, again, the productivity-quality trade-off, in which an increase in service productivity causes a decrease in customer-perceived quality. In fact, the analysis at the overall and intragroup levels, shows a productivity increase (Table 1), due to employee reductions over the period examined, which would explain the slight decrease in CS (in this particular case, the company negotiated with unions and reduced employees through policies of early retirement and reduction of new hires). The hypothesis that it is possible to increase customers' perceived quality by means of employee incentive systems (H_3) can, thus, be partially supported. The trend analysis shows that the slight decrease in CS indexes (Table 2) occurs in conjunction with a simultaneous increase in labour productivity. The data show that although this service company is committed to increasing productivity, its two dimensional incentive system (rewarding both productivity and service quality) is able to raise productivity without significant reductions in CS. According to the analyses (Tables 1 and 2; Figures 3 and 4), it can be stated that the employee rewards aimed at achieving CS targets are not failing: the system permits adherence to the company CS standards while also retaining efficiency. Consequently, hypothesis H_3 , that the trade-off between customer-perceived quality and service productivity can be overcome by an appropriate incentive system, is partially supported.

Concerning the relationship between service productivity, customer-perceived quality and company profitability (H_5 and H_6), Equation (5) proposes a multiple linear regression model consistent with those seen in previous studies (Anderson, Fornell, and Rust 1997). Here, company profitability is the dependent variable while CS and service productivity are the independent variables, therefore:

$$PRO_{i,t} = \beta_0 + \beta_{CS} \times CS_{i,t} + \beta_P \times P_{i,t} + \varepsilon_{i,t} \quad (5)$$

where, $PRO_{i,t}$ is branch i profitability at time t ; $CS_{i,t}$ is branch i CS at time t ; $P_{i,t}$ is branch i productivity at time t ; β_0 is a variability factor introduced to model the variability not being expressed by the other two factors; β_{CS} is CS weight in

Table 2. Percentage of CS variation on 2010–2011.

CS dimensions	Average CS variation (52 offices, %)	NGA (%)	SGA (%)	NGA Cluster 1 (%)	NGA Cluster 5 (%)	SGA Cluster 1 (%)	SGA Cluster 5 (%)
Counter (synthetic value)	–1	–1	–1	–1	–1	–1	–1
Queue management	–1	–1	–1	0	–2	–1	–1
Counter efficiency	0	0	0	–1	1	1	0
Counter assistance	–1	–1	–1	–2	0	0	–1

Table 3. Results of multiple regression for NGA cluster 1.

Coefficients ^a												
Model	Unstandardised coefficients		Standardised coefficients	<i>t</i>	Sig.	95% confidence interval for B		Correlations			Collinearity statistics	
	β	Std. Error				Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	−1.134	2.417		−.469	.644	−6.176	3.908					
CS	−1.004	.876	−.139	−1.146	.265	−2.832	.823	−.580	−.248	−.11	.701	1.426
Productivity	1.161	.174	.808	6.677	.000	.798	1.523	.884	.831	.67	.701	1.426

^aDependent variable: pro, $R^2 = .795$.

Table 4. Results of multiple regression for NGA cluster 5.

Coefficients ^a												
Model	Unstandardised coefficients		Standardised coefficients	<i>t</i>	Sig.	95% confidence interval for B		Correlations			Collinearity statistics	
	β	Std. error				Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	−1.851	3.356		−.551	.587	−8.851	5.150					
CS	1.148	1.235	.158	.929	.364	−1.428	3.724	−.046	.203	.15	.918	1090
Productivity	.730	.175	.711	4.172	.000	.365	1.095	.666	.682	.68	.918	1090

^aDependent variable: pro, $R^2 = 0.466$.

Table 5. Results of multiple regression for SGA cluster 1.

Coefficients ^a												
Model	Unstandardised coefficients		Standardised coefficients	<i>t</i>	Sig.	95% confidence interval for B		Correlations			Collinearity statistics	
	β	Std. error				Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	−1.956	2.303		−.849	.406	−6.759	2.847					
CS	−.918	1.283	−.101	−.716	.482	−3.594	1.757	−.393	−.158	−.09	.855	1.169
Productivity	1.120	.206	.768	5.449	.000	.691	1.549	.807	.773	.71	.855	1.169

^aDependent variable: pro, $R^2 = 0.66$.

determining profitability; β_P is the weight of employee productivity in determining company profitability; and $\varepsilon_{i,t}$ is the error term due to both error measurements and to factors not considered. Employing this model and processing the data by SPSS[®] statistical software, the relationships of both CS and productivity with service profitability are analysed.

