IT-ENABLED CUSTOMER EXPERIENCE MANAGEMENT: SYSTEMS AND STRATEGIES TO ENHANCE PERFORMANCE

A Dissertation

Submitted to the
Department of Economics and Management
at the **University of Pavia**, Italy

in fulfillment of the requirements for the degree of
Doctor of Philosophy in
Economics and Management of Technology,

by

Daniele Marchesani
Department of Economics and Management
University of Pavia
daniele.marchesani01@universitadipavia.it

Supervised by:

Professor Gabriele Piccoli

February 2017

A tutti coloro che mi sono stati affianco nella quotidianità di ogni giorno e mi hanno messo in condizione di arrivare a questo traguardo, dandomi sostegno e distrazione quando l'obiettivo era ancora lontano.

Acknowledgements

First of all, I would like to thank Carlo Fontana, Alex Wyden and the whole Hoxell team, which made at my disposal any data existing, thus offering me a remarkable base on which to research. They always supported me in understanding reality behind data and helped me solving all issues we encountered together during the route.

Then, I am grateful to the professor Piccoli and professor Lui, which continuously supported me in any step of my research, always indicating me the way to follow and giving my work all the quality and the rigor which I would never be able to reach by myself. This, never neglecting the human aspects and always sharing their culture of hard work, which represents the most important lesson I learnt from them.

Finally, I thanks the faculty of Economics which gave me the possibility to begin this journey, and particularly professor Rampa, which done his best to guide me and my colleagues among all the bureaucratic steps of the research.

Introduction

Service companies today face new challenges arising from the widespread of technologies, which affects their relationships with customers. This is particularly true in the hospitality industry, where the emergence of Online Travel Agencies, such as Booking.com, today erodes the share of reservations directly done by guests through traditional channels. The continuous advancement in technology and methods for collecting customers' feedback and the increase of data volumes available to both guests and hotels made difficult for managers to analyze and interpret this information (Ordenes et al., 2014) and translate them into strategies able to leverage on them to create value for customers.

In the literature, in last decades several studies deepened effects of information technology on customer service systems (CSS), discussing its benefits in terms of service quality and value generated for and by customers. Particularly, literature on CSS focused the attention of the how firms can increase overall value provided to customers through taking advantage of a set of diverse information systems, which are jointly able to enable and enable an enhanced service experience.

On this base, recent studies introduced the concept of customer experience management (CEM), a strategic process aimed to manage the entire experience perceived by guests while getting in touch with the company. The concept of CEM relies on the increasingly common practice in the industry during last decade to design the service to react to each customer interaction, with the aim to exceed his/her expectation, increase overall satisfaction provided and, finally, build a strong relationship with translates into loyalty and advocacy. Literature in information systems and service science started focusing on it relying on well-known concepts of customer engagement, service quality and service customization, to develop the concept of CEM, and finally identifying it as a strategic process aimed at managing the overall experience provided to customers, at each touch-point.

By merging the concepts of IT-enabled Customer Service Systems and Customer Experience Management, the present study therefore introduces the notion of IT-enabled CEM, representing the incorporation of CSS within CEM strategies. Particularly within the hospitality industry, service personalization, the ability to tailor products, services, and the transactional environment to individual customers' needs, represents the most significant strategic mean of brand differentiation, so that firms are increasingly using IT and CSS to provide customized offers tailored to individuals' needs.

IT-enabled CEM strategies thus represent a trend topic for both academia and industry, particularly in the field of information systems and hospitality industry. Among all functionalities offered through CEM personalization is going to constitute the core functionality offered by service companies to reach this goal.

During last decades researchers adopted multiple field glasses to examine and review the knowledge of the role of information technology for customer satisfaction within service context, such as of service quality, management of their expectations, seek of satisfaction and loyalty, service designing, service recovery, self-service technologies and customer value co-production. They did so by focusing on each aspect of the overall knowledge in the field, but lacking in reviewing literature from different disciplines to link them together. Given the cross-disciplinary nature of the field, I therefore believe that it is now relevant to theorize the nomological network of constructs that explains how information systems affects customer satisfaction through service.

Besides, while past studies examined the joint effects of perceived system quality, information quality and service quality on customer value, a study to explore their effects on user satisfaction with IT-enabled service systems has been identified as a need for research, as well as the investigation of extents and types of effects of IT-enabled interventions on customer satisfaction, productivity improvement and innovation in service firms.

Finally, while most of the high quality studies on CEM are currently conceptual, there is a call for further empirical investigations of the relevance of CEM strategies in the hospitality industry, and on how IT can be used for service personalization as part of such strategy.

Based on these literature gaps, the present dissertation contains three works. At first, a conceptual study called "*IT Enabled Customer Service Systems: An Interdisciplinary Review and Integrated Framework"* offers a complete review of the studies which in several disciplines described elements and relationships among component of a customer service system. In this first article, 1030 articles have been reviewed, to finally coding and classifying 192 articles. The literature describes functionalities and the effect of technical and social attributes of customer service systems, and how each element translates into service quality provided and customer value perceived. The work therefore offers an interdisciplinary literature review, synthetizing knowledge into a unique paradigm describing how different elements of an information system for customer management can co-generate value for both internal and external actors of the service chain. This works replies to the quest for more review articles in IS field and represents an essential first step and foundation for undertaking a research project.

Based on this theoretical framework, and contextualizing it within the hospitality industry, the present work moves forward showing empirical evidence of how IT-enabled CSS can be incorporated within CEM strategies to enhance value generated, reporting evidence of relationships described during first chapter. Particularly, usage of a CEM work system called Hoxell, specifically developed for top-medium range hotels, is investigated. The system adopted is designed to be focused on customers' needs, levering on IT to offer a set of functions aimed to cover the whole ensemble of aspects of the overall stay experience. It focuses on enabling a deep interaction between guests and hotels' staff at

multiple touch-points of the customer experience, providing support to hoteliers through dedicated functions ranging from housekeeping daily tasks to business trend reporting and internal communications among personnel. Among all, distinctive element of Hoxell is service personalization, which is enabled to guests by offering a web interface making easier to elicit their preferences over a wide set of options.

Therefore, by investigating effects of Hoxell CEM work system, empirical evidence of the role of IT-enabled CSS within CEM strategies is here addressed by reporting two articles.

The first one, entitled "*Information Systems for Customer Experience Management: effects of usage and users' perceptions on satisfaction*", investigates how different patterns of usage, and different beliefs and attitudes of system users, can translate into different benefits perceived by both customers and employees. Relying on theories of Information System Success Model and Task-Technology Fit, it advances how top/medium management plays a critical role in advocating its usage, by contributing to the development of a cultural customer-centric mindset. The work explains how an IT-enabled CEM strategy can sustain firms' competitiveness, levering on new technological innovations to generate value and loyalty among guests. It does so by conducting two surveys among service personnel and collecting external data from Google Analytics and TripAdvisor related to system usage and gusts' perceptions. In this way the study provides empirical evidence of the impact of social and technical attributes of a CSS on the ability of system functionality to enhance service quality provided, and finally improve customers' value and satisfaction.

The second empirical article, entitled "*The Impact of IT-enabled Customer Experience Management on Service Perceptions and Performance*", then places the focus on individuals and firm level outcomes, making three contributions to the literature. First, it demonstrates a positive role played by signifiers in service system design. Second, it show how service personalization through CEM systems translates into enhanced service quality and comfort perceived by guests. Finally, it reports a firm-level service improvement in terms of revenue share-shift through disintermediation. Based on these results, the study also shows empirical evidence of how different service delivery channels for service personalization can enhance the provision of service quality to guests through the usage of system functionalities, and how this translates into enhanced service quality and satisfaction delivered to guests. It thus offers support of the theoretical model depicted in chapter one, and specifically on service personalization as a functionality provided through IT-enabled CSS.

The three articles, reflecting sequential researches conducted between 2014 and 2016, describe what elements characterize a customer service system enabled by IT solutions and how they can generate customer value and information system strategic success through service personalization and system usage. The work does so by offering theoretical as well as empirical contributions to both literature and industry, through the proposition of a multi-disciplinary review of elements influencing

the overall customer experience provided to guests, and the evidence of how firms can deal with today challenges in hospitality industry by levering on IT-enabled service personalization.

TABLE OF CONTENTS

CHAPTER 1

IT Enabled Customer Service Systems: An Interdisciplinary Review and Integrated Framework

Introduction

The service industry accounts for 69% of the world GDP in 2014 (World Bank, n.a.), and its sustained growth leads to an ever-increasing set of research questions addressed by scholars (Ostrom et al., 2010). However, surprisingly there is still lack of a strong conceptual foundation (Chesbrough and Spohrer, 2006), with several theories from different disciplines without a joint model able to collect them all. Besides, with the huge development of theoretical contributions in information systems field during last two decades, "the individual [IS] scientist is overloaded with scientific information and can no longer keep up with and assimilate all the information being produced that is related to his primary specialty" (Garwey and Griffith, 1971).

Service is defined as "the application of competence and knowledge to create value between providers and receivers" (Spohrer et al., 2007, p. 72), as well as through actions, processes and performance, with the final objective to create value for other entities (Vargo and Lusch, 2004). A s*ervice system* is then defined as "a value-creation configuration comprising the exchange parties (providers and customers) and their networks that indirectly influence value co-creation" (Jaakkala and Alexander, 2014, p.249; based on Edvardsson et al., 2011; Vargo et al., 2008). Service systems therefore requires socio-technical interdependent entities (Bardhan et al., 2010), characterizing people, processes, organization and technology involved in the service provision. Their value derives from their interaction together with shared information, language, laws, measures and models (Spohrer et al. 2007). Moreover, among elements of a service system, supplementary functionalities represent integral part of the customer value proposition that the firm offers to its own customers (Shostack, 1977; Woodruff, 1977). They contribute to a growing portion of *customer value*, i.e. the customer's "overall assessment of the utility of a product based on perceptions of what is received and what is given" (Zeithaml, 1988, p.14).

The relevance of the topic is also highlighted by the spread of the *service-dominant logic* in which service provision, rather than tangible products, represents the fundamental unit of economic exchange

(Vargo and Lusch, 2004). Following this paradigm services marketing focuses on interactions in *services encounters* rather than on goods (Bardhan et al., 2010), concentrating on the interplay between the customer and the service provider (Bitner et al., 1990).

As shown earlier, service in its nature can be a highly inter-disciplinary construct. Consequently, researchers adopt multiple investigative lenses such as service quality, management of customer expectations, customer satisfaction and loyalty, service design and servicescapes, service encounters, service recovery, self-service technologies and customer co-production of services (Bitner and Brown, 2006). By conducting a multi-disciplinary literature review, I provide a description of each element constituting IT-enabled Customer Service Systems (CSS), reporting relationships among them.

More specifically, in this study I focus on the customer service and service experience literature. Customer service plays a crucial role in differentiating companies positioned in a highly competitive environment (Sheehan, 2006) especially if they are able to exploit the opportunities derived by technology adoption. More specifically, supplementary services built around the core product, rather than from the quality of the product alone, increasingly drive differentiation (El Sawy and Bowles, 1997). On this base, service provision affects customers' perceptions at touch-points, finally resulting in enhanced service experience delivered.

Firms are continuously seeking to maximize economic value during every interaction no matter when, where, or how the transaction takes place (Watson et al., 2005). Companies able to harvest technologic innovations can provide high quality and personalized service at reasonable costs reaching the above-discussed goal (Rust and Miu, 2006). More generally, the co-evolution of customer service and information technology (IT) constantly challenges traditional views of customers as receivers of a service, creating opportunities to push the frontier of customer service (Chesbrough and Spohrer, 2006) and emphasizes the relevance of the service-dominant logic (Vargo and Lusch, 2004; Day, 2004; Deighton and Naravandas, 2004; Gummesson, 2004). Technologies enabled service processes improvement, developed new markets opportunities and enhanced competitiveness by transforming physical products into pure-service elements (Kannan et al., 2009), and by accelerating the shift from a goods-based to a service-based economy (Rust and Kannan, 2006).

The growth of service-oriented IT innovations offers opportunities for IS researchers to investigate behavioral, economic, technical and organizational issues related to the fulfillment of customer needs

(Bardhan et al., 2010). In this context, the service literature introduced the *service-oriented paradigm*, viewing customers as co-developers and recipients of services. The goal of service science is "to provide a foundation to advance the ability to design, refine and scale service systems for practical business and social purposes" (Bardhan et al., 2010, p.21). Among service systems, IT-enabled ones leverage technology to get benefits in terms of (1) achievement of consistent results to support the organization in the creation of better quality outputs, and of (2) holding customers engaged throughout their relationship, at a lower costs and with higher quality (Bardhan et al., 2010).

Given the nature of the study and its focus, a cross-disciplinary literature review is necessary in order to theorize the nomological network of constructs that explains how information systems affects customer satisfaction through service. The information systems discipline brings a distinct integrative research perspective to the area proposing itself as one of the reference discipline for customer service research (Baskerville and Myers, 2002).

The present work builds upon Lui and Piccoli (2009) to map current knowledge in this research area and in offering a theoretical framework able to integrate the cross-disciplinary studies on customer service systems available in information systems, marketing, human resources management, service research, organizational research and operations management literature.

Despite the complexity of assembling a review in an interdisciplinary field (Webster and Watson, 2002); the present work seeks to extend beyond the focus on self-service and Web-based service systems that has characterized much of the work in information systems and marketing, in order to provide a general model of IT-enabled customer service. The work focuses on supplementary services because they affect both product and service organizations. It is therefore possible to produce a general theory of IT-enabled customer service as it pertains to supplementary services.

In the next section, I describe the proposed theoretical framework together with its key concepts. Then I provide more detailed propositions built on literature review. The paper concludes with suggestions and implications for future research.

Customer Service Experience

Different disciplines explored the concept of "service". Early attempts to define "service" tended to be illustrative (Judd, 1964) and focused on the defining attributes of service: intangible, dynamic,

subjective, ephemeral, perishable, and inseparable from production and consumption (Judd, 1964; Shostack, 1977; Zeithaml et al., 1985). Recently, scholars of the service-dominant logic state that services are "the application of specialized competencies (knowledge and skills) through deeds, processes and performances for the benefits of another entity or the entity itself" (Vargo and Lusch, 2004, p.2). When this entity corresponds to customers, I talk about customer service. These definitions touch upon different aspects of service: intangibility, customers' input, knowledge and information-intensity, and a positive change in condition. However, due to the intangibility and the inextricable relationship between goods and services, it is more appropriate to apply specific classification schemes of services related to different research purposes, instead of using a single definition that try to encompass the full diversity of service (Cook et al., 1999).

Customer services are here classified in two categories: services "for the customer" and services "to the customer" (Wemmerlöv, 1990), where the first category represents core benefits delivered to customer and the second consists in the set of services that surround the core product offer. In this paper, I narrow the analysis to the second category that includes supplementary service, then described in more detail in the next section. An *experience* entails aggregate, cumulative customer perceptions created during interactions with a product or service (Pullman and Gross, 2004) within a context. This context is defined by its functional clues – focused on ease of use and usefulness -, mechanical clues – generated by things, such as product variety – and humanic clues – generated by people and their behaviors, such as knowledge, responsiveness, courtesy and ease of access of service representatives - (Berry et al., 2006). Experience cues can occur at any moment, both pre- or post-purchase (Carbone and Haeckel, 1994; Hoffman and Turley, 2002), therefore experiences will develop over time (Gupta and Vajic, 2000; Pine and Gilmore; 1998), arising before and ending after the moment of service delivery.

Service literature identified the concept of *service experience* (SE), defining it as "the outcomes of interactions between organizations, related systems/processes, service employees and customers" (Bitner et al., 1997, p.193). SE relies on the related concepts of *service encounter* - "a direct dyadic interaction between customer-contact employees and customers" (Bitner, 1990, p.7) – and *service-scape* – "the built environment within which service encounters occur" (Bitner, 2000, p.7), which is perceived by both customers and employees and cause cognitive responses affecting their social interactions (Zomerdijk and Voss, 2011). Similarly, SE is also related to *user experience* that, from the

computer science literature, focuses on the functional dimension of interfaces between users (customers) and content (service) delivered via IT-enabled solutions (Fleming and Koman, 1998; Garrett, 2010). Users can interact via traditional as well as via virtual means such as telephone and websites, but always having an experience (Berry et al., 2006). Therefore, SE is affected by several actors, moments, contexts and means with which users get in touch (Tombs and McColl-Kennedy, 2003; Tseng, Qinhai and Su, 1999). For this reason, SE is similarly defined also in terms of "many-to-many engagement" (Chandler and Lusch, 2014, p.8), with more actors continually aligning their connections and dispositions.

The goal of experience design will then be "to create a compelling experience that can be measured and analyzed on the basis of flow experience" (Ding et al., 2010).

Supplementary Services

Customer-Service Life Cycle (CSLC) theorizes the role of technology as an enabler of superior customer service identifying four major phases that describe customers-firm, namely requirement, acquisition, ownership and retirement (Piccoli et al., 2001). *Supplementary services* represent the identifiable intangible activities that the organization enacts in order to enable a customer to benefit from the firm's product or core service. Besides, supplementary services enable the fulfillment of needs emerging at each of the different stages of the CSLC (Ives and Learmonth, 1984, Piccoli et al., 2001). Therefore, it is relevant to discuss how at each stage of the CLSC different supplementary services can be provided by firms to enhance final service quality perceived by customers. Table 1 provides a description of each kind of supplementary services (Lovelock, 1994), referring them to the CSLC phase they typically occur in. It is important to note that each supplementary service can be offered in multiple phases of the customer service life cycle, and how it is required for a firm to offer at least one supplementary activity for each stage of the CSLC.

IT-Enabled Customer Service Systems

The advent of IT deeply affected customer service (Ives and Learmonth, 1984; Keen, 1991; Piccoli et al., 2001), and its impact will more likely intensify rather than diminish in the future (DeVries, 2008). *IT-enabled customer service systems* are the collection of information systems that mediate and enable the performance of supplementary services to increase overall customer value by improving customer service's *interaction value*, the overall utility realized by customers using the service system (Piccoli et

al., 2004). Thus, a firm can foster efficiency (e.g., speeding check-out for the online retailer by storing customer information) and effectiveness (e.g., providing customers with precise and timely product information) in service delivery by deploying IT-enabled customer service systems.

Table 1: Descriptions and examples of supplementary services (adapted from Lovelock, 1994)

Supplementary Services	Description	Examples of services that fulfill needs at different phases of CSLC
Information Provision	The services that provide information about the company (e.g., location and service hours) and the product offerings (e.g., usage instruction).	*Requirement phase*: answering frequently asked questions *Acquisition phase*: tracking delivery status *Ownership phase*: informing product upgrade information *Retirement phase*: informing disposal options
Consultation	The services that engage customers in a conversation to probe the customers' requirements and provide them with a tailored solution.	*Requirement phase*: suggesting complimentary products *Acquisition phase*: customizing products and services to the individual *Ownership phase*: responding to customer feedback
Order Taking	The services that involve application acceptance to memberships or subscriptions, order entry, and reservation of seats, tables, hotel rooms, etc.	*Acquisition phase*: confirming order placement *Retirement phase*: canceling or modifying order
Hospitality	The services that involve considering the customer's needs and taking care of the customer.	*Acquisition phase*: providing entertainment while waiting for products or services to be delivered
Caretaking	The services that involve looking after the customer's possessions.	*Ownership phase*: providing child care
Exceptions	The services that fall outside the normal service delivery, including special requests, problem-solving, handling compliments, and compensating customers for performance failure.	*Requirement phase*: handling special diet requests in advance of service delivery *Ownership phase*: providing warranties against product malfunction *Retirement phase*: providing refunds or compensation against product malfunction
Billing	The services that inform the customer of a change of product/service in a timely and accurate manner.	*Acquisition phase*: providing invoices of the transaction
Payment	The services that involve collecting the charges from the customers.	*Acquisition phase*: handling alternative methods of payment, such as cash, check, and credit cards.

Those components are, in a competitive context, necessary (Bonfield, 1996) to sustain performance. *IT service delivery* represents the "joint application of specialized competences (knowledge and skills in the business and IT domains) by users and their IT units" (Sun et al., 2012, p.1195). It takes advantage

of technical knowledge of IT units and business knowledge of users (Ko et al., 2005) and effectively integrates them (Mitchell, 2006).

IT-related service represents the strategic management of the creation and delivery of service in which technology plays a substantial role, serving as facilitator and enabler of value co-creation. It weakens the common belief that there is a trade-off between customer satisfaction and productivity improvement for service, since IT-enabled service systems are able to reduce costs of customer satisfaction (Huang and Rust, 2013). Such trade-off, indeed, usually exists in the literature (Frei, 2006), which contrasts concepts of *efficiency* – how fast a service provider can fulfill customer needs, e.g. saving time – and *personalization* – whether a service provider understands the needs of each individual customer, and then addresses individuals' needs in a context (Liang et al., 2007; Riecken, 2000). Customers require at the same time efficient (Bateson, 1985; Berry et al., 2002; Meuter et al., 2000), and personalized service (Awad and Krishnan, 2006; Liao et al., 2005; Solomon et al., 1985; Tam and Ho, 2005, 2006). Nowadays, IT plays a critical role in enabling their achievement.

Organizations develop CSS functionalities in order to provide higher service quality. *Service quality* is defined as the consumers' judgment of overall excellence or superiority of services provided and includes five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988). These dimensions mainly apply to the face-to-face service context (Buttle, 1996; Yang et al., 2004; Svensson, 2006). Therefore, researchers refined the service quality dimensions in the technology-enabled service context: efficiency, system availability, fulfillment, privacy, compensation, and contact (Parasuraman et al., 2005). Finally, the *quality-value-loyalty chain* (Parasuraman and Grewal, 2000) suggests that service quality, being harder to imitate than product quality and price, affects the customers' perceived benefits, a key component of customer value. In summary, supplementary services enable companies to differentiate their offer from competitors and to sustain loyalty by enhancing customer value (Jones and Sasser, 1995).

Any IT-enabled solution is characterized by three main properties: *information intensive* - to face the challenge of increasing amount of available data -, *customer centric* - to cost-efficiently generate value for customers - and *multi-disciplinary* – by involving research areas of marketing, operation management, organization and computer science, as well as both practitioners and academics (Huang and Rust, 2013). These characteristics represent the primary requisites of an IT-enabled CSS to be

successful.