The results of the multiple regression analysis are presented in Tables 3–6. Analysing these tables, it is possible to observe that the factor of service productivity impacts positively on bank office profitability while, for all four branch typologies, that of customer-perceived quality shows negative impact on service profitability.

To sum up, when service companies consider restructuring programmes to achieve major improvements in efficiency, a well-designed incentive system is able to solve the trade-off and to bring the company within the ‘Possibility area’ for enhancement (Figure 5).

Table 6. Results of multiple regression for NGA cluster 5.

Coefficients ^a													
Model		Unstandardised coefficients		Standardised coefficients	t	Sig.	95% confidence interval for B		Correlations			Collinearity statistics	
		β	std. error	β			Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	−1.672	2.781		−.601	.554	−7.474	4.129					
	CS	−.721	1.372	−.093	−.525	.605	−3.582	2.141	−.094	−.117	−.09	1.000	1.000
	Productivity	.940	.277	.601	3.389	.003	.361	1.518	.601	.604	.60	1.000	1.000

^aDependent variable: pro, $R^2 = 0.37$.

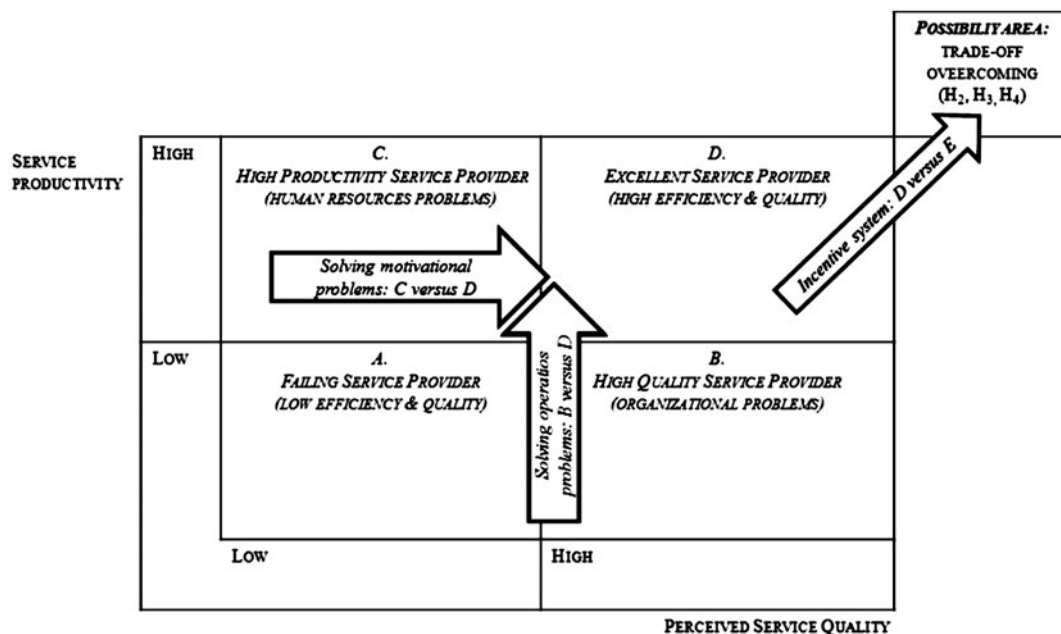


Figure 5. SPM: trade-off overcoming.

5. Discussions and limitations

The banking sector is among the most suitable to conduct the organisational investigation performed in this research: the majority of banking operations are routine and they allow the employment of quantitative operations management methods for improving operational efficiency (Cook, Seiford, and Zhu 2004). Furthermore, while previous operations management researches on banking have focused on cost-cutting and improvement in efficiency, scholars and practitioners of service management also stress the importance of achieving high levels of perceived quality (Calabrese and Scoglio 2012; Ostrom et al. 2010). Therefore, since many banking processes are both unstructured and customer centred, the question of how to efficiently produce high quality outputs is an important area for investigation of service management research.

Research into the trade-off between CS and productivity is grounded both in operations and service management literature; however, there are few studies that have attempted to interconnect these two research areas (e.g. Calabrese and Scoglio 2012; Grönroos and Ojasalo 2004; Heineke and Davis 2007). The current paper is placed at the intersection of the disciplines of interest and, as discussed below, blends contributions in operations management, service management and HR management.

Customer retention is determined, among other factors, by CS and by cost-effective services (Anderson, Fornell, and Rust 1997). Service quality and TE are accordingly two of the primary vectors for corporate strategy. Since companies, in many countries, are currently facing inadequate growth, mature markets and increased foreign competition, they are

more and more adopting employee incentive systems as a HR tool that is effective at synchronising operations management with service management in the achievement of their performance objectives (Calabrese 2012). Since service productivity is a combined effect of cost efficiency and perceived quality (Grönroos and Ojasalo 2004), productivity and service quality should not be managed as separate processes (Chase and Haynes 2000): an incentive system designed for rewarding both efficiency and quality ensures an appropriate, unified approach to service productivity. The productivity-quality trade-off is not an inescapable constraint, but can rather be mitigated (or amplified) by incentives awarded to employees. A compelling finding of this research is that an incentive system, aimed at rewarding CS, is able to bolster employee orientation to quality even under conditions of enhanced productivity. This finding supports previous studies indicating that, in existing organisations, HR are partially unemployed – meaning that HR are not fully exploited for the benefits they can provide on behalf of an organisation – and that their contribution in reaching company missions is limited to the duties required in their tasks and functions, or to behaviours and performances elicited through the incentives to which they are subject (Calabrese 2012).

The findings of this research indicate that ESPs can modulate the magnitude of the productivity-quality trade-off through an incentive system that, while maintaining profitability targets, assigns different weights to the two dimensions of the trade-off. To this end, it should be noted that a productivity increase leads promptly to growth in profitability, while in the short run a CS increase has no effects on company profitability: top managers, in order to increase short run profitability, must leverage productivity over CS. However, these same managers, in choosing between productivity and CS, must constantly think strategically: since CS is a success factor of higher order, the overly aggressive pursuit of employee productivity actually constitutes a red herring, and the management of the trade-off in fact requires always constant attention (Marinova, Ye, and Singh 2008).

A useful development from the current study would be to test the hypotheses through more comprehensive and analytical experimentation in further organisations. A first improvement in the research setting would be to consider important control variables such as gender, age, educational level, job position, average use of banking services and the kind of banking services used. Also, although ACSI provides general quality dimensions for service industries, a further research improvement would be to include specific quality dimensions for banking services employing customisable assessment methods (i.e. CSFs, SERVQUAL) (Calabrese and Scoglio 2012). Two kinds of productivities can be measured in banking: front-line productivity and commercial productivity. In our study, we consider front-line productivity; a further promising development would be to consider commercial productivity (instead of front line) and to link it to the perceived quality of specific services. Lastly, a final useful development from the current research would be to conduct comparative analysis of the differences that occur when a two-dimensional incentive system is in place versus when low/no incentive system is in place.

6. Conclusions

The trade-off between service productivity and perceived service quality is one of the primary strategic problems service companies are facing in the current era (Floyd et al. 2011; Grönroos and Ojasalo 2004). Consistent with the mainstream theory, which asserts a trade-off between service productivity and perceived service quality, this study provides empirical confirmation of the trade-off in the case of 78% of the bank offices under examination. Further, through a retrospective longitudinal analysis, based on collection of monthly data concerning CS and service productivity in 2010 and 2011, it also demonstrates that monetary incentives can overcome the productivity-quality trade-off. In the case observed, the company implements a productivity increase accompanied by an increase in employee rewards for achievement of CS targets, thus mitigating the trade-off between productivity and perceived quality. This result is consistent with other empirical evidences underlining the importance of employee commitment and motivation in prevailing over the trade-off (Calabrese 2012). Finally, the application of a multiple regression model demonstrates the existence of a statistically significant relationship between productivity and profitability while, at least in the short term, no direct impact of CS on profitability can be confirmed.

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