Previous studies in the information systems research field focused more on the effects of IT on firm performance outcomes, such as sales, internal operations, market share (Melvill et al., 2004) than in examining the link between IT and customer service performance (Ray et al., 2005). Moreover, literature identifies five trends requiring actions to deep the knowledge of business value arising from IT adoption (IBM Systems Journal, 2005): (1) agility and flexibility in adaption to changes in strategies and operational processes (Sambamurthy et al., 2003); (2) understanding of service orientation effects in IT investments; (3) identification of new economics of services co-creation (Vargo and Lusch, 2004); (4) building awareness of how technology platforms are affected by technological evolutions (Eisenmann, 2006; Fichman, 2004); and (5) learning of how to manage risks arising from IT-enabled solutions, particularly operational ones arising from organizations, IT and business processes.

Service strategies can leverage on IT solutions to reach two different objectives: service transformation and service renovation. To achieve the first, IT shapes services in order to make them more *tangible* by sustaining perceptions of service delivered to customers, *separable* by using online solutions and *homogenous* by automating processes of customization and by renovating services characteristics (Huang and Rust, 2013). On the other side, to achieve the objective of service renovation, IT offers the possibility to make services *less tangible* by making physical goods manageable trough services thus increasing their value , *less separable* by involving customers for co-creation and *more personalized* by providing a better fit to individual needs based on relevant and timely customer data (Huang and Rust, 2013). Therefore, IT-related services must be considered as information-intensive, since information are consumed by both firms and customers, to build profitable relationships and to create benefits.

Costs decreasing and revenue increasing are usually considered benefits of service performance improvement through IT (Huang and Rust, 2013), resulting from creation of customer value and building long-term customer equity (defined later).

For a service organization, performance is measured by customer satisfaction and quality of service delivered (Montoya et al., 2014). Previous studies showed the importance of IT-enabled relational

value and of revenue growth, in order to enhance performance-increasing firms' differentiation and competitiveness (Mithas et al., 2013; Rai et al., 2012). IT investments are therefore able to influence intangible elements, such as customer experience, satisfaction and responsiveness (Rai et al., 1997). Business value literature links IT to concepts of productivity, profitability and market value, as well as reporting cases of a strong relationship between IT investments and customer satisfaction (e.g. Mithas et al., 2006).

As technology continues to evolve, there are opportunities for innovative uses of IT to reshape supplementary services that raise the bar on service differentiation and operations, as well as after-sales services (Karimi et al., 2001). Most organizations, indeed, depend today on information services that are facilitated by information technology (Peppard, 2003), to improve efficiency, cost-effectiveness or quality of operations to customers. Companies who are able to implement a service-oriented architecture (SOA) through IT usually reduce costs of integrations of projects and maintenance by at least 30 percent (Vollmer et al., 2004). SOA addresses the fusion of business processes through development of independent interfaces from organizational processes to technology services (Lee, 2005). Therefore, studies in this area are often inter-disciplinary and cross-disciplinary, bringing concepts from areas of service environment (Goul and Corral, 2007), service management (Cox and Kreger, 2005) and service level agreement (Benaroch et al., 2010).

The information systems literature has a growing interest in customer service and service systems in general (Ives and Learmonth, 1984, El Sawy and Bowles, 1997; Ray et al., 2005; Brohman et al., 2003; Orman, 2007). However, much of previous works focuses on Web-based customer services (Dillon and Reif, 2004; Piccoli et al., 2004; Yeung and Lu, 2004; Lightner, 2004; Liang et al., 2006; Levenburg and Klein, 2006; Cenfetelli et al., 2008). Differently, my literature reviews represent an attempt to deepen this perspective of coordinated and integrative multichannel customer service strategy, identifying many technology-mediated and technology-enabled avenues for customer service available to modern organizations (Rayport and Jaworski, 2004; Arnowitz and Dykstra-Erickson, 2007).

Theoretical Framework

IT-enabled customer service systems represent the collection of information systems an organization implements to fulfill customer needs. As *socio-technical systems*, customer service systems encompass both a *technical* and a *social* subsystem (Bostrom and Heinen, 1977). Since, customer needs vary throughout the customer service life cycle, service provision typically occurs through a collection of

systems. A simple hotel stay, for example, requires a reservation system when a traveler seeks the room, a property management system when the traveler checks in, and a guest accounting system to credit loyalty points.

Service provision is enabled by the functionalities of customer service systems, where functionalities are considered as the set of capabilities associated with electronic devices - hardware and software - that enable the "deeds, processes and performances" that service providers or customers (in the case of self-service) use to transition from pre-service (need condition) to after-service (need-fulfilled condition) (Lui and Piccoli, 2009).

Objective of the sections below is therefore to describe social and technical sub-system composing an IT-enabled CSS, together with the functionalities if provides to generate customer value.

Before that, following section discusses methodology used to perform the extensive literature review designed to surface the state of the art of customer service systems. Based on this literature review, the work provides a conceptual model and a set of research propositions.

Methodology

In last decade, several articles in IS area proposed different definitions of literature review, highlighting how it differs based on its objective, perspective, audience and coverage. Accordingly, IS scholars proposed several recommendations and different methodologies, borrowing concepts and practices from diverse research areas historically more consolidated in the literature review process. Therefore, in this section I will describe the methodology adopted, yet describing how the present study locates itself also within different research approaches. As remarked by Webster and Watson (2002), nowadays most of the IS scholars are not familiar with structure and format of reviews, thus lacking in rigour. Therefore, by describing all methodology aspects, the present section wants to ensure rigour, as characterized by both validity and reliability of findings (vom Brocke et al., 2009). Specifically, the former is provided by the description of sources and keywords adopted, period and articles considered, and the application of extensive searches to enhance review coverage (Cooper, 1988; Levy and Ellis 2006; Torraco, 2005; Webster and Watson, 2002; vom Brocke et al., 2009), while the latter is ensure by the description of steps taken so that any future scholar would have the possibility to replicate and

extend the study (vom Brocke et al., 2009; Paré et al., 2015), thus providing updated picture of literature field, so that review would not become out-of-vogue after a certain time (Pervan, 1998).

I followed the methodology proposed by Webster and Watson (2002) in order to conduct an extensive literature review through querying of scholarly databases using keywords and backward and forward searches based on relevant articles found. On this regard, backward search represents the review of references of the articles yielded from the keyword search, while forward search refers to the review of additional sources which cited the articles found (vom Brocke et al., 2009). The choice to use keyword search is related to the old literature existing in the field, so that this strategy could allow to cover 30 years of studies without risking to exclude old contributions, even if with a high cost of search in terms of coverage. Besides, considering the interdisciplinary field, accessing to a wide range of sources results appropriate (Smith et al., 2011).

As suggested in the literature (Bandara et al., 2011; Wolfswinkel et al., 2013), in order to facilitate the creation of the review I used a qualitative research software. Particularly, I performed a keyword search on Web of Science using a combination of the following keywords: customer service systems, customer service, information technology, information systems, functionality, self-service technology, service quality, service convenience, customer value. The list of words is based on personal knowledge of the research field after first preliminary study of leading articles in the field, as well as by following approach already adopted on the study on which the present work relies on (Lui and Piccoli, 2009), which depicts an overall picture of key issues and discussions in the field. The inclusion of this specific set of keywords enables to exclude contributions covering topics not necessarily relevant (Rowley and Slack, 2009).

The choice to adopt Web of Science for conducting the search is due to its wide indexing of articles from different research fields, particularly in social and service sciences involved in this study, its flexibility in excluding areas not related to the study and the possibility to easily change the metric to sort and filter results. This allowed conducting a research based on many forms of scholarly achievement. Besides, in comparison with alternative online tools like PubMed, Web of Science allows tracking citations and it is generally considered more accurate than Google Scholar for citations analysis, allowing it to be considered as a standard by many official organizations (Michigan State University, n.a.). Additionally, Web of Science does not search within full articles text, thus providing more accurate results.

Particularly, primary sources have been identified among leading journals in the research field, namely: Decision Sciences, Information Systems Research, Management Science, MIS Quarterly and Journal of Information Systems. All the chosen journals well represent the five cores constituting the identity of IS discipline (Sidorova et al., 2008). After identifying most important constructs and conducting a first review through backward and forward search, review have been extended to journals belonging to related ones from diverse disciplines, particularly: Journal of Marketing, Journal of Service Research, Journal of the Academy of Marketing Science, Marketing Science and Organization Science. Considering the high number of articles in the field, selecting only "A-level" journals can be considered appropriate (Rowe, 2014). This process allows including only high-quality papers at first, define a specific applicability area, and successively extend boundaries of the research to enhance coverage. Additionally, the choice to start focusing on articles published only in scholarly journals is highly recommended for identification of main theoretical constructs (Rowley and Slack, 2009). At first, I sorted found results based on relevance with the keywords used, and then again based on citations. In this way both most relevant and most influential works in the literature have been identified since the early stages of the search process.

After the inclusion of these journals, a first stage of search resulted in a total of 975 articles. I examined titles and abstracts to evaluate whether articles were relevant to IT-enabled Customer Service Systems field. Papers were included if abstract were related at least one of the following topics: customer service systems; customer information system; service quality; service delivery channel; personalization; customer service value; customer service satisfaction; system quality; customer service value co-creation; human asset; social capital; customer experience behavior; information quality. After reviewing the abstracts, articles were then selected for in-depth review and finally coded in the concept matrices (Salipante et al., 1982; Webster and Watson, 2002), thus classifying via typology form (Bailey, 1994; Smith, 2002). Particularly, codification process was performed investigating whether the contribution of each study was related to any of the units of analysis reported in the matrixes of tables 2-3-5-7-8-9. During coding process, also articles discussing constructs strictly connected to the constructs classified have been included, thus comprising i.e. concepts of customization under the construct of personalization, IT technical characteristics together with system quality, IT assets as an important aspect to reach system pervasiveness, as well as strategy alignment within structure fit construct. Therefore, while research of literature contributions started from keywords and most-adopted

terms used, analysis of cited articles allowed to extend results over the mere seek of specific words, connecting studies to related concepts from different disciplines.

I based the choice of inclusion in the review on the discussion of any of the functionalities of the customer service systems, as well as any of the other social or technical components of customer service system. To extend the scope of review beyond the original search result, I investigated main backward-cited and forward-cited works for potential interest (Webster and Watson, 2002). This process surfaced 55 new papers for which I reviewed title and abstract. The resulting set of papers read and fully categorized was 192. I coded these papers in the concept matrices to develop an integrated framework for IT-enabled Customer Service Systems. Goodfellow (1998) pointed out that there is no clear answer to the question of when to stop reading and when to start writing. I interrupted the backward and forward search approach when I found that saturation was reached and studies found already fit well the purpose of the review, so that any additional article would have a diminishing marginal return (Baker, 2000).

I adopted the referencing approach based on Harvard system so that every time I refer to a source, reader would clearly be informed about authors and date of publications.

I performed the review between January and October 2016, finding evidence of highest number of contributions during first decade of 2000 years, with only little contributions on 90s and 2010s years. This confirms how wide discussion of the topics related to customer service systems has been in these two decades. Reference found are thus primarily comprised in such period, while after 2012 literature started moving to new and similar concepts, often focusing on specific attributes and elements of the CSS driven by the fast technology developments. Additional studies after 2012 mainly constitute empirical works focused on specification of IT-enabled CSS within precise business contexts, such as hotel and hospitality industry, and gave birth to new notions such as of Customer Experience Management (CEM), strictly related to the present review but without adding elements to the core framework.

Cooper (1988), by proposing a taxonomy of literature reviews, highlighted six constituent characteristics which describe any methodology adopted by scholars while performing a literature review. He identified research (1) focus - outcomes, methods, theories or applications, (2) goal – integration, criticism or central issues, (3) perspective – neutral or espousal, (4) coverage – exhaustive,

selective, representative or pivotal, (5) organization – historical, conceptual or methodological and (6) audience – specialized or general scholars, practitioners or general public. On this approach, I define the present review as (1) focused on research findings, methods and theories, by identifying main theoretical contribution in the field, as well as empirical applications of such constructs and corresponding methods adopted by scholars. As indeed point out by Cooper and Hedges (2009), "most literature reviews center on one or more of four areas: the findings of individual primary studies; the methods to carry out research; theories meant to explain the same or related phenomena" (p. 4). The (2) goal to accomplish through the review is to integrate past literature related to the above mentioned topics, particularly by formulating general statements that characterize different specific instances and bridging the gap between concepts through a common linguistic and theoretical framework. Levering on Hart (1988), the goal is thus to synthetize and gain a new perspective, identify relationships between ideas and practices, establish the context of the topic, enhance and collect the vocabulary and finally to identify main methodologies and research techniques adopted. This to finally reach the goal to understand IT-enabled CSS elements as a whole, they overall characteristics and dynamics and their relationships from the parts to the whole, and reciprocally (Rowe, 2014). It is carried out through the lenses of a (3) neutral perspective, to attempt to present all arguments being as similar as possible to the original argument discussed in primary articles. The review wants to provide an (4) exhaustive coverage, hoping to be comprehensive in identification of all major studies, through an (5) conceptual organization, so that all works related to same abstracts and ideas appear together, furtherly grouped based on methodology applied. By doing so, the works systematically compares which concepts and underlying dimensions or categories are part of which paper in a given set of concepts belonging to a framework (Rowe, 2014). It then results that the work can be considered as a *theory building review*, since it integrates theories within a conceptual framework, building a theory upon the knowledge of precedent research by interpretation and re-categorizing and coding of accumulated documents (Rowe, 2014). Finally, due to its potential usefulness for a large crowd, the present literature is addressed to an (6) audience of general researchers in the field of customer service and information system.

With the purpose to integrate past researches in comprehensive and neutral way, the work represents a *research synthesis* in the area (Cooper and Hedges, 2009). Besides, the work focuses on breadth of coverage of the literature rather than the depth of coverage (Rumrill et al., 2009; Arksey and O'Malley, 2005), aims to be as comprehensive as possible and draws on existing conceptual and empirical studies to provide a context for identifying, describing and transforming into a higher order of theoretical

structure and various concepts, constructs or relationships. It does so by developing a conceptual framework grounded on both theoretical and empirical literature (Webster and Watson, 2002). Based on this, the conducted review can be classified as *scoping* and *theoretical review* (Paré et al., 2015), as well as framework article (Schwarz et al., 2007).

Finally, for completeness purpose, methodology of each work has been reported, to allow a comparison of theoretical and empirical contributions given to literature, so that to identify how each research area has been discussed in the literature.

Literature Review

The literature review is organized around the theoretical framework that models the impact of customer needs and customer service systems on customer value. Figure 1 depicts the nomological network that emerges from the literature review and the research propositions describing the relationships among the constructs.

Functionalities of Customer Service Systems

Functionalities offered by customers service systems represent the basic service content (Tan et al., 2013; Cenfetelli et al., 2008), so that *service content quality* constitutes the range and sophistication of functions available to assist customers in completing their transactions (Tan et al., 2013;). It reflects the assortment of functions made available by delivery channels, and it is "instrumental in shaping positive customer reactions by ensuring constant support throughout the entire transactional process" (Tan et al., 2013, p.83), especially with regard of service experience personalization (Cenfetelli et al., 2008). Service content functions are necessary since they assist customers in sensing their transactional requirements (Cenfetelli et al., 2008; Ives and Learnmonth, 1984; Ives and Mason, 1990; Lightner, 2004).

The set of functionalities therefore defines the *analytical ability*, namely "the extent to which IT applications provide analytical tools to support decision making in the context of customer interactions" (Roberts and Grover, 2012, p.241).

This sections reports interdisciplinary researches that, to date, map the functionalities offered by customer service systems (Table 2). After classification, 31 works have been identified in the literature as discussing any of the functionalities of a CSS. Among them, in 71% of the studies are either theoretical or based on survey. In addition, personalization results the most discussed topic, with 17 works (51%) discussing it, followed by sensing needs (29%) and information provision (23%). This confirms the crucial role of personalization as a leading functionality in any IT-enabled Customer Service System.

Keeping the focus on customer needs, I organize data by macro-functionality, rather than by specific tools a firm may have implemented. I thus report an analysis of the body of previous studies, as well as propositions for further works.

Sensing Customers' Needs

Globalization, evolution of competitive environment, and changing in technological solutions, nowadays create a context where firms strive to sustain competitive advantage (D'Aveni, 1994; McAfee and Brynjolfsson, 2008). As a consequence, organizations must be able to quickly sense and respond to opportunities (Sambamurthy et al., 2003).

The service-dominant logic introduced in the marketing literature has as one of its main tenets the centrality of knowledge and information about customer needs (Vargo and Lusch, 2004). With completed information about its customers (Brohman et al., 2003), a firm can anticipate customers' needs and requests, thus being responsive to them (Vargo and Lusch 2004; Sisodia, 1992). This functionality also enables the business to react to customers' needs and requests promptly and effectively, providing the customer with the knowledge necessary to make a purchase (Dillon and Reif, 2004) and consuming the products and services (i.e., the third stage of the customer service life cycle). Finally, firms can handle complaints effectively because they are able predict customer needs (i.e., the last stage of the customer service life cycle), which in turn enhances service quality (Erevelles et al., 2003). For example, Four Seasons Hotel in Los Angeles has a customer database that stores which guests are allergic to down and need foam pillows or the kimonos and special tea sets it keeps on hand for its Japanese clients (Berkley and Gupta, 1994). As a result, service quality is enhanced because the organization can be proactive and responsive to customer needs.

Table 2: Concept matrix: Functionalities provided by customer service systems

#		Methodology	Sensing the Needs	Provide Information	Personalization	Transaction and Payment	Problem-Solving	Relationship Building
1	Berkley and Gupta, 1994	Theory	x	x				
2	Dev and Ellis, 1991	Theory			x			
3	Dillon and Reif, 2004	Survey	x	x				
4	Erevelles et al., 2003	Survey	x			x	x	
5	Furey, 1991	Theory		x				
6	Gwinner et al., 1998	Interview/survey						x
7	Hennig-Thurau et al., 2002	Survey						x
8	Huang and Rust, 2013	Theory			x			
9	Kim et al., 2006	Theory			x			
10	Liang et al., 2006	Experimentation			x			
11	Lightner, 2004	Analyze Websites		x	x	x	x	
12	Lin, 2007	Survey		x				
13	Meister et al., 2002	Theory			x			
14	Mithas et al., 2016	Multi-method	x		x			
15	Negash et al., 2003	Survey		x				
16	Piccoli et al., 2004	Multi-method			x			x
17	Ribbink et al., 2004	Survey			x			
18	Roberts and Grover, 2012	Survey	x					
19	Rowley and Slack, 2003	Theory		x	x	x		x
20	Rust and Huang, 2012	Field research			x			
21	Sambamurthy et al., 2003	Theory	x					
22	Semeijn et al., 2005	Survey			x			
23	Shim et al., 2002	Multi-method	x					
24	Sisodia, 1992	Theory	x		x			
25	Sivabrovornvatana et al., 2005	Interview				x		
26	Srinivasan et al., 2002	Survey			x			
27	Surjadjaja et al., 2003	Theory			x			
28	Tan and Cenfetelli, 2013	Survey	x		x	x		
29	Tseng and Hwang, 2007	Experimentation					x	
30	Yen and Gwinner, 2003	Survey						x
31	Zhang et al., 2011	Lab Experiment			x			

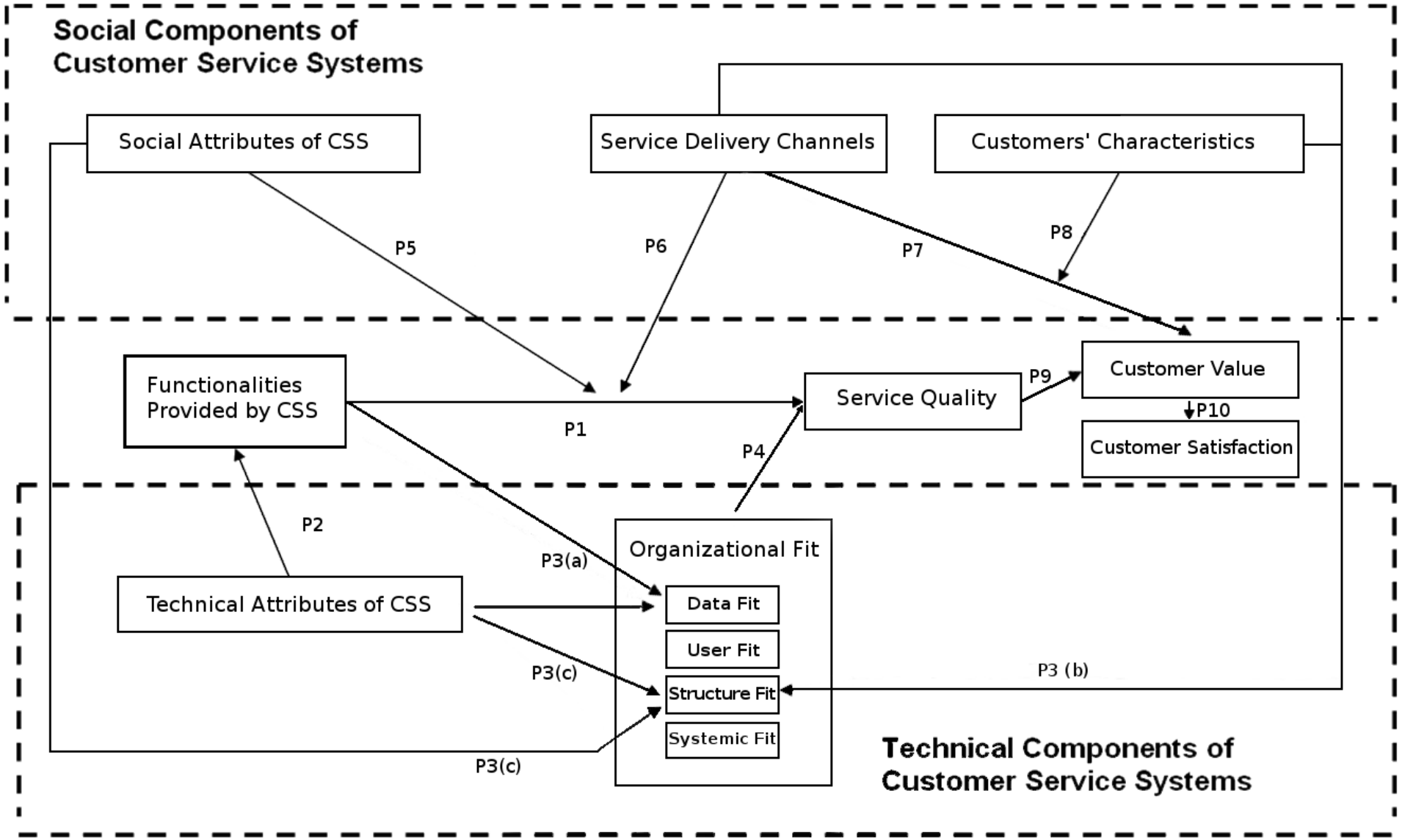

Figure 1: Detailed Conceptual Model

Providing Information

The literature shows that organizations can provide quality services and generate customer value by disseminating valuable information to their customers (Furey, 1991). Extending the notion of Information Systems Success (DeLone and McLean 1992), information quality provided by companies affects customer satisfaction increasing service quality. Providing reliable information about the product of interest and alternative products facilitates customers' information acquisition and processing that enable customers to locate and select products and services that satisfy their needs (Alba et al., 1997), thus improving service quality. This functionality is even more important when customers purchase products and services over the Internet where they rely on mediated representation of the products and services to acquire information (Dillon and Reif, 2004). The ability to inform customers about the relevant product alternatives in a timely and accurate fashion will increase user satisfaction (Negash et al., 2003; Lin, 2007). Therefore, businesses that provide more-reliable information about their products achieve higher service quality.

Personalization

Personalization is the ability to tailor products, services, and the transactional environment to individual customers, increases the probability that customers will find something they wish to buy (Srinivasan et al., 2002). It is also defined as "the design, management, and delivery of content and business processes to users, based on known, observed and predictive information" (Zhang et al., 2011, p.861; based on Meister et al., 2002).

In this situation, service providers not only offer product information, but also exchange information with the customers, so that personalization represents an IT-based service strategy able to link firm capabilities to *customer knowledge* (Zhang et al., 2011). This is defined as "the necessary knowledge that enables a consumer to perform product-related tasks successfully" (Zhang et al., 2011, p.863; based on Alba and Hutchin, 1987).

The customer provides some personal, so customer service systems make recommendations or provide additional information to facilitate the customer's decision-making. A personalized product offering shows that the company wants to provide individualized service attention enhancing service quality.

Personalization of service is important because customers desire it, they prefer answers to their own specific requests instead of standard products, and since trust, service quality, satisfaction with, attitude and loyalty and finally adoption of an IS are positively sustained by it (Xu et al., 2014).

Moreover, this notion of "personalization" of the transactional environment is expected to emerge with the evolution of Web sites when businesses desire to create within-industry differentiation and barriers to imitation (Piccoli et al., 2004). This is especially important in the information age when customers are overloaded with information. Therefore, the ability to deliver personalized information that accurately fits customer needs enhance customer satisfaction (Liang et al., 2006). Customers are able to complete the transaction more efficiently when firms provide customized environment (e.g., the Website) and, as a result, they tend to perceive higher service quality.

Personalization and customization represent the basic consequence of an IT-enabled customer-centric strategy. Customized services offerings can increase the knowledge of customers' preferences, thus reducing the costs of service provision for both the firm, by tailoring activities to better meet needs, and for guests, by lowering search costs, risks costs and transaction costs (Bardhan et al., 2010), at the cost to bring challenges in process standardization. Customization enabled by IT advancement allows firms to offer personalization at a significantly low cost, so that small and individual segments can become economically feasible to reach with customized strategies (Huang and Rust, 2013), and that over time it can lead to customer satisfaction (Rust and Huang, 2012). Customization can call for individualized services design and delivery, whilst efficient production involves process standardization and less variability, therefore these objectives are conflicting. For this reason, by levering on both marketing and IS researches, literature needs to deepen ways to mass customize service design and delivery, and thus taking market opportunities while ensuring high level of service quality (Bardhan et al., 2010).

Facilitating Transactions and Payments

Technology allows service providers to access customers' data in a faster and more accurate way, as well as to increase the customers' confidence of the transaction process reliability, reduce waiting time, enhance the responsiveness of the service providers to customers' feedback, ensure the accuracy of the payment process, and give customers individual attention (Sivabrovornvatana et al., 2005). Flexibility with respect to payment options also enhances customer services by providing more means for customers to finish a transaction (Erevelles et al., 2003). For example, kiosks that sell rail tickets at railway stations provide an alternative method to purchase a rail ticket (Rowley and Slack, 2003). As a result, customers that have more access to the resources needed to complete their transaction and payments and experience less cognitive frustration. Therefore, customer service systems that provide different means for customers to process their transaction and payment tend to receive a higher service quality evaluation.

Problem Solving

The functionality that solves customers' problems includes detecting errors, correcting errors and minimizing the disruption of consumption of the core products and services (Erevelles et al., 2003). One way to solve customers' problems is to have the answers for a set of frequently asked questions that can solve customers' problems, saving time over providing solutions through emails or online requests. This approach limits service delays because emails and online requests rely on manpower to reply the customers' requests. Having this functionality can significantly reduce the service cost and provide more efficient and effective customer service (Tseng and Hwang, 2007), thus enhancing service quality.

Relationship Building

Relational benefits (Gwinner et al., 1998), namely the value (i.e., confidence benefits, social benefits, and special treatment benefits) created through the interpersonal interaction between customer and service providers, are the antecedents of customer satisfaction with the service (Hennig-Thurau et al., 2002; Yen and Gwinner, 2003). Customer service systems can provide functionalities that draw people into a community or a relationship with a retailer. These functionalities, such as special offers, service enhancements, and other value-added activities, can enhance relationships with and commitment to a retailer (Rowley, 2000). By collecting individual information about customers and their previous interactions with the businesses can indeed establish an on-going relationship with their customers, provide products and services more appropriate for the customers and, as a result, enhance customer value (Piccoli et al., 2004).

Clearly, different functionalities impact different aspects of service quality. For example, the relationship-building functionality will have a positive impact on the empathy aspect of the service quality, while transaction and payment functionality have a positive impact on reliability. In general, here is proposed that there is a positive relationship between functionalities provided by customer service systems and service quality. When a customer service system provides a new functionality that fulfills the emerging customers' need or enhances the performance of the existing functionality, the service quality will increase.

Proposition 1: Functionalities provided by customer service systems will enhance service quality.

Technical Attributes of Customer Service Systems

In this section, a list of technical attributes of customer service systems is reported from reviewing the interdisciplinary research, and is presented in Table 3. These technical components of the customer service systems enable and/or constrain the functionalities provided by customer service systems to fulfill customer needs. As summarized in Table 4, data quality is the most described attribute in the literature with 61% of works discussing it. This highlights how data quality is the oldest discussed elements of interest for CSS scholars, with works edited on 80s and 90s, and how networks, privacy and infrastructures grabbed the attention of scholars only in the last 15 years. In addition, theoretical works represent 48% of the literature reviewed, followed by survey studies in 30%.

System Quality

IT infrastructure represents the arrangement of shared technical components and IT services: platforms, networks and telecommunications, data and software applications (Duncan, 1995). The "tool view" sees IT as a "driver" and "magnifier" that organizations can leverage on to increase performance, to process information and adapt social relations in an efficient way (Roberts and Grover, 2012; Orlikowski and Iacono, 2001), so that literature identifies three possible benefits of IT adoption for customer sensing: improved direction of communication, enhanced intensity and richness of interaction and better defined size and scope of audience (Sawhney et al., 2005).

IT supports organization in both forward and outward looking, focusing attention on customers and refining current view concentrated on technology-based service systems for internal efficiency. To do reach this objective and support service quality, value equity, personalization and customization, customer satisfaction and loyalty, IT-enabled CSS needs to leverage on a solid IT-infrastructure, defined by its system quality.

The important dimensions of *system quality* in the customer service context include reliability, responsiveness, flexibility and dynamicity, accessibility and pervasiveness. *Reliability* and *responsiveness* refer to the need of customer service system to provide any kind of functionalities of the system, ensuring that the right kind of functionality will be delivered to the right customers through the right channel in a timely manner (Choi et al., 2006). *System* reliability positively impacts service quality through the effects of effective decision making and efficient task completion (Bharati and Berg, 2003). *Flexibility* enables a firm to implement IT applications to support customer service more efficiently and effectively (Ray et al., 2005), facilitating rapid development and implementation of IT applications that enhance customer service process

performance by allowing the organization to respond swiftly to customer needs and provide functionalities to take advantage of emerging opportunities.

Table 3: Concept matrix: Attributes of technical components of customer service systems

#		Methodology	System Quality	System Pervasiveness	Data Quality	Communication Networks	Security and Privacy
1	Bancel-Charensol, 1999	Theory			x	x	
2	Beatty et al., 1996	Observation/interview			x		
3	Berkley and Gupta, 1994	Theory	x				
4	Berkley and Gupta, 1995	Theory			x		x
5	Berry and Gresham, 1986	Theory			x		
6	Berry and Parasuraman, 1997	Theory			x		
7	Bharati and Berg, 2003	Survey	x				
8	Bhatt and Troutt, 2005	Survey			x		
9	Birnbaum, 1997	Theory		x			
10	Brohman et al., 2003	Theory			x		
11	Brown, 1997	Theory				x	
12	Cai and Jun, 2003	Survey				x	
13	Choi et al., 2006	Survey	x				
14	Cooper et al., 2000	Single case study			x		
15	Dawes and Rowley, 1998	Multiple case studies				x	
16	Day, 1994	Theory			x	x	
17	De Búrca et al., 2006	Survey			x		
18	Delene and Lyth, 1989	Theory			x		
19	Dev and Ellis, 1991	Theory			x		
20	Domegan, 1996	Survey			x		
21	Douglas et al., 2003	Survey					x
22	Ellram et al., 1999	Survey				x	
23	Fassnacht and Koese, 2006	Empirical			x		
24	Gilmore and Pine, 1997	Theory			x		
25	Glynn and Brannick, 1998	Archival			x		
26	Größler et al., 2008	Theory	x				
27	Gummerus et al., 2004	Survey					x
28	Harper, 1988	Theory			x		
29	Hull and Cox, 1994	Interview			x		
30	Ives and Mason, 1990	Theory			x	x	
31	Ives and Vitale, 1988	Single case study			x		
32	Janda et al., 2002	Survey					x
33	Jarvenpaa and Ives, 1994	Theory	x		x	x	
34	Kim and Lim, 2001	Empirical			x		x
35	Kim et al., 2004	Empirical	x		x		x
36	Kourouthanassis et al., 2007	Field Experiment		x			
37	Lambert, 1992	Theory			x		

38	Manrodt and Davis, 1992	Theory			**x**		
39	Moriarty and Swartz, 1989	Theory			**x**		
40	Nguyen et al., 2007	Theory			**x**		
41	Niketic and Mules, 1993	Theory				**x**	
42	Parasuraman et al., 2005	Survey					**x**
43	Rathnam et al., 1995	Survey			**x**		
44	Raval 1983	Theory			**x**		
45	Ray et al., 2005	Survey	**x**				
46	Rayport and Jaworski, 2004	Theory	**x**				
47	Ross, 2005	Theory				**x**	
48	Rowley, 1999	Theory			**x**		
49	Santos, 2003	Empirical				**x**	
50	Shchiglik and Barnes, 2004	Empirical			**x**		
51	Sisodia, 1992	Theory			**x**		
52	Slater 1997	Theory			**x**		
53	Stamoulis et al., 2001	Single case study			**x**		
54	Surjadjaja et al., 2003	Theory				**x**	**x**
55	Tan et al., 2013	Survey			**x**	**x**	**x**
56	Teo et al., 2006	Single case study			**x**		
57	Torkzadeh et al., 2006	Survey			**x**	**x**	
58	Voss, 1983	Interview			**x**		
59	Wells et al., 1999	Theory			**x**	**x**	
60	Wolfinbarger and Gilly , 2003	Survey					**x**
61	Zeithaml et al., 2002	Theory					**x**
62	Zeithaml, 2002	Theory					**x**
63	Zhu and Nakata, 2007	Survey				**x**	
64	Zhu et al., 2002	Survey	**x**				**x**

Table 4: Impact of the technical attributes of customer service on the functionalities provided by the system

	Sensing Customer Needs	Providing Information	Personalization	Transaction and Payment	Service Recovery and Problem Solving	Relationship Building
System Quality	x			x		x
System Pervasiveness						x
Data Quality	x	x	x	x	x	x
Communication Networks		x	x		x	
Security and Privacy				x		

Close to the concept of flexibility it is located *system dynamicity*, referred to depiction, modeling and simulation of dynamic systems (Größler et al., 2008), through the explanation and interpretation of phenomena of feedback loops, accumulation processes and delays in operations management (Bardhan et al., 2010). Particularly in this service area, system dynamics allow to get improvements in production flow, supply-chain management, process and project management, new service development and different technologies adoption.

Accessibility of the customer service system, that is, the number of accessible service-delivery points that are available when customers need them, also has an impact on service quality (Zhu et al., 2002): the more service-delivery points available for customers to acquire services, the more convenient it is for customers to obtain services. This dimension is strictly dependent on service delivery channels settings (described later), and is especially important when customers are using self-service technology because convenience, such as solving intensified need and saving time, is one of the main drivers of using the self-service channel (Meuter et al., 2000).

IT-enabled CSS has therefore the potential to provide experiences that are consistent with customer expectations, thus improving reliability of experiences (Mithas et al., 2016), as well as to enable business process transparency and efficiency in resources allocation, thus shorting response times and improving quality. Finally, high quality IT-enabled solutions are able to facilitate business process innovations, resulting in improved customer experiences (Tallon, 2008), and in a reduction of service gaps (Krasnikov et al., 2009).

System Pervasiveness

A wide literature stream discusses about concept of *IT asset*, referring to it as "commodity-like information technologies that are used to process, store and disseminate information" (Wang et al., 2015, p.580, based on Nevo and Wade, 2010). It highlights how IT assets alone are not able to create a sustainable competitive advantage (Floyd and Wooldridge, 1990; Powell and Dent-Micallef, 1997; Ray, Muuhanna and Barney, 2005), so they do not represent strategic assets alone, and are not considerate to possess the characteristics required by the resource-based view (RBV) (Clemons and Row; 1991; Mata et al., 1995), while IT management skills are often more important than hard skills in sustaining firm performance (Mata et al., 1995). On this approach, several scholars from different areas stated that value is not something embedded in things (e.g. Chase and Apte, 2007; Holbrook, 1994; Tuunan and Cassab, 2011), but it is generated by business activities (Normann and Ramirez, 1998). Information system is considered to be a complementary resource, able to enhance value of other organizational resources (Tanriverdi, 2006). In order for a system to permeate within the whole service delivery network, it is thus important that this value arising from matching IT assets together with business activities, in a way that is perceived by both customers and employees. When an information system finally achieves *pervasiveness*, most people will see it as part of the natural world. That is, the system will be more noticeable by its absence than its presence (Birnbaum, 1997). A pervasive CSS can provide new means of interaction and generate new experience for its users. It can enable businesses to provide "customer-centric" services that

alleviate customers' perceptions of confusion, stress, and routine during the shopping session and increases loyalty (Kourouthanassis et al., 2007). Therefore, pervasiveness represents a technical attribute of customer service system that enhances the functionality of relationship building.

Data Quality

Service encounters are socially interactive and information dependent. Organizations that employ a market-orientation strategy and develop market intelligence can learn the preference of individual clients and capture this information and use it to best advantage in serving clients' requirements (Day, 1994; Berry and Parasuraman, 1997; Berry and Gresham, 1986; Teo et al., 2006). With complete and integrated customer information gained from market intelligence, businesses are able to sense the customers' needs and proactively act to satisfy its customers (Bessen, 1993; Berkley and Gupta, 1995) or even offer personalized services (Delene and Lyth, 1989; Sisodia, 1992; Gilmore and Pine, 1997; Cooper et al., 2000). Therefore, the greater the level of *data completeness*, the greater the likelihood that customers will feel their needs are understood or will want to build a relationship with the company (Brohman et al., 2003) Therefore, an organization able to collect complete data about its customers will be capable to provide a variety of functionalities including sensing customers' needs, providing personalized services and building relationships with customers.

Data quality not only refers to customers' information but also information about the company and its products provided to the customers (Berkley and Gupta, 1995). These include instructions about means of access to the service, such as hours of opening, information about the behavior expected from the customer, recommendations and warning, and conditions of access (Bancel-Charensol, 1999). Knowledge-based systems (Armstrong, 1992; Chang et al., 1996) can be used for customer supports pertaining to repetitive questions. Without a complete database, the employees will not be able to deliver the functionality of providing information. Finally, the accuracy of data ensures accurate billing and record and, therefore, is critical in providing functionalities involving transactions and payments (Berkley and Gupta, 1994; Zhu et al., 2002).

Communication Networks

Data quality that is available through *integrated communication networks* allows businesses be more responsive to customers' needs (Bhatt and Troutt, 2005). A well-developed communication network ensures the collection of information required to define the individual customer's needs and to facilitate purchase and use of products is communicated to customer service personnel so that they understand which resources are necessary to satisfy the customer's need (Ives and Mason,

1990). These networks include both internal and external information distribution (Wells et al., 1999). *Internal information distribution* refers to the distribution of information within the organization for the purpose of decision support (Day, 1994). On the other hand, *external information distribution* focuses on the exchange of information between organizations and customers to enhance the service interaction process (Day, 1994; Ellram et al., 1999; Zhu and Nakata, 2007). Then, both customers and service agents are better informed about the products or services on offer as well as the purchase habits of the customer (Brown, 1997; Torkzadeh et al., 2006). Communication networks finally enable companies to activate open, productive dialogues with customers that are personalized to reflect each customer's needs (Ross, 2005). Without these networks, employees will not have the accurate and reliable information base necessary to provide needed functionalities to fulfill customer needs.

Security and Privacy

Customers normally expect that their records, especially financial information such as account and credit-card number, are kept confidential (Berkley and Gupta, 1995). Customers are concerned with their privacy, in particular when using IT-based services provided online. Concern about potential sharing of personal information affects customers' willingness to obtain services, and thus their trust in overall service experience, especially when involving functionalities of transaction and payment (Zhu et al., 2002).

Table 4 summarizes the impact of the technical attributes of customer service systems on the functionalities provided by the system. Based on the syntheses of the literature, I propose the following:

Proposition 2: Different technical attributes of the customer service systems enable different sets of functionalities.

Organizational Fit

To understand the relationship among the technical components and social components of customer service systems as well as the functionalities, the concept of "organization validity" is adopted. It is defined as the fit or match between a system and its organizational context (Markus and Robey, 1983) when implementing an information system. Based on this, "organizational fit" is here defined as the degree of congruence between the customer service system and its organizational context. Literatures related to (a) data fit, (b) user fit, (c) structure fit and (d) system fit in the customer

service context were reviewed. As summarized in Table 5, the most adopted methodology for studying organizational fit is survey, with 12 works (63%) reviewed. Structure fit is instead the most discussed element, reflecting the high interest of organizational disciplines in the field. Apart from a work about user fit (Rayport and Jaworski, 2004), studies related to structure fit represent the entirety of theoretical researches conducted in the context of organizational fit.

Data Fit

Data fit is defined as the degree of congruence between the data contained in the information systems and the functionalities provided by the systems, in terms of the user preferences for information content and format that are rooted in personal cognitive styles (Markus and Robey, 1983). In the theory of Task-Technology Fit (TTF) (Goodhue, 1995), *technologies* are tools used by individuals in carrying out their tasks; while *tasks* are defined as the actions carried out by individuals in turning inputs into outputs. When a technology can better assist an individual in performing his/her tasks, there is a higher degree of *task-technology fit*. In the context of customer service systems, data quality affects the content and presentation of the information. Information available needs to be clear and accurate in order to successfully deliver tasks performed and to facilitate service providers' decision making (Torkzadeh et al., 2006). However, functionalities with different characteristics require different information context and format. For example, the functionalities that involves unstructured tasks (e.g., providing personalized services) require a more user-friendly information format that assists service providers in analysis, decision making, and control in the customer service strategy; while the information context and format will be trivial for the functionalities involving routine and repetitive tasks (e.g. facilitating transactions and payments). Therefore, I propose:

Proposition 3(a): Customer service systems technical attributes and functionalities influence the data fit between the data in the customer service systems and the functionalities.

User Fit

User fit is here defined as the degree of congruence between a system and a user's cognitive process, where *cognitive process* refers to "the way people process information" (Markus and Robey, 1983, p. 208). Providing an interface that fits customer characteristics at each service encounter is a strategic decision that calls for the consideration of both costs and benefits (Rayport and Jaworski, 2004). The interface between customer and service provider may be best driven by customer needs, such as the level of involvement in the purchase (Dawes and Rowley, 1998). Three different types of interface are available from the service delivery channel: people-dominant (e.g., a

guest service agent), machine-dominant (e.g., a Website), or hybrid (e.g., a live chat) (Rayport and Jaworski, 2004). When choosing the service delivery channel, a customer considers the effort involved in using the channel and the complexity of the service delivery process (Zhu et al., 2002). Customers are more inclined to choose the channel that is easier to use, consistent with their existing values, beliefs, and needs (Greer and Murtaza, 2003). For example, technology-readiness (Parasuraman, 2000) refers to people's propensity to embrace and use new technologies for accomplishing goals at home and at work. That is, people who are less technology-ready may find using new technology to be intimidating. In the context of customer service, these customers prefer a people-dominant channel or a machine-dominant channel that they have been used to before. As a result, there will be a better fit between system and user when personal service is offered to them.

Proposition 3(b): The types of service delivery channel and customer characteristics together influence the user fit between the customers and the customer service systems.

Table 5: Concept matrix: Organizational fit

#		Methodology	Data Fit	User Fit	Structure Fit	Systemic fit
1	Bardhan et al., 2007	Survey			x	
2	Dawes and Rowley, 1998	Multiple case studies		x		
3	de Ruyte and Zuurbier, 1993	Interview	x			
4	Fink and Gaining, 1997	Survey			x	
5	Greer and Murtaza, 2003	Survey		x		
6	Jarvenpaa and Ives, 1994	Theory			x	
7	Lee et al., 2005	Survey			x	
8	Mahmood et al., 2001	Meta-analysis			x	
9	Luftman and McLean, 2004	Survey			x	
10	Overby et al., 2006	Theory			x	
11	Rayport and Jaworski, 2004	Theory		x		
12	Roberts and Grover, 2012	Survey			x	x
13	Spohrer and Maglio, 2008	Theory			x	
14	Tallon and Pinsonneault, 2011	Survey			x	
15	Tallon, 2008	Survey			x	
16	Torkzadeh et al., 2006	Survey	x			
17	Venkatraman, 1989	Theory			x	
18	Wang et al., 2015	Survey				x
19	Zhu et al., 2002	Survey		x		

Structure Fit

"A central problem in service science is understanding service system evolution" (Spohrer and Maglio, 2008, p.243). The present sections therefore describes how the fit between organizational structure and CSS depends on overall system characteristics, highlighting its dimensions of system alignment, inter-functional integration, flexibility, customer relevance and agility – with characteristics of sensing and responding – and finally organizational agility.

Structure fit is defined as the degree of congruence between a system and user's internal needs or motivation (Markus and Robey, 1983). McLean and Luftman (2004) define the concept of alignment between business strategies and IT as the correspondence between strategies, goals, business needs and requirements of the IT-based system. Such alignment needs to exist in both intra- organizational and inter-organizational processes (Bardhan et al., 2007), as well as in external and internal collaborators (Mukhopadhyay et al., 2002; Sabherwal and Chan, 2001). *Alignment* represents "the degree to which the needs, demand, goals, objectives and/or structures of one component are consistent with the needs, demand, goals, objectives and/or structures of another component" (Nadler and Tushman (1993, p.63). The higher the alignment between customer-sensing and customer-responding capabilities, the greater will be the customer agility, since it affects the efficacy of actions performed (Roberts and Grover 2012; see also Overby et al., 2006; Venkatraman, 1989). Coordination theory (Malone, 1987), which is affected by the service-oriented IT adoption, identifies road maps to investigate the process of managing dependencies between activities. It defines coordination structures and costs as main characteristics affected by decision making communication processes and actors involved. Based on this, social network analysis and coordination are able to deep human aspects of any adoption of a service-oriented IT solution (Bardhan et al., 2010); agility becomes the one of main aspects to extend in the research, particularly in the fields of customer relationship and performance management systems (Bardhan et al., 2010), particularly for firms operating in dynamic, customer-oriented and information intensive environments (Haeckel, 1999).

A *flexible* system is more appropriate for an organic organizational structure and decentralized decision making; while a standardized system is more appropriate for a mechanistic organizational structure and centralized decision making (Markus and Robey, 1983). For example, a dynamic network organization that links, on an as-needed basis, teams of empowered employees, suppliers, and the customers in order to solve one-time problems and provide personalized customer service will need a customer service system that is flexible, well-connected, and able to provide needed information at the right time.

Concepts of customer relevance and customer agility are relevant in the customer service field. Literature defines *customer relevance* as "the degree to which the operational processes are able to sense and meet customer needs" and *agility* as "the ability to engage customers in the exploration of innovation opportunities" (Benaroch et al., 2006, p.43). Customer agility, in particular, is facilitated by IT and is able capture the "extent to which a firm is able to sense and respond quickly to customer-based opportunities for innovation and competitive action" (Roberts and Grover, 2012, p.231). It consists of two key organizational capabilities, sensing and responding, which contribute to success in the competitive environment (Zaheer and Zaheer, 1997). Sensing refers to the ability to effectively absorb external knowledge from the market (Cohen and Levinthal, 1990), while responding refers to capacity to respond to market opportunities. Integrated ISs offer the possibility to quickly collect critical information used to address decision in a timely manner, as well as to enhance the service provided (Bharadwaj et al., 2007) and to improve customer agility (Roberts and Grover, 2012, Sambamurthy et al., 2003). Customer agility finally impact *competitive activities*, consisting of market-based moves that challenge the status quo of the market or industry through innovations in products, services and channels (Smith et al., 2001; Chen, 1996).

Similarly, IT is also able to influence *organizational agility* (Fink and Gaining, 1997; Tallon, 2008; Tallon and Pinsonneault, 2011), here defined as the ability to manage and apply knowledge effectively, enhancing the potential of firms to thrive in a continuously changing and unpredictable business environment (Dove, 2001). Customer and organizational agility represent dynamic capabilities referred to the detection of opportunities and threats from the market, and then the adaption of existing essentials capabilities (Teece, 2007; Teece et al., 1997). To achieve value from the customer-centric view in the IT and marketing fields, it is indeed necessary to consider how business processes need to be adjusted, organizational units de-siloed, and management thinking reorganized in a dynamic way.

In addition to the technological characteristics, management support also affects the use of technology by frontline service employees (Mahmood et al., 2001; Lee et al., 2005). When the management team provides technological users the opportunities to receive intrinsic rewards from the tasks, the motivation is increased and the employees are more likely to accept the systems; that is, a better fit between the customer service systems and the users' motivation. In sum, the technical attributes of the customer service system as well as its social attribute (e.g., organizational structure) together influence the structure fit between the customer service system and the organization. Therefore, I propose:

Proposition 3(c): The technical attributes of customer service systems and its social attributes together influence the structure fit between the customer service systems and the users' needs and motivations.

Systemic Fit

System theory describes that every system has interconnected elements that respond to the environment (von Bertalanffy, 1976). Organizations are open, manmade social systems, with interconnected and interdependent subsystems (Kast and Rosenzweig, 1972). From the system theory standpoint, organizations can be then seen as open systems made of a set of inter-related sub-elements that cooperate to finally reach a common objective, within a specific and dynamic environment (Ackoff, 1971; Johnson et al., 1964). When new emergent capabilities become beneficial to the achievement of organizational goals, a synergic relation among sub-system can be usually identified (Corning, 1998; Nevo and Wade, 2010). Among sub-systems, synergies exist (Churchman, 1971), with one specific delegate to administrate and manage other subsystems (Ackoff, 1971). This element of management has system-control functions, with functions of planning, organization, control and communication (Ackoff, 1971). A change in the environment can produce a change in the system (Ackoff, 1971), so open systems are kept in a dynamic equilibrium by feedback loops and controlling, to be able to respond to changes in the environment (Gharajedaghi, 2011; Kast and Rosenzweig, 1972; Leveson, 2003). Therefore, based on information and signals collected, sub-systems management can direct and eventually adapt the whole system to a new environment (Ackoff, 1971; Katz and Kahn, 1978), while keeping a fit between each component of the social system with the others in a systemic approach. I therefore define *system fit* as the dynamic alignment of sub-systems by system and sub-system management.

On this regard, *inter-functional integration* affects the information flow, reducing task uncertainty and developing shared understanding to finally sustain customer-based market opportunities (Roberts and Grover, 2012) and ensuring that overall service delivery chain will flow as a system made of functional sub-systems. Managers need therefore to cultivate mechanism of inter-functional coordination to be able to respond to market opportunities (Roberts and Grover, 2012).

For example, in the context of IT-enabled solutions, there is the need that also non-IT staff gains the knowledge required to align business objectives to systems adopted, and understands how IT resources can support business operations and strategic actions in a systemic way (Wang et al., 2015). On this base, IT-management plays an important role in controlling and integrating IT

activities in a systematic way, with the objective to align IT assets and projects with business objectives and requirements, and provide integrated access to data across organizational sub-units (Bharadwaj, 2007). By coordinating IT assets, the IT-management can then support the organization to identify future changes and adapt the IT-portfolio accordingly (Wang et al., 2015).

The value of IT-management is thus represented by the ability to implement and supervise IT-based activities, such as IS planning and design, IS applications delivery, IT project management and planning for IT standards and controls (Bharadwaj et al., 1999; Karimi et al., 2001; Kim et al., 2011; Zhang and Sarker, 2008). Superior IT assets enhance IT management effectiveness, e.g. gathering customer feedbacks about product and services. Superior IT management then elicits more value from available IT asset (Wang et al., 2015), levering on a higher ability to interpret and actuate customer information without losing flexibility and agility in business processes.

A technology in order to have a positive impact on individual performance must be utilized and fit well with the tasks it supports. That is, when a technology provides features and support that are congruent with the requirements of a task, the performance of the user will be impacted (Goodhue, 1995). Therefore, organizational fit (i.e., data fit, user fit, structure fit and systemic fit) can enhance employee performance (e.g., improved efficiency, improved effectiveness, and/or higher service quality). For example, the correspondence between task and information-presentation format (e.g. tables, graphs, and schematic faces) reduces the users' need to transform the mental representation and therefore, leads to superior task performance of individual users, according to cognitive fit theory (Vessey, 1991). In the context of customer service, the match between the characteristics of customer service systems and the tasks performed by actors (service agents and/or customers) leads to superior task performance, and, hence, better service quality. IT investments have the possibility to sustain such positive effect (Mithas et al., 2016). Therefore, I propose that when organizational fit is present, service quality is improved.

Proposition 4: Organizational fit is positively related to service quality.

Social Attributes of Customer Service Systems

The literature to date has identified the following characteristics of the social components of customer service systems: service-oriented culture, human capital, physical environment and social capital. Table 6 summarizes the reviewed studies, highlighting the relevance of the first two components, namely culture and human capital, representing more than 90% of studies to date, and how these elements grab most of the attention of scholars only during last 15 years.

Service-Oriented Culture

Service-oriented culture is defined as "employee perceptions of the practices, procedures and behaviors that are expected, supported and rewarded with regard to customer service and customer service quality" (Schneider et al., 1998, p. 151). Therefore, an organization with customer-oriented culture shows commitment to customers and views customer satisfaction as a priority (Levenburg and Klein, 2006). The service orientation of a business strategy includes the number of services, customers services offered, and the extent to which these services are emphasized (Homgurg et al., 2002).

Adoption of service-oriented technologies enables the organizational dynamic capabilities to finally have an impact on organizational and human characteristics (Bardhan et al., 2010). It is able to reach such objectives by levering on the characteristics of:

(1) loose coupling with business processes, through interdependencies with external systems and externally-located systems;

(2) dynamic capabilities, to develop greater process flexibility and agility in decision making (Bhargava and Sundaresan, 2004). It can be obtained through processes of integration, coordination, learning and sensing, and final reconfiguration of resources and services (Pavlopu and El Sawy, 2006);

(3) semantics efforts and ontology, to provide domain-based data representation to facilitate automated reasoning and to standardize business processes, operations and information requirements;

(4) reusability and modularity, to improve processes of outsourcing to finally re-use sub-processes capabilities. To do so, modularity represents the ability of systems' components to be separated and recombined (Schilling, 2000; Baldwin and Clark, 1997, 2000).

Through service orientation, companies can create "benefit bundles" that comprise products and services, rather than just the value of the product offerings (Narver and Slater, 1990; Homburg et al., 2002). Researchers have shown a positive link between a service-oriented business strategy and company performance (Homburg et al., 2002; Agnihothri et al., 2002; Ray et al., 2004). For example, the First American Corporation, with a customer-relationship-oriented strategy in mind, provides personalized products through customers' preferred distribution channels (Cooper et al., 2000). In this situation service, in addition to products, has become a source of customer value.

Table 6: Social Attributes of customer service systems

#		Methodology	Service-Oriented Culture	Human Asset	Physical Environment	Social Capital
1	Agnihothri et al., 2002	Theory	x	x		
2	Au et al., 2008	Survey				x
3	Bardhan et al., 2010	Theory	x			
4	Beatty et al., 1996	Observation and interview	x			
5	Bowen et al., 1989	Theory	x			
6	Brown, 1997	Theory		x		
7	Cooper et al., 2000	Single case study	x			
8	Davis, 1993	Survey		x		
9	Dickey et al., 2007	Field study		x		
10	Farrell and Song, 1988	Theory	x			
11	Hoffman and Turley, 2002	Theory			x	
12	Homburg et al., 2002	Survey	x			
13	Hsieh et al., 2012	Archival and Survey		x		
14	Levenburg and Klein, 2006	Survey	x			
15	Mahmood et al., 2001	Meta-analysis		x		
16	Meyronin, 2004	Theory		x		
17	Montoya et al., 2014	Survey		x		
18	Nahapiet and Ghoshal, 1988	Theory				x
19	Narver and Slater, 1990	Survey	x			
20	Ray et al., 2004	Survey	x	x		
21	Schlesinger and Heskett, 1991	Survey		x		
22	Schneider et al., 1998	Archival	x			
23	Sun et al., 2012	Survey				x
25	Sutton and Rafaeli, 1988	Observation	x			
25	Tan et al., 2013	Survey		x	x	
26	Tax et al., 2013	Theory		x		
27	Torkzadeh et al., 2006	Survey		x		

As for customers, they often interact with a few frontline employees during a service encounter and typically develop an overall image of the emotions that members of a given organization display (Sutton and Rafaeli, 1988). Most importantly, even when employees are the ones to implement customer services processes, management must be committed to the employees and its customers to make it work (Beatty et al., 1996). With this commitment, management provides training to employees, respects and empowers employees to provide customers with solutions to their problems or needs. Therefore, even with the same functionalities, customer-oriented employees are encouraged to create a warm emotional service environment for the customers and be responsive to customers' needs, which will attain a high quality of service (Sutton and Rafaeli 1988).

Human Assets

One of the major differentiating factors of services is the customer service agents' interpersonal skills and their unique know-how (Schlesinger and Heskett 1991). This represents the *human asset*, defined as "knowledge, skill or expertise embodied in people and acquired through investments in formal or informal education, training or learning by doing" (Ratchford, 2001, p.397). Human capital (or asset) is made manifest through the information given to customers, the style of welcome and interactions, the ability to listen and understand the needs of customers, the capacity to personalize service in real time, and the skilled handling of crises situations (Meyronin, 2004). A positive service climate, also, can sustain a superior service through improved employees' behaviors (Tax et al., 2013).

Based on this, the concept of *employee service quality (ESQ)* is introduced, comprising ability of employees to address customer demands (Ray et al., 2005) and referring to it as the conformance to an organization's requirements to deliver services to its customers (Chakrabarty et al., 2007, 2008; Parasuraman et al., 1988). Service-profit chain literature identified two characteristics of employees that affect their service quality, namely job dedication and embodied service knowledge (Heskett et al., 1997), stating how employees that are more committed to the job their perform will finally provide better service quality, and how their personal competencies influence such relation, e.g. by enabling users to compensate functions that do not fulfill their personal needs for service provision, while low-knowledgeable employees more likelihood risk to traduce dissatisfaction with CSS into compromised service quality (Hsieh et al., 2012)

Important skills a service agent acquires include communication skill and technical skills. First, during the service encounter, successful *communication* between the customer and service agents are essential to ensure successful service delivery. Successful communication requires a shared understanding of context among partners (Dickey et al., 2007). When the customer fails to articulate his or her intention, it falls to the customer service agents to take the initiative and provide help. Therefore, the communication skills of a customer-service agent are important to ensure a successful service encounter. This has become even more important as computer-mediated communication is playing a more and more important role in the customer service encounter. Second, employees who have greater *technical skills* tend to have a higher level of usage of the IT-enabled customer service system (Mahmood et al., 2001). Therefore, their overall knowledge of the service process will be increased by acquiring information from the customer service systems. As a result, the employee can make better judgments at the point of customer contact and provide better

services (Berkley and Gupta, 1994). Therefore, with the same functionality, employees with higher level of skills provide higher service quality.

To enhance employees' skills and knowledge in order to impact customer service, companies need to provide them with training to ensure employees' compliance with the operating procedures so as to be able to deliver the expected services (Torkzadeh et al., 2006). Continuous training and support can affect employees' efficacy in service delivery (Agnihothri et al., 2002), even if individual learning occurs over time as employees use a system (Montoya et al., 2014). Training thus has a significant effect in achievement of system benefits (Galletta et al., 1995; Yi and Davis, 2007) and effective training can create a better attitude toward IS and IT services (Venkatesh and Davis, 2000; Venkatesh et al., 2003), creating a better understanding benefits provided by the systems and skills required (Montoya et al., 2014). When training is able to present IT as "a means to deliver services rather than focusing on the technology itself" (Montoya et al., 2014, p.80), it stimulates the generation of a positive attitude toward technology, sustaining trust in it.

For example, training ensures that customers have fewer number contacts with the company, interact with more knowledgeable employees, and experience fast and personalized service recovery (Brown, 1997) - with the same service encounter involving service recovery, a better-trained employee will be able to provide better service quality. This also opens to future streams of research focused on effects of service orientation and technology on knowledge management in organizations, as well as management of career paths and required set of skills (Bardhan et al., 2010).

Additionally, *employee satisfaction* covers an important role in IT-enabled service success. Frameworks such as the service-profit chain describe relationships between satisfaction and loyalty of employees as well of customers, and their effects on profit, describing how employee satisfaction is necessary for having a satisfied customer (Heskett et al., 1994). On this framework, Montoya et al. (2014) added *trust in technology* as element affecting the others, highlighting how IT-enabled operations can affect daily jobs and tasks of employees, so that operational-level service employees becomes more attentive to issues with trust due to their greater dependence on IT. Employees' trustiness in IT-enabled service solutions relies on effective internal delivery of IT services, being of particularly importance for acceptance of new mandatory system implementations. Role of trust in IT-enabled service systems represent an avenue of research, with the need to deepen its relationships with business performance and outcomes, such as customer satisfaction and profitability (Montoya, 2014). BN

The expectancy-value theory (EVT) by Ajzen and Fishbein (1980) describes how external stimuli are able to affect individuals' beliefs about outcomes of their performance, where a *belief* about a targeted behavior is defined as "the individual's subjective probability that performing the target behavior will result in certain consequence", and which is affected by the *attitudes*, namely the "salient beliefs about consequences of performing the behavior and the evolution of those consequences (Davis et al., 1989, p. 984). From an IT-enabled CSS standpoint, system design functionalities can influence external stimuli, thus affecting users' beliefs about consequence of utilizing a technology, and such beliefs translates into different attitudes towards the system usage Davis (1993). Building on these works scholars stated the characteristic of individualization of beliefs and attitudes toward IT-enabled systems (Tan et al., 2013).

Therefore, I summarize that human capital, with its elements of beliefs, attitudes, employees' satisfaction and trustiness in technology, moderates the relationship between the functionalities provided by the customer service system and service quality.

Physical Environment

The physical environment, with its elements of social factors and ambient conditions, represents another critical factor impacting service quality. It, indeed, characterizes service encounters, since it represents what customers look during their experience, observing and assessing aspects such as of cleanliness, lightening or noise (Tan et al., 2013). Such physical cues act as tangible indicators of service quality, in addition to other intangible ones representing the core elements of service (Bitner, 1990). Physical environment can indeed be design to provoke particular emotions and responses; therefore the correct management of it becomes important for creating a captivating service experience (Hoffman and Turley, 2002). Therefore I propose that physical environment affect perceptions of service quality provided through functionalities delivered.

Social Capital

Social capital represents the "set of resources embedded within the social relationship among actors within a network" (Sun et al., 2012, p.1196), as well as "the sum of actual and potential resources embedded within, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1988, p.243). Social capital positively moderates the relation between service quality and user satisfaction (Sun et al., 2012) through its three dimensions:

1. *structural*, "the overall pattern of connections between actors – that is, who you reach and how you reach them" (Nahapiet and Ghoshal, 1998, p.244);
2. *cognitive*, namely the resources which enable shared representations and interpretations

among involved parties (Cicourel, 1973);

3. *relational*, which involves assets arising from social relationships, such as trust, norms, obligations and identification (Nahapiet and Ghoshal, 1998).

Among them, structural capital influences the other two dimensions, as well as cognitive influence the relational one (Tsai and Ghoshal, 1998). In particular, relational capital positively affects the exchange and combination of knowledge, allowing to external users to create and anticipate value through such exchange, and thus enhancing the motivation to engage in value creation (Nahapiet and Ghoshal, 1998). This finally helps customers to fulfill their needs, creating value and thus improving customer satisfaction (Au et al., 2008), and as well as moderating the relationship between service quality and user satisfaction (Sun et al., 2012).

Similarly, the cognitive capital, by reinforcing the cognitions between organizational users, reduces the cognitive effort to achieve a reasonable understanding and anticipation of what users can provide to others (Tsai and Ghoshal, 1998). By doing so, it can strengthens the relationship between service quality and user satisfaction (Sun et al., 2012). Finally, structural capital can affect customer value and satisfaction by positively affecting cognitive and relational capitals (Sun et al., 2012).

Therefore, I summarize that the social capital of customer service system moderates the relationships between service quality provided and customer value perceived.

Based also on attributes of the social customer service sub-system previously described, and their relationships on service quality and customer value, I propose the following:

Proposition 5: The social attributes of customer service system moderate the relationships between the functionalities provided by the systems and the service quality.

Service Delivery Channels

Previous works identified how quality of customer experiences delivered within and across channels reflect the integration of quality of multichannel service, showing also how misalignment between organizational perceptions and design of a multichannel system can affect customer expectations of a multichannel service experience (Banerjee, 2014). Similarly, different studies also defined the concept of *service delivery quality,* as the manner by which functionalities offered by the CSS are made accessible via interfaces as delivery channels, as well as the "efficiency of accessing service content via […] a delivery channel in fulfilling […] process goals" (Tan et al., 2013, p.83). While the absence of service content quality reduces the possibility to achieve desired

outcomes, the lack of service delivery quality amplifies the difficulties in executing activities (Ancarani, 2005; Gil-Garcia et al., 2006; Grimsley and Meehan, 2007).

Customers evaluate service quality not only based on the outcome of the service, but also on the quality of the service delivery process (Han and Han, 2001). Therefore, in this section I provide a review of research addressing different types of service delivery channels, offering propositions based on their impact on service quality and customer value, and indicating attentions needed for future studies.

People have different attitudes toward different service delivery channels, and these attitudes vary from service to service at different times (Curran and Meuter, 2005). *Service delivery channel* is the medium through which service is delivered (Lui and Piccoli, 2009). *Service delivery network* (SDN) (Tax et al., 2013), instead, represents more organizations responsible for the provision of a connected and integrated overall service. A clear example of this setting is the existence of intermediaries, which act as agents to integrate resources, and potentially adding complexity to service encounters, but finally allowing customer to harvest "dynamic packages" (Piccoli et al., 2009).

Different types of channels can exist, from physical entities (e.g. hotel reception desks) to technology-assisted ones (e.g. web-sites) (Banerjee, 2014), to multichannel systems, i.e. "the combination of channels to manage organizational activities for customer interaction and positive customer experiences within and across channels" (Payne and Frow, 2005). In business fields, this last setting represent the most frequent one, characterized by a combined offer of traditional and virtual means for customer service delivery, adding to the core service new ways of disseminating information in order to finally develop a closer relationship with customers (Bardhan et al., 2010). Three streams of literature deepened reasons behind the development of multichannel systems. First, by focusing on organizational factors, previous studies (Cespedes and Corey, 1990) identified two external factors - computerization and development of multi-located firms - and two internal ones - costs of personal selling and just-in-time inventory approach. A second stream focused on inter-organizational issues, identifying market share and cost reduction as main engines of multichannel service systems spread (Frazier and Antia, 1995), thus defining dynamic capabilities needed for firms to transform channels in business markets (Falk et al., 2007; Webb and Didow, 1997; Webb and Hogan, 2002, Webb and Lambe, 2007; Wilson and Daniel, 2007) and centering attention on optimal integrated multichannel strategies (Sharma and Mehrotra, 2007; Van Bruggen et al., 2010) and inter-organizational channel cooperation (Wiertz et al., 2004). Finally, a third stream described consumer-level factors such as channel choice and preferences (Balasubramanian,

Raghunhatan and Mahajan, 2005; Schoenbachler and Gordon, 2002; Verohef, Neslin and Vroomen, 2007), consumer characteristics (Konus, Verohef and Neslin, 2008), channel satisfaction (Montoya-Weiss, Voss and Grewal, 2003), customer loyalty (Wallace, Giese and Johnson, 2004) and customer profitability (Venkatesan, Kumar and Ravishankar, 2007). The three streams together then identified "five key challenges for multichannel management: data integration, understanding of customer behavior, channel evaluation, allocation of resources across channels and coordination of channel strategies" (Banerjee, 2014, p. 462).

Building on these works, *multichannel service quality* is defined as the "quality of the overall service experienced by a customer, encompassing all the existing physical and virtual components" (Sousa and Voss, 2006, p.359). It can be operationalized in three constructs: *physical* quality – "goods and service delivered through human interfaces"-, *virtual* quality - without human contact - and *integration* quality – "the ability to provide customers with a seamless service experience across multiple channels" (Sousa and Voss, 2006, p.365).

Overall *integration quality* broads to a wider organizational goal, resulting from the interplay actions between three entities - the organization, institutional environment and customers. It is determined by the elements of appropriateness of channel configuration, integration of transactional data (data on products), and interaction data (related to communication or interface between the customer and the organization) and within and across channels integration (Banerjee, 2014). The notion of integration is defined as characterized by a functional and a vertical integration. *Function channel integration* (FI) is the "cooperation between people and departments, within and between channel organizations, in performing activities necessary to create utility" (Larson and Lusch, 1992, p.2). This concept focuses on the delivering consistent and superior customer experience through channels (Banerjee, 2014). *Vertical integration* (VI), differently, refers to the institutional integration between two or more organizations dependent or subjected to a common ownership (Anderson and Weitz 1986). The corresponding concept of integration quality is then characterized by two dimensions: *channel-service configuration* - the ability to perform the same service across different channels in the multichannel system at similar and consistent quality levels – and *integrated interaction* – the need for consistency in service experience within and across channels (Ganesh, 2004; Montoya-Weiss, Voss and Grewal, 2006; Payne and Frow, 2004).

In addition, it is important to note how integrate channels means focusing on how information, system and processes interact for effective service design, delivery and operations. Therefore, when both elements are present, overall integration quality will result in a better customer experience delivered (Sousa and Voss, 2006).

Finally, “it is the customers and their usage that determine the appropriateness of the channel-service configuration, not the managerial ambitions” (Banerjee, 2014, p. 469), so that also final channel integration quality will be perceived differently based on customers’ characteristics.

The importance of the topic is clearly stated in the literature, which see research on efficient IT-mediated service delivery interfaces as a new research stream, with the need to seek and deep interface design principles able to take advantage of proprieties of the web medium to deliver content in a readily accessible manner (Tan et al., 2013)

The present work identifies types of service delivery channel by adapting from the five different customer service channels proposed by Froehle and Roth (2004): (A) technology-free customer contact, (B) technology-assisted customer contact, (C) technology-facilitated customer contact, (D) technology-mediated customer contact, and (E) technology-generated customer contact (self-service). Situations (A), (B), and (C) are “face-to-face” service encounters because the customer and customer service representative are physically co-located. In these cases, the interfaces are more people dominant. In situations (D) and (E), in which the customer and the customer service representative are not co-located are often referred to as face-to-screen, because the customer is generally using some sort of visual display (and/or audible interface) to interact with the service provider, and the interfaces are more machine dominant.

On this base, Spohrer and Maglio (2008) introduce a framework to deepen work evolution in service systems, positing how work systems evolve over time from human systems with interpersonal collaboration (face-to-face channel) to fully automated (face-to-screen channel) systems with little or no human presence.

Different types of service interaction call for different types of channel: people-dominant, machine-dominant, or a hybrid of both (Tinnila and Vepsalainen, 1995; Rayport and Jaworski, 2004). The manner in which a service is delivered may be more important when using personal service (e.g., friendliness of staff), whereas the outcome may be more important when using self-service channel (e.g., speed of the service process) (Beatson et al., 2006). *Self-service* technologies are “IT-enabled interfaces that facilitate sales and related transactions, such as customer ordering, payment and exchange without human intervention” (Bardhan et al., 2010, p.43). On the other side, personal service channel, which is better at conveying empathy and handing exceptions, is a better channel in delivery functionalities like relationship building and service recovery. These *face-to-face* service encounters create personal connections and enjoyable interactions that ultimately affect customer satisfaction (Gremler and Gwinner, 2000).

Self-service channel excels in routine processing, being more appropriate for functionalities that perform simple and routine tasks (Selnes and Hansen, 2001), such as transaction and payment. Automated multimedia kiosks in retailing, for example, can be reliable, trustworthy, quick, and will never get bored, tired, or impatient, while presenting information through a variety of different media (Dawes and Rowley, 1998). The transaction functionality can be structured by the technology so that the experience is more standardized and consistent. This type of channel saves customers' time, gives the customer more control (Lee and Allaway, 2002), and provides the user with access to services at the time and location that are convenient for the customer. These conditions will have a positive effect on user satisfaction with the service (Yen, 2005; Meuter et al., 2000, Bitner, 2001). For example, tracking delivery status of orders may be better accomplished through Internet - because customers can view their order status at any time - than through a call centers. However, customers tend to trade with people they know - especially when the products involve high risk or/and when the customers have limited knowledge of the products (DiMaggio and Louch, 1998; Schultze, 2003) — and to have a sense of obligation to a service-providing employee (Price and Arnould, 1999). Therefore, one risk of self-service channel is the reduction in customer loyalty through weakened social bonds (Selnes and Hansen, 2001; Salomann et al., 2007).

In knowledge-intensive industries, service managers focus on providing personalized services offerings requiring high-touch or high-tech delivery processes (Bardhan et al., 2010). In this setting, customer service is more likely to be provided through face-to-screen channel (Bardhan et al., 2010).

In sum, service delivery channels that are more people-dominant provide higher service quality when delivering services that require employees' judgment and engagement. While service delivery channels that are more machine-dominant provide services in a more efficient fashion when performing tasks that are routine and repetitive. However, while customers generally develop separate, distinct attitudes toward the personal-service and self-service channel, these attitudes lead to a more global attitude toward the service firm (Curran et al., 2003). Therefore, even if companies distinguish service delivered through self-service vehicles from service delivered through customer service representatives as separate process implementations, they should look at options for integrating different channels (Selnes and Hansen, 2001; Salomann et al., 2007), and treat all channels as part of a larger customer experience continuum. Through different combinations of service delivery channels, companies are able to provide a higher level of customer service (Selnes and Hansen, 2001) Therefore, the combined effects of different service delivery channels should be

considered, and service delivery channels and/or a mix of them is expected to moderate the relationship between functionalities of customer service systems and service quality.

Proposition 6: The choice of service delivery channels moderates the relationships between the functionalities provided by the customer service systems and the service quality.

According to the summary of previous studies, presented in Table 7, only a few studies have discussed service delivery channels as integrated means of service delivery, while 21 studies out of 32 discussed only single-delivery channels. Most of the time, businesses keep the traditional channel and add a self-service delivery channel, so that literature prevalently identifies face to screen channels as prevalent topic in the field of customer service. In the future, further studies might be necessary to address service delivery channel as being composed of integrated solutions rather than separate channels. In addition, organizations are increasingly adding new channels to their portfolio, therefore the need for greater effectiveness in mapping channel management processes increases over time.

In addition to the moderating effect on the relationship between the functionalities and service quality, the choice of service delivery channel also has a direct effect on customer value. To increase *service convenience* (Berry et al., 2002), customer desire to conserve time and effort when obtaining services. An increase in service convenience has been theorized to be associated with an increase in satisfaction (Berry et al., 2002). Different service delivery channels will have different levels of service convenience (i.e., the costs and efforts to acquire the services), especially access convenience (time and effort needed to order or purchase a service), transaction convenience (the perceived time and effort needed to secure the right to use a service), and post-benefit convenience (the time and effort needed to reinitiate contact with a firm after the benefit has been received). For example, a customer who wants information about a product can either go to the store during business hours or obtain the information on the Internet. Therefore, the service delivery channel that fulfills a need with higher access convenience generates a higher level of satisfaction and customer value.

Table 7: Concept matrix: Service-delivery channels

#		Methodology	Types D and E (face to screen)	Types A, B, and C (face to face)	Multi-channel Integration
1	Arnowitz and Dykstra-Erickson, 2007	Theory	x		
2	Banerjee, 2014	Multimethod	x	x	x
3	Bardhan et al., 2010	Theory	x	x	
4	Beatson et al., 2006	Survey	x	x	
5	Bitner et al., 2002	Survey/interview	x		
6	Bitner, 2001	Theory	x		
7	Curran and Meuter, 2005	Survey	x		
8	Curran et al., 2003	Survey	x		
9	Curry and Penman, 2004	Interview/survey/archival			x
10	Dabholkar, 1996	Experimentation	x		
11	Dawes and Rowley, 1998	Multiple case studies	x	x	
12	DiMaggio and Louch, 1998	Archival		x	
13	Ganesh, 2004	Theory			x
14	Gremler and Gwinner, 2000	Interview	x		
15	Lee and Allaway, 2002	Experimentation		x	
16	Li et al., 2003	Survey			x
17	Meuter et al., 2005	Survey	x		
18	Montoya-Weis et al., 2003	Survey			x
19	Payne and Frow, 2004	Theory			x
20	Price and Arnould, 1999	Survey/interview		x	
21	Rayport and Jaworski, 2004	Theory	x	x	
22	Rowley and Slack, 2003	Theory	x		
23	Selnes and Hansen, 2001	Survey	x		x
24	Sharma and Mehrotra, 2007	Archival			x
25	Sousa and Voss, 2006	Theory			x
26	Spohrer and Maglio, 2008	Theory	x	x	
27	Tax et al., 2013	Theory			x
28	Tinnila and Vepsalainen, 1995	Theory		x	
29	Torkzadeh et al., 2006	Single case study	x		
30	Van Bruggen et al., 2010	Theory			x
31	Wells et al., 1999	Theory	x		
32	Yen, 2005	Survey	x		

Moreover, the enjoyment aspect of computer software and games encourages customers to try new products. The novelty aspect of the new technology can make it a preferred service-delivery option for customers (Dabholkar, 1996). Finally, a person's belief that he or she has control, even in the absence of real control, will result in benefits similar to those associated with real control, and, as a result, will enhance the value of the service to the customer (Dabholkar, 1996). As discussed above, customer value comprises two components: benefits and costs. The increase in the benefits

component (preserving time and effort, enjoying new technologies, and gaining control) perceived by customers results in increased customer value. Therefore, I propose the following:

Proposition 7: The choice of service-delivery channels influences customer value.

Customers' Characteristics

Customers' characteristics included in this study are individual traits (i.e., demographic characteristics and need for personal interaction), and experience with the technology (i.e., technology readiness). Table 8 reports the summarized literature review, showing a balanced attention of CSS scholars to all the different customers' characteristics, with only a minor focus on technology experience due to the several survey studies conducted during last decade. Based on this review, I propose that customers' characteristics will have a moderating effect on the relationship between service-delivery channels and customer value. I below present a detailed review of each dimension of customer characteristics.

Demographic

Demographic variables considered include age, gender, income, and education level. The effects of age and gender are less clear, with just few studies reporting how differences in gender (Roth et al., 2010), education (Ng and Feldman, 2010), age (Hedge et al., 2006) and service experience (Crandall and Perrewé, 1995) can affect job-outcomes (Hsieh et al., 2012). In general, there is a belief that younger people and males are more likely to have higher levels of role clarity, motivation, and ability with respect to technology innovations than older people and females (Zhu et al., 2002; Meuter et al., 2005). Aging is associated with a decline in perceptual skills, working memory, processing speed, and the encoding of information into episodic memory (Hedden and Gabrieli, 2004). On the other hand, aging is also associated with cumulative learning processes and increases in life experience. Therefore, the perception of service complexity decreases with age: older customers are more willing to engage in complex face-to-face communication with service providers, especially when the speed of service is not a key factor for the customer (Simon and Usunier, 2007). A study of financial services suggests a similar result: that (1) younger customers are more open to direct means such as phone or online banking and (2) well-off customers are less likely to need human interaction while acquiring financial services (Lee, 2002). Similarly, people exposed to higher levels of education are likely to engage in more comprehensive information gathering and processing efforts than less educated people, and. therefore, are likely to form a positive attitude toward using the self-service technology (Weijters et al., 2007).

Table 8: Concept matrix: Customers' characteristics

#		Methodology	Demographic	Need for Interaction	Experience with the Technology	Flow Experience	Customer Engagement Behaviors
1	Albrecht, 2003	Theory		x			
2	Beatson et al., 2007	Interview			x		
3	Bitner et al., 2002	Survey/interview			x		
4	Brodie et al., 2013	Multimethod					x
5	Cambre and Cook, 1985	Survey			x		
6	Chandler and Lusch, 2014	Theory					x
7	Compeau and Higgins, 1995	Survey			x		
8	Curran and Meuter, 2005	Survey		x	x		
9	Curran and Meuter, 2007	Survey			x		
10	Curry and Penman, 2004	Interview/survey/archival		x			
11	Dabholkar, 1992	Experimentation		x	x		
12	Dabholkar, 1996	Experimentation		x	x		
13	Ding et al., 2009	Survey				x	
14	Greer and Murtaza, 2003	Survey			x		
15	Gremler and Gwinner, 2000	Survey					x
16	Hedden and Gabrieli, 2004	Experimentation	x				
17	Hedge et al., 2006	Theory	x				
18	Hoyer et al., 2010	Theory					x
19	Hsieh et al., 2012	Archival and Survey		x			
20	Jaakkola and Alexander, 2014	Case study					
21	Korzaan, 2003	Survey				x	
22	Kristensson et al., 2004	Experimentation					x
23	Kumar et al., 2010	Theory					x
24	Lee, 2002	Archival	x				
25	Libai et al., 2010	Theory					x
26	Meuter et al., 2003	Survey			x		
27	Meuter et al., 2005	Survey	x	x	x		
28	Milligan and Hayes, 1997	Theory	x				
29	Ng and Feldman, 2010	Meta-research	x				
30	Oliver, 1997	Theory				x	
31	Pullmann and Gross, 2004	Survey				x	
32	Roth et al., 2010	Survey	x				
33	Salomann et al., 2007	Multiple case studies		x			
34	Schultze, 2003	Interview		x			
35	Simon and Usunier, 2007	Survey	x	x			
36	Walker et al., 2002	Survey			x		
37	Wang et al., 2006	Survey			x		
38	Weijters et al., 2007	Survey	x				
39	Wells et al., 1999	Theory		x			
40	Zhu et al., 2002	Survey		x	x		

In sum, younger, well-off, and more-educated customers will require less time and effort when acquiring service through self-service channel; therefore, the demographic characteristics of customers moderate the relationship between service-delivery channel and customer value.

Need for Personal Interaction

A need for interaction is a desire to retain personal contact with others during service encounters. Cognitive-experiential self-theory (Epstein, 1994) proposes that people have two parallel, interacting modes of information processing: a rational system and an emotionally driven experiential system. Interpersonal interaction relates to the experiential system, whereas reasoning and problem solving mobilize the rational system. People who rely more on the experiential system, which is primarily non-verbal and intricately associated with affect, tends to experience more difficulty in navigating the interface associated with a self-service system because they do not perform well when the interaction is logical and sequential. However, they find it easier to follow the transmission of implicit and pragmatic messages during face-to-face communication (Simon and Usunier, 2007). A high need for personal interaction will lead to decreased interest in learning how self-service systems work and increase the effort needed to invest in learning self-service technologies (Meuter et al., 2005). Therefore, customers who have more of a need for personal interaction during the service encounter will experience greater customer value than customers with less of a need for personal interaction when using the people-dominant service delivery channel.

Experience with Technology

Customers' previous experience with the technology will influence their feelings about using the IT-enabled customer service systems (Dabholkar, 1992), as experience with the technology may improve customers' confidence and willingness to use it (Walker et al., 2002). Based on the social cognitive theory, self-efficacy is the belief that one has the ability to perform a specific behavior (Compeau and Higgins, 1995). Individuals who have greater proficiency with the technology will find it easier to use and will have higher expectations of the outcome of using the technology (Walker et al., 2002; Wang et al., 2006). The more consumers interact with the customer service technology, the more skilled they become with the role they play in the service delivery process. This results in increased usage of the technology and in the overall satisfaction of the service delivery (Beatson et al., 2007). Therefore, customers are expected to place a higher value on the systems if they feel comfortable using them (Zhu et al., 2002). That is, with the same customer service technology, customers who are more experienced in using the customer service technology perceive higher customer value.

Employees' cumulative experience is able to "influence their morale, their disposition toward the IS innovation, and ultimately, performance (service quality)" (Straub et al., 1995, p. 1338), therefore employees' satisfactions affect service quality (Abraham, 2004), particularly for employees with moderate or low levels of embodied service knowledge (Hsieh et al., 2012).

The previous use of related technology will also increase perceptions of self-confidence and guide behavior (Meuter et al., 2005). For example, people who have had more experience using the Internet are more likely to adopt the Web personalization functionality (Greer and Murtaza, 2003). The notion of technology readiness (Parasuraman, 2000) refers to people's propensity to embrace and use new technologies for accomplishing goals at home and at work. Most people today are likely to have been exposed to some technological products and have formed an attitude toward using them. This general attitude influences the evaluation of new but similar situations (Dabholkar, 1996). Customers who have a positive attitude of mechanical dependability are more willing to adopt new technologies (Walker et al., 2002; Curran and Meuter, 2005), have positive anticipated outcomes from the service encounter and perceive higher service quality and, hence, higher customer value (Curran and Meuter, 2007). Therefore, I propose the following:

Proposition 8: The characteristics of customers moderate the relationships between the service delivery channel and customer value.

Flow Experience

"An *experience* occurs when a customer has any sensation or acquires knowledge from some level of interaction with the elements of a context created by a service provider" (Zomerdijk and Voss, 2011, p.70; based on Pullmann and Gross, 2004). Customer experience therefore is the core of service offering (Haeckel et al., 2003; Pine and Gilmore, 1999; Pullmann and Gross, 2004; Voss et al., 2008), and "experience-centric services" are the ones in which firms defines the customer experience proactively to create distinctive product and service offerings (Zomerdijk and Voss, 2011).

A key characteristic of experience-centric services is their focus on customers' engagement, to enable them to connect with service in a personal and memorable way (Pine and Gilmore, 1999; Pullmann and Gross; 2004).

Service economy continuously moves towards experience-centric focus, so that firms need to design and deliver unique experiences to attain sustainable competitive advantage (Barney, 1991; Scott, 2007). Indeed, value for customers is generated in the interaction process, rather than solely based on the provision of service itself (Etgar, 2008; Gronroos, 1997; Grissemann and Stokburger-Sauer, 2012). *Flow experience* is affected by the psychological state of customer satisfaction (Korzaan, 2003; Oliver 1997; Pullmann and Gross, 2004) and by elements of perceived control, skill, focused attention, interactivity, challenges (Ding et al., 2010). *Perceived control* refers to the

self-efficacy in which a user/customer of a service believes he/she can respond and influence an event (Ajzen, 1991). Since this can generate positive emotional responses in a service setting, it can increase customer satisfaction (Quelch and Klein, 1996). *Skill* refers to the capacity to execute an action (Azjen, 1991) and predicts satisfaction (Flynn et al., 1990). *Focused attention* refers to the importance of customers to be co-producers of service, which must be centered on a limited set of stimulus (Ding et al., 2010) avoiding a potential negative effect on satisfaction due to information overload and distraction (Xia and Sudharshan, 2000). *Interactivity* refers to the perceptions of customers to be involved in definition of experience flow (Chase and Dasu, 2001; Novak, Hoffman and Yung, 2000), thus affecting final satisfaction. Finally, *challenges* refer to opportunities to enhance actions' results, such as providing enjoyment to guests through involvement (Ding et al., 2010).

Evolution of CSS usually involves assessment of common process characteristics, such as security, reliability, ease of use, availability, response time and interface (DeLone and McLean, 2003; Palmer, 2002). These features can affect customers' value and satisfaction (Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003), as well as customer retention (Chen and Hitt, 2002) and retention effectiveness (Schmenner, 2004; Schemenner and Swink, 1998).

Therefore, I summarize that the overall experience perceived by the customer, among the customers' characteristics composing a CSS, positively affects actual customer value and future attitudes toward the firm through service delivery.

Customer Engagement Behaviors

To discuss about how service systems are able to match systems and processes to finally generate value for the customers, it is important to state the important role of value proposition, and its relations with business activities and processes. *Value proposition* is the "invitations from actors to one another to engage in service" (Chandler and Lusch, 2014, p.3), with the final aim to create engagement and achieve value for both all actors involved. Particularly, engagement is usually studied as "application of one's self to workplace tasks and environment" (Chandler and Lusch, 2014, p.3), identifying its characteristics of emotional healthiness, personalization and personal accomplishment. In the service literature, customer engagement "reflects a psychological state occurring through interactive customer experiences with a focal agent/object within specific service relationships (Brodie et al., 2011). It is influenced by temporal and permanent connections, as well as by past, present and future psychological dispositions, therefore also consequent service experience will continually change over time, adapting to new combinations of such elements. "Armed with new connective tools, consumers want to interact and co-create value" (Prahalad and

Ramaswamy, 2004; p. 5; in Kohler et al., 2011). *Co-creation* thus represents the process where consumers co-create value together with the company, so covering an active role in output generation (Prahalad and Ramaswamy, 2004).

Customer engagement represents a psychological state arising from interactive experiences with an object or agent (Brodie et al., 2011), based on a particular context defined by physical settings and relational elements – e.g. social actors and interactions - of the experience environment (Zomerdijk and Voss, 2011). In particular, context can enhance engagement and emotional connections, stimulating the five senses (Zomerdijk and Voss, 2011) and thus becoming the first element to be designed by firms within service experience (Pullman and Gross, 2004). In addition, service employees influence customers' emotions and their engagement, finally affecting perceived service quality and customer satisfaction (Zomerdijk and Voss, 2011). By engaging customers, service employees perform "emotional labor" (Hochschild, 1983), e.g. by creating a *rapport* (Gremler and Gwinner, 2000), i.e. "an enjoyable interaction which include feelings of care and friendliness and personal connections based on psychological similarity or a genuine interest in the other party" (Zomerdijk and Voss, 2011, p.69). Service literature describes how a relation between service employees and customers that overcomes the basic transaction can positively affect customer satisfaction, loyalty and word-of-mouth recommendation (Gremler and Gwinner, 2000; Price et al., 1995; Pullman and Gross, 2004).

Customer engagement is manifest through *customer engagement behaviors* (CEB), defined as the act of "customer provision of resources during non-transactional, joint value processes that occur in interaction with the focal firm and/or other stakeholders, thereby affecting their respective value processes and outcomes" (Jaakkala and Alexander, 2014, p.254). CEB can be of two classes (Jaakkola and Alexander, 2014): involvement in innovation and new products development (Hoyer et al., 2010: Kristensson et al., 2004), or communication of firm to influence other customers' perceptions (Kumar et al., 2010; Brodie et al., 2013; Libai et al., 2010). IT can helps customers enabling information exchange and interaction (Baron and Warnaby, 2011; Dholakia et al., 2009) and by recompensing customers for their actions (Fuller, 2010; Kumar et al., 2010). Through CEB, customers are able to provide resources, overcoming the basic provide-customer dyad (Jaakkala and Alexander, 2014; Nambisan and Baron, 2009; Schau et al., 2009). Jaakkala and Alexander (2014), within the rail industry, identified many possible drivers of CEB: accessibility to service system, shift of partial control from firms to customers, sense of ownership in the service chain, need for improvement and frequent communication and relationships. CEB will finally lead to service

improvement, positive recognition of co-production, improved experience and relationships reinforcement with firm and other possible stakeholders (Jaakkala and Alexander, 2014).

CEB can result in four different types: offer augmentation, offering co-development, influencing of other customers' perceptions, and mobilizing behavior toward other potential stakeholders (Jaakkala and Alexander, 2014). The first two types view customers as co-creators of an improved firm offering, by respectively adding non-fundamental elements, or by facilitating provision. By leveraging on Unified Services Theory (UST) (Sampson and Frohele, 2006), service literature indeed describes how customers cover the role of co-producers of service, considering them as partial employees co-responsible for the outcomes provision (Bowers et al., 1990; Xie et al., 2008). Self-designed products and services can result in tighter fit of preferences, situations and contexts (Franke and Schreier, 2010; Grissemann and Stokburger-Sauer, 2012; Hoyer et al., 2010; Gronros and Ravald, 2011; Epp and Price, 2011; Gummesson and Mele, 2010). This fit finally affects revenues through co-creation (Ostrom et al., 2010; Grissemann and Stokburger-Sauer, 2012) as well as business performance or customer value itself (Auh et al., 2007; Chan et al., 2010; Prahalad and Ramaswamy, 2004). On the other side, un-skilled customers risk to mis-perform service delivered, thus affecting outcomes for both customers and firms (Etgar, 2008). For this reason, customer co-creation and interaction/engagement today define a wide stream of research (e.g. Hoyer et al., 2010) and a research priority (Marketing Science Institute, 2008).

Therefore I propose that, by inducing broader resources integration, CEBs can make value co-creation a system-level process (Jaakkola and Alexander, 2014), finally enhancing customer value delivered.

Customer Value

Customer value is the perception of a customer that involves the tradeoff between what he or she is receiving and what he or she is giving up to acquire and use a product or service (Woodruff, 1997) - the tradeoff between perceived worth of the product or service and perceived psychological and monetary sacrifices (Dodds et al., 1991). When a customer perceives a service to be of good quality, and it is of relatively low price compared to a competitor's product, it is considered to be of good value (Han and Han, 2001). The value of any exchange or relationship is perceived and determined by customers based on value-in-use, therefore the producer stakeholder needs to be customer-centric (Bardhan et al., 2010). Based on this, service system design, pricing, and innovations emerge to increase value created and consequentially revenue as well as internal efficiency (Lusch

et al., 2007). In the service marketing literature, the concept of customer value is widely deepened, discussing about topics such as customer satisfaction and delight (Bolton and Drew, 1991a, 1991b; Oliver et al., 1997; Parasuraman et al., 1988), customer expectations (Oliver et al., 1980), satisfaction measurement and analysis (Fornell, 1992; Fornell et al., 1996; Johnson and Gustafsson, 2000) as well as loyalty and retention, namely their intentions to re-visit and recommend (Kauffman and Sougstad, 2008; Reinartz et al., 2004).

The concept of *customer equity* is here introduced, as "the sum of all customers' lifetime value" (Bardhan et al., 2010, p.39). Customer equity offers firms the possibility to be translated into higher profits and sustained financial performance (Gupta et al., 2006). Similarly, *customer journey* (Patricio et al., 2011; Zomerdijk and Voss, 2010) represents a perspective based on which service encounters are touch-points or "interactions embedded in a series of exchange that may extent over a considerable period of time and with a variety of providers contributing to the experience" (Tax et al., 2013, p.454). In this view, customers represent a "hub" of a service network, linked to the different actors of service-provider firms through service encounters, which act as touch-points of the experience (Tax et al., 2013) enabled by corresponding service delivery channels. Touch-points differ from cues and service encounters since the former represent the actual perspective of the customer, while the latter are defined by service offer originally designed (Zomerdijk and Voss, 2011). Complexity of the overall service provided by different actors will be then affected by the number of "nodes" in the service delivery network and by the frequency of interaction with each one of them. Also, while customers are responsible to piece together all elements of the SDN, to effectively manage the overall service experience provided to the customer firms need to comprehend the overall "constellation" of touch-points and deep how each helps customers in achieving their service consumption goals (Patricio et al., 2011).

Related to the concept of customer value, customer satisfaction covers the role of mechanism able to explain what of IT-enabled benefits are delivered to consumers (Rai et a, 1997). *Customer satisfaction*, within marketing literature, is defined as a positive emotional state arising from the value assessment of a customer's consumption experience (Oliver, 1980), as well as "a summary psychological state resulting from a product/service acquisition and/or consumption experience" (Oliver, 1997, p.13). It is therefore been identified as an important intangible indicator of performance (Fornell et al., 2006; Gupta and Zeithalm, 2006; Lev, 2001; Rust et al., 2004; Srinivasan and Hanssens, 2009). Several studies have measured firm-level customer satisfaction and its consequence on performance (Anderson et al., 1994; Fornell et al., 2006, 2009; Lariviere et al., 2016). They described how it is able to reduce costs and probability that customers will continue

to choose the firm, as well as consumer spending, price elasticity, re-purchase intentions and returns in equity (Anderson, 1996; Anderson et al., 1997; Anderson and Mansi, 2009; Anderson and Sullivan, 1993; Fornell et al., 2010). By levering on IT-enabled strategies, and thus applying technological solutions for internal and customer-facing tasks, firms have the possibility to improve their customer satisfaction (Bharadwaj et al., 2013; Rosenbush, 2015; Mithas et al., 2013; Rai et al., 2012; Ray et al., 2005).

Literature states how IT is able to generate customer satisfaction particularly in more information-intensive service businesses. Services indeed need adaptation to individuals' preferences, so this aim requires customized delivery in real-time, which ask for proper IT solutions. In hospitality industry literature, this need is clearly stated, showing cases of hotels adopting IT-enabled strategies and thus applications to collect, deliver and monitor customers preferences are also based on past experiences. Furthermore, IT has the potential to provide experiences that are consistent with customer expectations, thus improving reliability of experiences (Mithas et al., 2016), as well as to enable business process transparency and efficiency in resources allocation, thus enhancing responding ability and improving quality. Finally, IT-enabled solutions are able to facilitate business process innovations, resulting in improved customer experiences (Tallon, 2008).

In the literature, three determinants of customer satisfaction are usually identified: perceived quality, perceived value and customer expectations (Fornell et al., 1996). *Perceived quality* is composed by two elements, customization and reliability, and can have several dimensions, such as service personalization and customization. Once quality is perceived, based also on price paid, it translates into perceived value. At the last, customer perspectives of delivered value, influenced by previous experiences and external beliefs, defines the customer expectations of future quality and value delivered (Mithas et al., 2016).

On these relationships, IT applications cover the role of potential enablers of perceived service quality, by collecting customer information and finally using them to customize offers (Mithas et al., 2016). Perceived service quality is indeed often considered as an important measure of assessment of customer-oriented services since it reflects responses to actions done to improve service encounters (Parasuraman et al., 1985; 1988; 1994), while been also influential in eliciting a host of positive customer attitudes, such as loyalty (Gefen, 2002), trust (Reichheld and Schefter, 2000) and satisfaction (Cenfetelli et al., 2008). The concept of *quality* has been widely defined in the literatures of philosophy, economics, engineering, marketing, operations, strategy and sociology (Tan et al., 2013), so that Garvin before and Forker then provide a framework to collect such definition based on five main perspectives: transcendent, product-oriented, user-oriented,

manufacturing-oriented and value-oriented. For information systems, marketing and economics studies, the user-oriented approach fits better, defining *quality* as "the ability of a product/service to satisfy human needs and is equivalent to customers' contentment with product/service attributes" (Tan et al., 2013, p.81).

Superior supplementary services, on particular, can both add benefit and reduce customer's non-monetary cost such as time, effort, and mental stress (Parasuraman and Grewal, 2000). Therefore, a service that is of higher quality (the benefit component of customer value) is perceived to be more attractive and more valuable to the customer (Wang et al., 2004). Following this logic, I propose the following:

Proposition 9: Service quality has a positive influence on customer value.

Table 9: Concept matrix: Service quality

#		Methodology	Service Quality	Dependent Variables	
				Customer Value	Customer Satisfaction
1	Bharadwaj et al., 2013	Theory			x
2	Buttle, 1996	Theory	x		
3	Cenfetelli et al., 2008	Survey	x		x
4	Dodds et al., 1991	Experimentation	x	x	
5	Lin, 2007	Survey	x		x
6	Mithas et al., 2013	Archival			x
7	Parasuraman and Grewal, 2000	Theory	x		
8	Parasuraman et al., 1988	Scale development	x		
9	Rai et al., 2012	Archival			x
10	Ray et al., 2005	Multi-method			x
11	Svensson, 2006	Theory	x		
12	Wang et al., 2004	Face-to-face survey	x	x	
13	Wang et al., 2006	Survey	x	x	
14	Yang and Fang, 2004	Content analysis	x		
15	Yang et al., 2004	Content analysis	x		
16	Zeithaml, 1988	Theory	x	x	

As seen before and from the summary of past studies (Table 9), some researchers have used customer satisfaction as the outcome of service quality (Cenfetelli, 2008; Lin, 2007). Customer value is theorized and empirically tested to be the antecedent of customer satisfaction (Chen and Quester, 2007). Therefore, I propose the following:

Proposition 10: Customer value has a positive influence on customer satisfaction and experience.

Conclusions

I reviewed the abstracts of 1030 articles from the information systems, marketing, and operations management literatures and identified 192 articles on which to build my literature review. Based on this review, an integrative theoretical framework has been developed to summarize the interaction among functionalities of customer service systems and their technical/social attributes, as well as their impact on service quality and customer value. This represents the most important part of a review (Okoli, 2012). The review showed that functionalities of customer service systems currently involve the capacities to sense customer needs, provide information, personalize service, facilitate transaction and payment process, solve problem and recover customer complaints, and build relationships. No formal definition of *functionalities of customer service systems* has been found; despite *service content* represents the closest concept in the literature. Functionalities are considered, in this paper, as the capabilities of customer service systems to fulfill customer needs throughout the life cycle. In Table 2, most studies addressed the functionalities that fulfill the need at beginning stages of the customer service life cycle (e.g. providing information and personalization). In the future, researchers should pay more attention to the functionalities needed during the last stage of the customer service life cycle, the retirement stage.

Second, as mentioned before, it is important to note that service can be delivered through multiple channels to customers, even during one transaction. Service delivery channel should be viewed as an integrated service delivery solution, instead of as separate solutions. Both theoretical and empirical research is needed in the field of multiple service delivery channels.

Finally, the last dependent construct emerged by this paper is customer value. *Customer service system interaction value*, the overall utility realized by the customer using a customer service system, is a better measure of the impact of supplementary service. As the benefit components of customer value include the benefits derived from the core product offerings as well as from additional services (e.g., support service, recovery service, and other extraordinary service that further satisfies customers), customer service interaction value is a more precise measure of the benefits derived from supplementary service than customer value in general.

In summary, levering on previous work (Lui and Piccoli, 2009) I propose an integrative framework of IT-enabled customer service systems, through a description of system components and of relationships among these as well as with customer value and overall satisfaction. I does offering to general scholars in information systems and customer service a comprehensive concept-based

review integrating all studies in the field, and by listing their theoretical, empirical and methodological contributions to the field.

"In management […] there might be dozens of completely different words or expressions for designating the same phenomenon" (Rowe, 2014, p. 247). The present review, with keyword-based search approach, has the limitation to potentially exclude articles which adopt different terms for discussing related topics. Adopted iterative methodology based on backward and forward search limited this risk, nevertheless the study can hardly be defined as exhaustive of the complete existing literature.

Additionally, due to the goal of the review to integrate and synthetize the literature through a neutral perspective, it does not analyze the theoretical contributions reported and thus does not critically consolidate the literature (Schwarz, 2007), so that critical knowledge gaps in the specific fields and central issues are not identified (Webster and Watson, 2002), while only a critical investigation of gaps in connections among concepts is described. By doing so, research gaps within each element constituting the proposed framework are not deepened, and research agenda for addressing them is thus not described.

Finally, several potential future research trends are identified by this extensive cross-disciplinary literature review, including the quest of a precise definition for functionality of customer service systems, the analysis of the combined effect of different customer service delivery channels, and the development of the new concept of customer service interaction value. These issues are essential to provide a more complete understanding of customer service systems to both researchers and practitioners.

Reference

Abraham, R. (2004). Emotional competence as antecedent to performance: A contingency framework. Genetic, Social, and General Psychology Monographs, 130(2), 117-145.

Ackoff, R. L. (1971). Towards a system of systems concepts. *Management science*,17, 661–671.f

Adria, M., & Chowdhury, S. D. (2002). Making room for the call center. *Information Systems Management*, 19(1), 71-80.

Agnihothri, S., Sivasubramaniam, N., & Simmons, D. (2002). Leveraging technology to improve field service. *International Journal of Service Industry Management*, 13(1), 47-68.

Baker, M. J. (2000). Writing a literature review. *The Marketing Review*, 1(2), 219-247.

PubMed, Web of Science, or Google Scholar? A behind-the-scenes guide for life scientists. : So which is better: PubMed, Web of Science, or Google Scholar? . *Michigan State University*, retrieved on 28th January, 2017 from http://libguides.lib.msu.edu/pubmedvsgooglescholar .

Ajzen, I. (1991), The Theory of Planned Behavior, *Organizational Behavior and Human Decision Processes*, 50 (2), 179-211.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour.

Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of consumer research*, 13(4), 411-454.

Alba, J., Lynch, J., Weitz, B., Janiszewski, C., Lutz, R., Sawyer, A., & Wood, S. (1997). Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces. *The Journal of Marketing*, 38-53.

Albrecht, K. (2003). Digitizing the customer: the digital moat. *Managing Service Quality: An International Journal*, 13(2), 94-96.

Ancarani, A. (2005). Towards quality e-service in the public sector: The evolution of web sites in the local public service sector. *Managing Service Quality: An International Journal*, 15(1), 6-23.

Anderson EW (1996) Customer satisfaction and price tolerance. Marketing Lett. 7(3):265–274.

Anderson EW, Fornell C, Lehmann DR (1994) Customer satisfaction, market share, and profitability: Findings from Sweden. *J. Marketing* 58(3):53–66.

Anderson EW, Mansi SA (2009) Does customer satisfaction matter to investors? Findings from the bond market. *J. Marketing* Res. 43(5):703–714.

Anderson EW, Sullivan MW (1993) The antecedents and consequences of customer satisfaction for firms. Marketing Science 12(2):125–143.

Anderson, Erin and Barton Weitz (1986), Make-or-Buy Decisions: Vertical Integration and Marketing Productivity, *Sloan Management Review*, 27 (3), 3-19.

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International journal of social research methodology*, 8(1), 19-32.

Armstrong, J. (1992). Knowledge-based systems for users: enhancing the productivity of help desks. *Information Systems Management*, 9(1), 28-37.

Arnowitz, J., & Dykstra-Erickson, E. (2007). Help yourself!: We have better things to do... interactions, 14(1), 5-7.

Au N, Ngai WT, Cheng TC (2008) Extending the understanding of end user information systems satisfaction formation: An equitable needs fulfillment model approach. *MIS Quarterly*, 32(1):43–66.

Auh, S., Bell, S. J., McLeod, C. S., & Shih, E. (2007). Co-production and customer loyalty in financial services. *Journal of Retailing*, 83(3), 359-370.

Awad NF, Krishnan MS (2006) The personalization privacy paradox: An empirical evaluation of information transparency and the willingness to be profiled online for personalization. *MIS Quarterly* 30(1):13–28.

Bailey K.D. (Ed.), Typologies and taxonomies: an introduction to classification techniques., (vol. 102), Sage, Newbury Park, CA, 1994.

Baldwin, C. Y., & Clark, K. B. (2000). Design rules: The power of modularity (Vol. 1). *MIT press*.

Ball, A. D., Coelho, P. S., & Machás, A. (2004), The Role of Communication and Trust in Explaining Customer Loyalty: an extension to the ECSI Model, *European Journal of Marketing*, Vol.38.

Ball, Dwayne, Pedro S. Coelho & Manuel. J. Vilares (2006), Service Personalization and Loyalty, *Journal of Services Marketing*, 20(6), 391-403.

Bancel-Charensol, L. (1999). Impacts on information and communication technologies on service production systems. *The Service Industries Journal*, 19(4), 147-157.

Bandara, W., Miskon, S., & Fielt, E. (2011). A systematic, tool-supported method for conducting literature reviews in information systems. *In Proceedings of the19th European Conference on Information Systems (ECIS 2011).*

Banerjee, M. (2014). Misalignment and its influence on integration quality in multichannel services. *Journal of Service Research*, 1094670514539395.

Bardhan, I. R., Demirkan, H., Kannan, P. K., Kauffman, R. J., & Sougstad, R. (2010). An interdisciplinary perspective on IT services management and service science. *Journal of Management Information Systems*, 26(4), 13-64.

Bardhan, I. R., Krishnan, V. V., & Lin, S. (2007). Project performance and the enabling role of information technology: An exploratory study on the role of alignment. *Manufacturing & Service Operations Management*, 9(4), 579-595.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage, *Journal of Management*, 17 (1), 99-120.

Baron, Steve and Gary Warnaby (2011), Individual Customers Use and Integration of Resources: Empirical Findings and Organizational Implications in the Context of Value Co-Creation, Industrial *Marketing Management*, 40 (2), 211-218.

Baskerville, R. L., & Myers, M. D. (2002). Information systems as a reference discipline. *MIS Quarterly*, 1-14.

Basuroy, S., Chatterjee, S., & Ravid, S. A. (2003). How critical are critical reviews? The box office effects of film critics, star power, and budgets. *Journal of Marketing*, 67(4), 103-117.

Bateson, J. E. (1985). Self-service consumer: An exploratory study. *Journal of Retailing*.

Bayliss, C. Y., & Clark, K. B. (1997). Managing in an age of modularity. *Harvard Business Review*, 46-58.

Beatson, A., Coote, L. V., & Rudd, J. M. (2006). Determining consumer satisfaction and commitment through self-service technology and personal service usage. *Journal of Marketing Management*, 22(7-8), 853-882.

Beatson, A., Lee, N., & Coote, L. V. (2007). Self-service technology and the service encounter. *The Service Industries Journal*, 27(1), 75-89.

Beatty, S. E., Mayer, M., Coleman, J. E., Reynolds, K. E., & Lee, J. (1996). Customer-sales associate retail relationships. *Journal of Retailing*, 72(3), 223-247.

Benaroch, M., Dai, Q., & Kauffman, R. J. (2010). Should we go our own way? Backsourcing flexibility in IT services contracts. *Journal of Management Information Systems*, 26(4), 317-358.

Benaroch, M., Lichtenstein, Y., & Robinson, K. (2006). Real options in information technology risk management: an empirical validation of risk-option relationships. *MIS Quarterly*, 827-864.

Berkley, B. J., & Gupta, A. (1994). Improving service quality with information technology. *International Journal of Information Management*, 14(2), 109-121.

Berkley, B. J., & Gupta, A. (1995). Identifying the information requirements to deliver quality service. *International Journal of Service Industry Management*, 6(5), 16-35.

Berry LL, Seiders K, Grewal D (2002) Understanding service convenience. *J. Marketing* 66(3):1–17.

Berry, L. L., & Gresham, L. G. (1986). Relationship retailing: transforming customers into clients. *Business Horizons*, 29(6), 43-47.

Berry, L. L., & Parasuraman, A. (1997). Listening to the customer--the concept of a service-quality information system. MIT *Sloan Management Review*, 38(3), 65.

Berry, L. L., A. E. Wall and L. P. Carbone (2006), Service Clues and Customer Assessment of the Service Experience: Lesson From Marketing, *Academy of Management Perspective*, 20(2), 43-57.

Berry, L. L., Seiders, K., & Grewal, D. (2002). Understanding service convenience. *Journal of Marketing*, 66(3), 1-17.

Berry, Leonard L., Eileen A. Wall, and Lewis P. Carbone (2006), Service Clues and Customer Assessment of the Service Experience: Lessons from Marketing, *Academy of Management Perspectives*, 20 (2), 43-57.

Bessen, J. (1993). Riding the marketing information wave. *Harvard Business Review*, 71(5), 150-160.

Bharadwaj A, El Sawy O, Pavlou P, Venkatraman N (2013) Digital business strategy: Toward a next generation of insights. *MIS Quarterly* 37(2):471–482.

Bharadwaj, A., Sambamurthy, V., & Zmud, R. (1999). IT capabilities: theoretical perspectives and empirical operationalization. In Paper presented at the 20thinternational conference on information systems Charlotte, North Carolina,United States.

Bharadwaj, S., Bharadwaj, A., & Bendoly, E. (2007). The performance effects of complementarities between information systems, marketing, manufacturing, and supply chain processes. *Information Systems Research*, 18(4), 437-453.

Bharati, P., & Berg, D. (2003). Managing information systems for service quality: a study from the other side. *Information Technology & People*, 16(2), 183-202.

Bhargava, H. K., & Sundaresan, S. (2004). Computing as utility: Managing availability, commitment, and pricing through contingent bid auctions. *Journal of Management Information Systems*, 21(2), 201-227.

Bhatt, G. D., & Troutt, M. D. (2005). Examining the relationship between business process improvement initiatives, information systems integration and customer focus: an empirical study. *Business Process Management Journal*, 11(5), 532-558.

Birnbaum, J. (1997). Pervasive information systems. *Communications of the ACM*, 40(2), 40-42.

Bitner, M. (2001). Self-Service Technologies. *Marketing Management*, 10(1), 10.

Bitner, M. J. (1990). Evaluating service encounters: the effects of physical surroundings and employee responses. *The Journal of Marketing*, 69-82.

Bitner, M. J., & Brown, S. W. (2006). The evolution and discovery of services science in business schools. *Communications of the ACM*, 49(7), 73-78.

Bitner, M. J., Ostrom, A. L., & Meuter, M. L. (2002). Implementing successful self-service technologies. The Academy of Management Executive, 16(4), 96-108.

Bitner, Mary J., Bernard H. Booms, and Mary S. Tetreault (1990), The Service Encounter: Diagnosing Favorable and Unfavorable Incidents, *Journal of Marketing*, 54 (01), 71-84.

Bitner, Mary Jo (2000), The Servicescape, in Handbook of Services Marketing and Management, T. A. Swartz and D. Iacobucci, eds. Thousand Oaks, CA: Sage, 37-50.

Bitner, Mary Jo, William T. Faranda, Amy R. Hubbert, and Valarie A. Zeithaml (1997), Customer Contributions and Roles in Service Delivery, *International Journal of Service Industry Management*, 8 (3), 193-205.

Bolton, R. N., & Drew, J. H. (1991). A multistage model of customers assessments of service quality and value. *Journal of consumer research*, 17(4), 375-384.

Bolton, R. N., & Drew, J. H. (1991[a]). A longitudinal analysis of the impact of service changes on customer attitudes. *The Journal of Marketing*, 1-9.

Bonfield, P. (1996). IT helps satisfy customer needs. Management today, 5.

Bostrom, R. P., & Heinen, J. S. (1977). MIS problems and failures: a socio-technical perspective, part II: the application of socio-technical theory. *MIS Quarterly*, 11-28.

Bowers, M. R., Martin, C. L., & Luker, A. (1990). Trading places: employees as customers, customers as employees. *Journal of Services Marketing*, 4(2), 55-69.

Brodie, R. J., Hollebeek, L. D., Juric, B., & Ilic, A. (2011). Customer engagement: conceptual domain, fundamental propositions, and implications for research. *Journal of Service Research*, 1094670511411703.

Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(1), 105-114.

Brodie, Roderick J. and Linda D. Hollebeek (2011), Response: Advancing and Consolidating Knowledge About Customer Engagement, *Journal of Service Research*, 14 (3), 283-4.

Brohman, M. K., Watson, R. T., Piccoli, G., & Parasurama, A. (2003). Data completeness: a key to effective net-based customer service systems. *Communications of the ACM*, 46(6), 47-51.

Brown, S. W. Service Recovery through IT, *Marketing Management* (6:3), Fall, 1997, pp. 25-27.

Buttle, F. (1996). SERVQUAL: review, critique, research agenda. European *Journal of Marketing*, 30(1), 8-32.

Cai, S., & Jun, M. (2003). Internet users perceptions of online service quality: a comparison of online buyers and information searchers. *Managing Service Quality: An International Journal*, 13(6), 504-519.

Cambre, M. A., & Cook, D. L. (1985). Computer anxiety: Definition, measurement, and correlates. *Journal of Educational Computing Research*, 1(1), 37-54.

Carbone, Lewis P. and Stephan H. Haeckel (1994), Engineering Customer Experiences, *Marketing Management*, 3 (3), 8-19.

Cenfetelli, R. T., Benbasat, I., & Al-Natour, S. (2008). Addressing the what and how of online services: Positioning supporting-services functionality and service quality for business-to-consumer success. *Information Systems Research*, 19(2), 161-181.

Chakrabarty, S., Whitten, D., & Green, K. (2008). Understanding service quality and relationship quality in IS outsourcing: Client orientation & promotion, project management effectiveness, and the task-technology-structure fit. *Journal of Computer information systems*, 48(2), 1-15.

Chan, K. W., Yim, C. K., & Lam, S. S. (2010). Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures. *Journal of Marketing*, 74(3), 48-64.

Chandler, J. D., & Lusch, R. F. (2014). Service systems a broadened framework and research agenda on value propositions, engagement, and service experience. *Journal of Service Research*, 1094670514537709.

Chang, K. H., Raman, P., Carlisle, W. H., & Cross, J. H. (1996). A self-improving helpdesk service system using case-based reasoning techniques. *Computers in Industry*, 30(2), 113-125.

Chase, R. B. and S. Dasu (2001), Want to Perfect Your Companys Service? Use Behavioral Science, *Harvard Business Review*, 79 (6), 78-84.

Chase, Richard and Uday Apte (2007), A History of Research in Service Operations: Whats The Big Idea? *Journal of Operations Management*, 25 (2), 375-386.

Chen, M. J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of management review*, 21(1), 100-134.

Chen, P. and L. M. Hitt (2002), Measuring Switching Costs and Their Determinants in Internet Enabled Businesses: A Study of the Online Brokerage Industry, *Information Systems Research*, 13 (3), 255-276.

Chen, S. C., & Quester, P. G. (2007). Implementation and outcomes of customer value: A dyadic perspective. *The Service Industries Journal*, 27(6), 779-794.

Chesbrough, H., & Spohrer, J. (2006). A research manifesto for services science. *Communications of the ACM*, 49(7), 35-40.

Choi, D. H., Kim, C. M., Kim, S. I., & Kim, S. H. (2006). Customer loyalty and disloyalty in internet retail stores: its antecedents and its effect on customer price sensitivity. International *Journal of Management*, 23(4), 925.

Choi, J., Bell, D. R., & Lodish, L. M. (2012). Traditional and IS-enabled customer acquisition on the internet. *Management science*, 58(4), 754-769.

Christensen, C. M., & Raynor, M. E. (2003). The Innovators Solution: *Harvard Business School Press*. Boston, Mass.

Christensen, C.M. The Innovators Dilemma. *Boston: Harvard Business School Press*, 1997.

Churchman, C. W. (1971). The Design of Inquiring Systems Basic Concepts of Systems and Organization.

Churchman, C. W. (1971). The design of inquiring systems: basic concepts of systems and organization. New York: Basic Books.

Cicourel AV (1973) Cognitive Sociology (Penguin Books, Harmondsworth, UK.

Clemons, E. K., & Row, M. C. (1991). Sustaining IT advantage: the role of structural differences. *MIS Quarterly*, 15, 275–292.

Compeau, D. R., and C. A. Higgins. Computer Self-Efficacy: Development of a Measure and Initial Test, *MIS Quarterly* (19:2), 1995, pp. 189-211.

Cook, D. P., Goh, C. H., & Chung, C. H. (1999). Service typologies: a state of the art survey. *Production and operations management*, 8(3), 318-338.

Cooper H., & Hedges L.V. (2009). Research synthesis as a scientific process. The handbook of research synthesis and meta-analysis, 1.

Cooper, B. L., Watson, H. J., Wixom, B. H., & Goodhue, D. L. (2000). Data warehousing supports corporate strategy at First American Corporation. *MIS Quarterly*, 547-567.

Cooper, H. M. (1988). Organizing knowledge syntheses: A taxonomy of literature reviews. *Knowledge in society*, 1(1), 104-126.

Corning, P. A. (1998). The synergism hypothesis: on the concept of synergy and its role in the evolution of complex systems. *Journal of Social and Evolutionary Systems*, 21, 133–172.

Cox, D. E., & Kreger, H. (2005). Management of the service-oriented-architecture life cycle. *IBM Systems Journal*, 44(4), 709-726.

Crandall, R., & Perrewe, P. L. (Eds.). (1995). Occupational stress: A handbook. CRC Press.

Curran, J. M., & Meuter, M. L. (2005). Self-service technology adoption: comparing three technologies. *Journal of Services Marketing*, 19(2), 103-113.

Curran, J. M., & Meuter, M. L. (2007). Encouraging existing customers to switch to self-service technologies: put a little fun in their lives. *Journal of Marketing theory and practice*, 15(4), 283-298.

Curran, J. M., Meuter, M. L., & Surprenant, C. F. (2003). Intentions to use self-service technologies: a confluence of multiple attitudes. *Journal of Service Research*, 5(3), 209-224.

Curry, A., & Penman, S. (2004). The relative importance of technology in enhancing customer relationships in banking-a Scottish perspective. *Managing Service Quality: An International Journal*, 14(4), 331-341.

Dabholkar, P. A. (1992). Role of affect and need for interaction in on-site service encounters. NA-Advances in Consumer Research Volume 19.

Dabholkar, P. A. (1996). Consumer evaluations of new technology-based self-service options: an investigation of alternative models of service quality. *International Journal of research in Marketing*, 13(1), 29-51.

Daveni, R.A. Hypercompetition: Managing the Dynamics of Strategic Maneuvering. New York: Free Press, 1994.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340.

Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International journal of man-machine studies*, 38(3), 475-487.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.

Dawes, J., & Rowley, J. (1998). Enhancing the customer experience: contributions from information technology. Management decision, 36(5), 350-357.

Day, G. S. (1994). The capabilities of market-driven organizations. *The Journal of Marketing*, 37-52.

Day, G. S. (2004). Achieving Advantage with a New Dominant Logic, in Invited Commentaries on Evolving to a New Dominant Logic for Marketing. In *Journal of Marketing*.

de Búrca, S., Fynes, B., & Brannick, T. (2006). The moderating effects of information technology sophistication on services practice and performance. *International Journal of Operations & Production Management*, 26(11), 1240-1254.

de Ruyter, K., & Zuurbier, J. (1993). Customer information systems: approaching a new field in information systems from a new perspective. *Information & Management*, 24(5), 247-255.

Deighton, J., & Narayandas, D. (2004). Stories and theories. *Journal of Marketing*, 68(1), 19-20.

Delene, L. M., & Lyth, D. M. (1989). Interactive services operations: The relationships among information, technology and exchange transactions on the quality of the customer-contact interface. *International Journal of Operations & Production Management*, 9(5), 24-32.

DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60-95.

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.

Dev, C. S., & Ellis, B. D. (1991). Guest histories: An untapped service resource. *The Cornell Hotel and Restaurant Administration Quarterly*, 32(2), 29-37.

DeVries, P. D. (2008). The state of RFID for effective baggage tracking in the airline industry. *International Journal of Mobile Communications*, 6(2), 151-164.

Dholakia, U. M., Blazevic, V., Wiertz, C., & Algesheimer, R. (2009). Communal service delivery how customers benefit from participation in firm-hosted virtual P3 communities. *Journal of Service Research*, 12(2), 208-226.

Dickey, M. H., Burnett, G., Chudoba, K. M., & Kazmer, M. M. (2007). Do you read me? Perspective making and perspective taking in chat communities. *Journal of the Association for Information Systems*, 8(1), 47.

Dillon, T. W., & Reif, H. L. (2004). Factors influencing consumers e-commerce commodity purchases. Information Technology, *Learning, and Performance Journal*, 22(2), 1.

DiMaggio, P., & Louch, H. (1998). Socially embedded consumer transactions: For what kinds of purchases do people most often use networks?. American sociological review, 619-637.

Ding, D. X., Hu, P. J. H., Verma, R., & Wardell, D. G. (2009). The impact of service system design and flow experience on customer satisfaction in online financial services. *Journal of Service Research*.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers product evaluations. *Journal of Marketing* research, 307-319.

Domegan, C. T. (1996). The adoption of information technology in customer service. European *Journal of Marketing*, 30(6), 52-69.

Douglas, A., Muir, L., & Meehan, K. (2003). E-quality in the e-services provision of legal practices. *Managing Service Quality: An International Journal*, 13(6), 483-491.

Dove, R. (2001). Response ability: the language, structure, and culture of the agile enterprise. John Wiley & Sons.

Duncan, N. B. (1995). Capturing flexibility of information technology infrastructure: A study of resource characteristics and their measure. *Journal of Management Information Systems*, 12(2), 37-57.

Eisenmann, T., Parker, G., & Van Alstyne, M. W. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84(10), 92.

El Sawy, O. A., & Bowles, G. (1997). Redesigning the customer support process for the electronic economy: insights from storage dimensions. *MIS Quarterly*, 457-483.

Ellram, L. M., B. J. La Londe, and M. M. Weber. (1999). Retail Logistics, *International Journal of Physical Distribution & Logistics Management* (29:7/8), pp. 477-494.

Epp, Amber M, and Linda L Price (2011), Designing Solutions Around Customer Network Identity Goals, *Journal of Marketing*, 75 (2), 36-54.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. American psychologist, 49(8), 709.

Erevelles, S., Srinivasan, S., & Rangel, S. (2003). Consumer satisfaction for internet service providers: An analysis of underlying processes. Information Technology and Management, 4(1), 69-89.

Etgar, M. (2008). A descriptive model of the consumer co-production process. *Journal of the Academy of Marketing Science*, 36(1), 97-108.

Farrell, C., & Song, J. H. (1988). Strategic uses of information technology. *SAM Advanced Management Journal*, 53(1), 10-16.

Fassnacht, M., & Koese, I. (2006). Quality of electronic services conceptualizing and testing a hierarchical model. *Journal of Service Research*, 9(1), 19-37.

Fichman, R. G. (2004). Real options and IT platform adoption: Implications for theory and practice. *Information Systems Research*, 15(2), 132-154.

Fink, L., & Neumann, S. (2007). Gaining agility through IT personnel capabilities: The mediating role of IT infrastructure capabilities. *Journal of the Association for Information Systems*, 8(8), 440.

Fleming, Jennifer and Richard Koman (1998), Web Navigation: Designing the User Experience. Sebastopol, CA: OReilly.

Fornell C, Mithas S, Morgeson FV (2009) The statistical significance of portfolio returns. *Internat. J. Res. Marketing* 26(2):162–163.

Fornell C, Mithas S, Morgeson FV, Krishnan MS (2006) Customer satisfaction and stock prices: High returns, low risk. *J. Marketing* 70(1):3–14.

Fornell C, Rust RT, Dekimpe MG (2010) The effect of customer satisfaction on consumer spending growth. *J. Marketing* Res. 47(1):28–35.

Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *The Journal of Marketing*, 6-21.

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: nature, purpose, and findings. *The Journal of Marketing*, 7-18.

Fornell, C.; Johnson, M.D.; Anderson, E.W.; Cha, J.; and Bryant, B.E. (1996). The American customer satisfaction index: Nature, purpose and findings. *Journal of Marketing*, 60, 4. 39–50.

Frei, F. X. (2006), Breaking the Trade-Off Between Efficiency and Service, *Harvard Business Review*, 84 (11), 92-103.

Froehle, C. M., & Roth, A. V. (2004). New measurement scales for evaluating perceptions of the technology-mediated customer service experience. *Journal of Operations Management*, 22(1), 1-21.

Füller, Johann (2010), Refining Virtual Co-Creation From a Consumer Perspective, California Management Review, 52 (2), 98-122.

Furey, T. R. (1991). How information power can improve service quality. Planning Review, 19(3), 24-26.

Galletta, D. F., Ahuja, M., Hartman, A., Teo, T., & Peace, A. G. (1995). Social influence and end-user training. *Communications of the ACM*, 38(7), 70-79.

Ganesh, J. (2004). Managing customer preferences in a multi-channel environment using web services. International *Journal of Retail & Distribution Management*, 32(3), 140-146.

Garrett, J. J. (2010). Elements of user experience, the: user-centered design for the web and beyond. Pearson Education.

Garvey, W. D., & Griffith, B. C. (1971). Scientific communication: Its role in the conduct of research and creation of knowledge. *American psychologist*, 26(4), 349.

Gefen, D. (2002). Customer Loyalty in e-Commerce, *Journal of the Association for Information Systems* (3:1), pp. 27-51.

Gharajedaghi, J. (2011). Systems thinking: managing chaos and complexity: aplatform for designing business architecture. Morgan Kaufmann.

Gil-Garcia, J. R., Chengalur-Smith, I., & Duchessi, P. (2007). Collaborative e-Government: impediments and benefits of information-sharing projects in the public sector. *European Journal of Information Systems*, 16(2), 121-133.

Gilmore, J. H., & Pine, B. J. (1997). The four faces of mass customization. *Harvard Business Review*, 75, 91-101.

Glynn, W. J., & Brannick, T. (1998). The listening organisation: A segmentation approach to service quality information. Irish *Journal of Management*, 19(2), 55.

Glynn, W. J., De Burca, S., Brannick, T., Fynes, B., & Ennis, S. (2003). Listening practices and performance in service organisations. *International Journal of Service Industry Management*, 14(3), 310-330.

Goodfellow, J. (1998), Constructing a Narrative. In J. Higgs (Ed.), Writing Qualitative Research, *Sydney: Hampden Press*, pp. 175–187

Goodhue, D. L. (1995). Understanding user evaluations of information systems. *Management science*, 41(12), 1827-1844.

Goul, M., & Corral, K. (2007). Enterprise model management and next generation decision support. *Decision Support Systems*, 43(3), 915-932.

Greer, T. H., & Murtaza, M. B. (2003). Web personalization: The impact of perceived innovation characteristics on the intention to use personalization. *Journal of Computer information systems*, 43(3), 50-55.

Gremler, Dwayne and Kevin P. Gwinner (2000), Customer-Employee Rapport in Service Relationships, *Journal of Service Research*, 3 (1), 82-104.

Grimsley, M., & Meehan, A. (2007). e-Government information systems: Evaluation-led design for public value and client trust. *European Journal of Information Systems*, 16(2), 134-148.

Grönroos, Christian and Annika Ravald (2011), Service as Business Logic: Implications for Value Creation and Marketing, *Journal of Service Management*, 22 (1), 5-22.

Größler, A., Thun, J. H., & Milling, P. M. (2008). System dynamics as a structural theory in operations management. *Production and operations management*, 17(3), 373-384.

Gummerus, J., Liljander, V., Pura, M., & Van Riel, A. (2004). Customer loyalty to content-based web sites: the case of an online health-care service. *Journal of Services Marketing*, 18(3), 175-186.

Gummesson, E. (2004). Service provision calls for partners instead of parties. *Journal of Marketing*, 68(1), 20-21.

Gummesson, E., & Mele, C. (2010). Marketing as value co-creation through network interaction and resource integration. *Journal of Business Market Management*, 4(4), 181-198.

Gupta S, Zeithaml V (2006) Customer metrics and their impact on financial performance. Marketing Sci. 25(6):718–739.

Gupta, S., Hanssens, D., Hardie, B., Kahn, W., Kumar, V., Lin, N., ... & Sriram, S. (2006). Modeling customer lifetime value. *Journal of Service Research*, 9(2), 139-155.

Gupta, S., Lehmann, D. R., & Stuart, J. A. (2004). Valuing customers. *Journal of Marketing* research, 41(1), 7-18.

Gupta, Sudheer and Mirjana Vajic (2000), The Contextual and Dialectical Nature of Experiences, in New Service Development: Creating Memorable Experiences, James A. Fitzsimmons and Mona J. Fitzsimmons, eds. Thousand Oaks, CA: Sage, 33-51.

Gwinner, K. P., Gremler, D. D., & Bitner, M. J. (1998). Relational benefits in services industries: the customers perspective. *Journal of the Academy of Marketing Science*, 26(2), 101-114.

Haeckel, S.H. Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations. *Boston: Harvard Business School Press*, 1999.

Haeckel, S.H. Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations. *Boston: Harvard Business School Press*, 1999.

Haeckel, Stephan H., Lewis P. Carbone, and Leonard L. Berry (2003), How to Lead the Customer Experience, *Marketing Management*, 12 (1), 18-23.

Han, J., & Han, D. (2001). A framework for analyzing customer value of internet business. *JITTA: Journal of Information Technology Theory and Application*, 3(5), 25.

Harper, D. Quality Service at a Profit, *Industrial Management + Data Systems* (Mar/Apr:1988, pp. 3-5.

Hart, C. (1998). Doing a literature review: Releasing the social science research imagination. *Sage.*

Hedden, T., and J. D. E. Gabrieli. Insights into the Ageing Mind: A View from Cognitive Neuroscience, *Nature Reviews Neuroscience* (5:2), 2004, pp. 87-96.

Hedge, J. W., Borman, W. C., & Lammlein, S. E. (2006). The aging workforce: Realities, myths, and implications for organizations. *American Psychological Association*.

Hennig-Thurau, T., Gwinner, K. P., & Gremler, D. D. (2002). Understanding relationship marketing outcomes an integration of relational benefits and relationship quality. *Journal of Service Research*, 4(3), 230-247.

Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., & Schlesinger, L. A. (2008). Putting the service-profit chain to work. *Harvard Business Review*.

Hill, T. P. (1977). On goods and services. Review of income and wealth, 23(4), 315-338.

Hochschild, Arlie Russel (1983), The Managed Heart: Commercialization of Human Feeling. Berkeley: University of California Press.

Hoffman, K. Douglas and L. W. Turley (2002), Atmospherics, Service Encounters and Consumer Decision Making: An Integrative Perspective, *Journal of Marketing* Theory & Practice, 10 (3), 33-47.

Holbrook, Morris B. (1994), The Nature of Customer Value, in Service Quality, R. T. Rust and R. L. Oliver, eds. Thousand Oaks, CA: Sage, 21-71.

Homburg, C., Hoyer, W. D., & Fassnacht, M. (2002). Service orientation of a retailers business strategy: Dimensions, antecedents, and performance outcomes. *Journal of Marketing*, 66(4), 86-101.

Horn, P. (2005). The new discipline of services science. Business Week, 21.

Hoyer, Wayne D., Rajesh Chandy, Matilda Dorotic, Manfred Krafft and Siddharth S. Singh (2010), Consumer Cocreation in New Product Development, *Journal of Service Research*, 13 (3), 283-96.

Hsieh, J. P. A., Rai, A., Petter, S., & Zhang, T. (2012). Impact of user satisfaction with mandated CRM use on employee service quality.

Huang, M. H., & Rust, R. T. (2013). IT-related service a multidisciplinary perspective. *Journal of Service Research*, 16(3), 251-258.

Hull, D. L., & Cox, J. F. (1994). The field service function in the electronics industry: providing a link between customers and production/marketing. International *Journal of Production Economics*, 37(1), 115-126.

Hunt, S. D. (2004). On the Service-Centered Dominant Logic for Marketing, *Journal of Marketing* (68:1), pp. 21-22.

IBM. (2009). Service Sciences, Management and Engineering, 2:20.

Ives, B., & Learmonth, G. P. (1984). The information system as a competitive weapon. *Communications of the ACM*, 27(12), 1193-1201.

Ives, B., & Mason, R. O. (1990). Can information technology revitalize your customer service?. The Executive, 4(4), 52-69.

Ives, B., & Vitale, M. R. (1988). After the sale: leveraging maintenance with information technology. *MIS Quarterly*, 7-21.

Jaakkola, E., & Alexander, M. (2014). The role of customer engagement behavior in value co-creation a service system perspective. *Journal of Service Research*, 17(3), 247-261.

Janda, S., Trocchia, P. J., & Gwinner, K. P. (2002). Consumer perceptions of Internet retail service quality. *International Journal of Service Industry Management*, 13(5), 412-431.

Jarvenpaa, S. L., & Ives, B. (1994). The global network organization of the future: Information management opportunities and challenges. *Journal of Management Information Systems*, 10(4), 25-57.

Johnson, M., and Gustafsson, A. Improving Customer Satisfaction, Loyalty and Profit: An Integrated Measurement and Management System. San Francisco: Jossey-Bass, 2000.

Johnson, R. A., Kast, F. E., & Rosenzweig, J. E. (1964). Systems theory and management. *Management science*, 10, 367–384.

Jones, T. O., and W. E. J. Sasser. Why Satisfied Customer Defect? *Harvard Business Review* (73:Nov/Dec), 1995, pp. 88-99.

Ju Rebecca Yen, H., & Gwinner, K. P. (2003). Internet retail customer loyalty: the mediating role of relational benefits. *International Journal of Service Industry Management*, 14(5), 483-500.

Judd, R. C. (1964). The Case for Redefining Services. *Journal of Marketing*, 28(1).

Kannan, P. K., Pope, B. K., & Jain, S. (2009). Practice prize winner-pricing digital content product lines: A model and application for the national academies press. Marketing Science, 28(4), 620-636.

Karimi, J., Somers, T. M., & Gupta, Y. P. (2001). Impact of information technology management practices on customer service. *Journal of Management Information Systems*, 17, 125–158.

Katz, D., & Kahn, R. L. (1978). The social psychology of organizations. New York, NY:Wiley.

Kauffman, R. J., & Sougstad, R. (2008). Risk management of contract portfolios in IT services: the profit-at-risk approach. *Journal of Management Information Systems*, 25(1), 17-48.

Keen, P. G. W. (1991). *Shaping the Future Business Design through Information Technology*, *Harvard Business School Press*, Boston MA.

Kim, G., Shin, B., Kim, K. K., & Lee, H. G. (2011). IT capabilities, process-oriented dynamic capabilities, and firm financial performance. *Journal of the Association for Information Systems*, 12, 491–492.

Kim, H. W., Xu, Y., & Koh, J. (2004). A comparison of online trust building factors between potential customers and repeat customers. *Journal of the Association for Information Systems*, 5(10), 13.

Kim, M., Kim, J. H., & Lennon, S. J. (2006). Online service attributes available on apparel retail web sites: an ES-QUAL approach. *Managing Service Quality: An International Journal*, 16(1), 51-77.

Kim, S. Y., & Lim, Y. J. (2001). Consumers perceived importance of and satisfaction with internet shopping. Electronic Markets, 11(3), 148-154.

Ko D-G, Kirsch JL, King WR (2005) Antecedents of knowledge transfer from consultants to clients in enterprise system implementations. *MIS Quarterly* 29(1):59–85.

Kohler, T., Fueller, J., Matzler, K., & Stieger, D. (2011). Co-creation in virtual worlds: the design of the user experience. *MIS Quarterly*, 35(3), 773-788.

Korzaan, M. L. (2003), Going With the Flow: Predicting Online Purchase Intentions, *Journal of Computer information systems*, 43 (4), 25-31.

Kourouthanassis, P. E., Giaglis, G. M., & Vrechopoulos, A. P. (2007). Enhancing user experience through pervasive information systems: The case of pervasive retailing. *International Journal of Information Management*, 27(5), 319-335.

Kristensson, Per, Anders Gustafsson and Trevor Archer (2004), Harnessing the Creative Potential Among Users, *Journal of Product Innovation Management*, 21 (1), 4-14.

Kumar, V., Aksoy, L., Donkers, B., Venkatesan, R., Wiesel, T., & Tillmanns, S. (2010). Undervalued or overvalued customers: capturing total customer engagement value. *Journal of Service Research*, 13(3), 297-310.

Lambert, D. M. (1992). Developing a customer-focused logistics strategy. *International Journal of Physical Distribution & Logistics Management*, 22(6), 12-19.

Lariviere B, Keiningham TL, Aksoy L, Yalcin A, Morgeson FV, Mithas S (2016) Modeling heterogeneity in the satisfaction, loyalty intention, and shareholder value linkage: A cross-industry analysis at the customer and firm level. *J. Marketing* Res. 53(1): 91–109.

Lee, H. Y., Lee, Y. K., & Kwon, D. (2005). The intention to use computerized reservation systems: the moderating effects of organizational support and supplier incentive. *Journal of Business Research*, 58(11), 1552-1561.

Lee, J. (2002). A key to marketing financial services: the right mix of products, services, channels and customers. *Journal of Services Marketing*, 16(3), 238-258.

Lee, J. (2005). Model-driven business transformation and the Semantic Web. *Communications of the ACM*, 48(12), 75-77.

Lee, J., and A. Allaway. Effects of Personal Control on Adoption of Self-Service Technology Innovations, *The Journal of Services Marketing* (16:6), 2002, pp. 553-572.

Lev B (2001) Intangibles: Management, Measurement, and Reporting (Brookings Institution Press, Washington, DC).

Levenburg, N. M., & Klein, H. A. (2006). Delivering customer services online: identifying best practices of medium-sized enterprises. *Information Systems Journal*, 16(2), 135-155.

Leveson, N. G. (2003). A systems-theoretic approach to safety insoftware-intensive systems. In Proceeding of the international conference of thesystem safety society Ottawa, Canada.

Levitt, T. Production-Line Approach to Service, *Harvard Business Review* (50:5), 1972, pp. 41-52.

Levy, Y., & Ellis, T. J. (2006). A systems approach to conduct an effective literature review in support of information systems research. Informing Science: *International Journal of an Emerging Transdiscipline*, 9(1), 181-212.

Li, Y. N., Tan, K. C., & Xie, M. (2003). Factor analysis of service quality dimension shifts in the information age. *Managerial Auditing Journal*, 18(4), 297-302.

Liang, T. P., Lai, H. J., & Ku, Y. C. (2006). Personalized content recommendation and user satisfaction: Theoretical synthesis and empirical findings. *Journal of Management Information Systems*, 23(3), 45-70.

Liao SY, Li Q, Xu DJ (2005) A Bayesian network-based framework for personalization in mobile commerce applications. *Comm. Assoc. Inform. Systems* 15(1):494–511.

Libai, B., Bolton, R., Bügel, M. S., De Ruyter, K., Götz, O., Risselada, H., & Stephen, A. T. (2010). Customer-to-customer interactions: broadening the scope of word of mouth research. *Journal of Service Research*, 13(3), 267-282.

Lightner, N. J. (2004). Evaluating e-commerce functionality with a focus on customer service. *Communications of the ACM*, 47(10), 88-92.

Lin, H. F. (2007). The impact of website quality dimensions on customer satisfaction in the B2C e-commerce context. Total Quality Management and Business Excellence, 18(4), 363-378.

Lovelock, C. H. *Product Plus: How Product + Service = Competitive Advantage*, McGraw-Hill, Inc., New York, 1994.

Luftman, J.N., and McLean, E.R. Key issues for IT executives. *MIS Quarterly* Executive, 3, 2 (June 2004), 269–285.

Lui, T. W. (2009). It-Enabled Customer Service Systems Design, Delivery And The Resulting Customer Satisfaction And Value *(Doctoral dissertation, Cornell University).*

Lui, T. W., & Piccoli, G. (2009). Toward a theory of IT-enabled customer service systems. Handbook of research on contemporary theoretical models in information systems, 364-383.

Lusch, R. F., Vargo, S. L., & OBrien, M. (2007). Competing through service: Insights from service-dominant logic. *Journal of Retailing*, 83(1), 5-18.

Mahmood, M. A., Hall, L., & Swanberg, D. L. (2001). Factors affecting information technology usage: A meta-analysis of the empirical literature. *Journal of Organizational Computing and Electronic Commerce*, 11(2), 107-130.

Malone, T. W. (1987). Modeling coordination in organizations and markets. *Management science*, 33(10), 1317-1332.

Manrodt, K. B., & Davis, F. W. (1992). The evolution to service response logistics. *International Journal of Physical Distribution & Logistics Management*, 22(9), 3-10.

Markus, M. L., & Robey, D. (1983). The organizational validity of management information systems. Human relations, 36(3), 203-225.

Mata, F. J., Fuerst, W. L., & Barney, J. B. (1995). Information technology and sustained competitive advantage: a resource-based analysis. *MIS Quarterly*, 19,487–505.

McAfee, A., & Brynjolfsson, E. (2008). Investing in the IT that makes a competitive difference. *Harvard Business Review*, 86(7/8), 98.

Meister, F., Shin, D., and Andrews, L. 2002. Getting to Know You: Whats New in Personalization Technologies, E-Doc, March-April (http://www.aiim.org/Resources/Archive/Magazine/2002-Mar-Apr/25187).

Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Review: Information technology and organizational performance: An integrative model of IT business value. *MIS Quarterly*, 28(2), 283-322.

Meuter, M. L., Bitner, M. J., Ostrom, A. L., & Brown, S. W. (2005). Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies. *Journal of Marketing*, 69(2), 61-83.

Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal of Business Research*, 56(11), 899-906.

Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50-64.

Meyronin, B. (2004). ICT: the creation of value and differentiation in services. *Managing Service Quality: An International Journal*, 14(2/3), 216-225.

Milligan, J. W., and T. Hayes. What do Customers what from You? Everything! *U.S. Banker* (107:12), 1997, pp. 38-45.

Mitchell, V. L. (2006). Knowledge integration and information technology project performance. *MIS Quarterly*, 919-939.

Mithas S, Almirall D, Krishnan MS (2006) Do CRM systems cause one-to-one marketing effectiveness? Statist. Sci. 21(2):223–233.

Mithas S, Krishnan MS, Fornell C (2005) Why do customer relationship management applications affect customer satisfaction? *J. Marketing* 69(4):201–209.

Mithas S, Tafti AR, Mitchell W (2013) How a firms competitive environment and digital strategic posture influence digital business strategy. *MIS Quarterly* 37(2):511–536.

Mithas, S., Krishnan, M. S., & Fornell, C. (2005). Effect of information technology investments on customer satisfaction: Theory and evidence. Ann Arbor, 1001, 48109-1234.

Mithas, S., Krishnan, M. S., & Fornell, C. (2016). Research Note—Information Technology, Customer Satisfaction, and Profit: Theory and Evidence. *Information Systems Research*, 27(1), 166-181.

Montoya, M. M., Massey, A. P., & Khatri, V. (2010). Connecting IT services operations to services marketing practices. *Journal of Management Information Systems*, 26(4), 65-85.

Montoya-Weiss, M. M., Voss, G. B., & Grewal, D. (2003). Determinants of online channel use and overall satisfaction with a relational, multichannel service provider. *Journal of the Academy of Marketing Science*, 31(4), 448-458.

Moriarty, R. T., and G. S. Swartz. (1989). Automation to Boost Sales and Marketing, *Harvard Business Review* (67:1), pp. 100-108.

Morris, B. (1998). The service profit chain: How leading companies link profit and growth to loyalty, satisfaction, and value. *International Journal of Service Industry Management*, 9(3), 312-313.

MSI (2008), 2008-2010 Research Priorities, Vol. 2010: Marketing Science Institute.

Mukhopadhyay, T., & Kekre, S. (2002). Strategic and operational benefits of electronic integration in B2B procurement processes. *Management science*, 48(10), 1301-1313.

Nadler, D., and Tushman, M. (1983). A general diagnostic model for organizational behavior: Applying a congruence perspective. In J.R. Hackman, E.E. Lawler, and L.W. Porter (eds.), Perspectives on Behavior in Organizations. New York: McGraw-Hill, pp. 112–124.

Nahapiet J, Ghoshal S (1998) Social capital, intellectual capital, and the organizational advantage. Acad. Management Rev. 23(2):242–266.

Narver, J. C., & Slater, S. F. (1990). The effect of a market orientation on business profitability. *The Journal of Marketing*, 20-35.

Negash, S., Ryan, T., & Igbaria, M. (2003). Quality and effectiveness in web-based customer support systems. *Information & Management*, 40(8), 757-768.

Nevo, S., & Wade, M. R. (2010). The formation and value of IT-enabled resources: antecedents and consequences of synergistic relationships. *MIS Quarterly*, 34,163–183.

Ng, T. W., & Feldman, D. C. (2009). How broadly does education contribute to job performance?. Personnel psychology, 62(1), 89-134.

Nguyen, T. H., Sherif, J. S., & Newby, M. (2007). Strategies for successful CRM implementation. Information Management & Computer Security, 15(2), 102-115.

Niketic, N., & Mules, G. R. (1993). How Qantas Airways uses EDI for travel reservation processing. *Journal of Systems Management*, 44(1), 9.

Normann, Richard and Rafael Ramirez (1998), Designing Interactive Strategy from Value Chain to Value Constellation. West Sussex, England: John Wiley.

Novak, T. P., D. L. Hoffman, and Y. Yung (2000), Measuring the Customer Experience in Online Environments: A Structural Modeling Approach, Marketing Science, 19 (1), 22-42.

Okoli, C. (2012). A critical realist guide to developing theory with systematic literature reviews. *Social Science Research Network.*

Oliver RL (1980) A cognitive model of the antecedents and consequences of satisfaction decisions. *J. Marketing Res.*17(4):460–469.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing* research, 460-469.

Oliver, R. L. (1997), Satisfaction: A Behavioral Perspective on the Consumer. Boston: McGraw-Hill.

Oliver, R. L., Rust, R. T., & Varki, S. (1997). Customer delight: foundations, findings, and managerial insight. *Journal of Retailing*, 73(3), 311-336.

Orlikowski, W. J., & Iacono, C. S. (2001). Research commentary: Desperately seeking the IT in IT research—A call to theorizing the IT artifact. *Information Systems Research*, 12(2), 121-134.

Orman, L. V. (2007). Consumer support systems. *Communications of the ACM*, 50(4), 49-54.

Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., ... & Rabinovich, E. (2010). Moving forward and making a difference: research priorities for the science of service. *Journal of Service Research*.

Overby, E., Bharadwaj, A., & Sambamurthy, V. (2006). Enterprise agility and the enabling role of information technology. *European Journal of Information Systems*, 15(2), 120-131.

Palmer, J. W. (2002), Web Site Usability, Design, and Performance Metrics, *Information Systems Research*, 13 (2), 151-167.

Parasuraman A., V. Zeithaml, and N. Malhotra (2005), E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality, *Journal of Service Research*, 7 (3), 213-233.

Parasuraman, A. (2000). Technology Readiness Index (TRI) a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307-320.

Parasuraman, A. B. (1988). LL and Zeithaml, VA SERVQUAL: A Multiple-item Scale for Measuring Customer Perceptions of Service Quality. Jouranl of Retailing, 64, 594-612.

Parasuraman, A., & Grewal, D. (2000). The impact of technology on the quality-value-loyalty chain: a research agenda. *Journal of the Academy of Marketing Science*, 28(1), 168-174.

Parasuraman, A., Berry, L. L., and Zeithaml, V. A. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Customer Perceptions of Service Quality, *Journal of Retailing* (64:1), pp.12-40.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *The Journal of Marketing*, 41-50.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. *The Journal of Marketing*, 111-124.

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). ES-QUAL a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), 213-233.

Paré, G., Trudel, M. C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*, 52(2), 183-199.

Paré, G., Trudel, M. C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*, 52(2), 183-199.

Patrício, L., Fisk, R. P., & Constantine, L. (2011). Multilevel service design: from customer value constellation to service experience blueprinting. *Journal of Service Research*, 1094670511401901.

Pavlou, P. A., & El Sawy, O. A. (2006). From IT leveraging competence to competitive advantage in turbulent environments: The case of new product development. *Information Systems Research*, 17(3), 198-227.

Payne, A. and Frow P. (2004). The Role of Multi-Channel Integration in Customer Relationship Management, Industrial *Marketing Management*, 33 (6), 527-538.

Peppard, J. (2003). Managing IT as a Portfolio of Services. *European Management Journal*, 21(4), 467-483.

Pervan, G. P. (1998). A review of research in group support systems: leaders, approaches and directions. *Decision Support Systems*, 23(2), 149-159.

Piccoli, G., B. R. Spalding, and B. Ives. (2001). The Customer Service Life Cycle: A Framework for Internet use in Support of Customer Service, *Cornell Hotel and Restaurant Administration Quarterly* (42:3). pp. 38-45.

Piccoli, G., Brohman, M. K., Watson, R. T., & Parasuraman, A. (2004). Net-based customer service systems: evolution and revolution in web site functionalities. *Decision Sciences*, 35(3), 423-455.

Piccoli, G., Brohman, M. K., Watson, R. T., & Parasuraman, A. (2009). Process completeness: Strategies for aligning service systems with customers service needs. Business Horizons, 52(4), 367-376.

Pine, Joseph B. and James H. Gilmore (1999), The Experience Economy: Work Is Theatre & Every Business a Stage. *Boston: Harvard Business School Press*.

Prahalad, C. K. The Cocreation of Value, *Journal of Marketing* (68:1), 2004, pp. 23-23.

Prahalad, CK and Venkat Ramaswamy (2004), Co-Creating Unique Value with Customers, Strategy & Leadership, 32 (3), 4-9.

Price, L. L., & Arnould, E. J. (1999). Commercial friendships: service provider-client relationships in context. *The Journal of Marketing*, 38-56.

Pullman, M. E., & Gross, M. A. (2004). Ability of experience design elements to elicit emotions and loyalty behaviors. *Decision Sciences*, 35(3), 551-578.

Pullman, M. E., & Gross, M. A. (2004). Ability of experience design elements to elicit emotions and loyalty behaviors. *Decision Sciences*, 35(3), 551-578.

Quelch, J. A. and L. R. Klein (1996), The Internet and International Marketing, *Sloan Management Review*, 37 (3), 60-75.

Rai A, Patnayakuni R, Patnayakuni N (1997) Technology investment and business performance. Comm. ACM 40(7):89–97.

Rai A, Pavlou P, Im G, Du S (2012) Inter-firm IT capabilities and communications for co-creating relational value: Evidence from the logistics industry. *MIS Quarterly* 36(1):233–262.

Ratchford, B. T. (2001). The economics of consumer knowledge. *Journal of consumer research*, 27(4), 397-411.

Rathnam, S., Mahajan, V., & Whinston, A. B. (1995). Facilitating coordination in customer support teams: a framework and its implications for the design of information technology. *Management science*, 41(12), 1900-1921.

Raval, V. (1983). Impact of information systems on customers. *Information & Management*, 6(5), 255-260.

Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view. *Strategic management journal*, 25(1), 23-37.

Ray, G., Muhanna, W. A., & Barney, J. B. (2005). Information technology and the performance of the customer service process: A resource-based analysis. *MIS Quarterly*, 625-652.

Rayport, J. G., and B. J. Jaworski. (2004). Best Face Forward, *Harvard Business Review* (82:12),, pp. 47-58.

Reda, S. (2006). Spicing Up Service, *Stores* (88:2), pp. 30-34.

Reichheld, F. F., and Schefter, P. 2000. E-Loyalty: Your Secret Weapon on the Web, *Harvard Business Review* (78:4), pp.105-113.

Reinartz, W., Krafft, M., & Hoyer, W. D. (2004). The customer relationship management process: Its measurement and impact on performance. *Journal of Marketing* research, 41(3), 293-305.

Ribbink, D., Van Riel, A. C., Liljander, V., & Streukens, S. (2004). Comfort your online customer: quality, trust and loyalty on the internet. *Managing Service Quality: An International Journal*, 14(6), 446-456.

Riecken D (2000) Personalized views of personalization. CACM 43(8):26–28.

Roberts, N., & Grover, V. (2012). Leveraging information technology infrastructure to facilitate a firms customer agility and competitive activity: An empirical investigation. *Journal of Management Information Systems*, 28(4), 231-270.

Rosenbush S (2015) CIOs face the age of the customer. *Wall Street Journal*.

Ross, D. F. (2005). E-CRM from a supply chain management perspective. *Information Systems Management*, 22(1), 37-44.

Roth, P. L., Purvis, K. L., & Bobko, P. (2010). A meta-analysis of gender group differences for measures of job performance in field studies. *Journal of Management*, 38(2), 719-739.

Rowe, F. (2014). What literature review is not: diversity, boundaries and recommendations. *European Journal of Information Systems*, 23(3), 241-255.

Rowley, J. (1999). Loyalty, the Internet and the weather: the changing nature of marketing information systems?. Management Decision, 37(6), 514-519.

Rowley, J. (2000). Loyalty kiosks: making loyalty cards work. *British Food Journal*, 102(5/6), 390-398.

Rowley, J., & Slack, F. (2003). Kiosks in retailing: the quiet revolution. *International Journal of Retail & Distribution Management*, 31(6), 329-339.

Rowley, J., & Slack, F. (2004). Conducting a literature review. *Management Research News*, 27(6), 31-39.

Rumrill, P. D., Fitzgerald, S. M., & Merchant, W. R. (2009). Using scoping literature reviews as a means of understanding and interpreting existing literature. *Work (Reading, Mass.)*, 35(3), 399-404.

Rust RT, Ambler T, Carpenter GS, Kumar V, Srivastava RK (2004) Measuring marketing productivity: Current knowledge and future directions. *J. Marketing* 68(4):76–89.

Rust, R. T. (2004). If everything is service, why is this happening now, and what difference does it make. *Journal of Marketing*, 68(1), 23-24.

Rust, R. T., & Huang, M. H. (2012). Optimizing service productivity. *Journal of Marketing*, 76(2), 47-66.

Rust, R. T., & Kannan, P. K. (2003). E-service: a new paradigm for business in the electronic environment. *Communications of the ACM*, 46(6), 36-42.

Rust, R. T., & Miu, C. (2006). What academic research tells us about service. *Communications of the ACM*, 49(7), 49-54.

Sabherwal, R., & Chan, Y. E. (2001). Alignment between business and IS strategies: A study of prospectors, analyzers, and defenders. *Information Systems Research*, 12(1), 11-33.

Salipante, P., Notz, W., & Bigelow, J. (1982). A matrix approach to literature reviews. *Research in organizational behavior*, 4, 321-348.

Salomann, H., M. Dous, L. Kolbe, and W. Brenner. (2007). Self-Service Revisited: How to Balance High-Tech and High-Touch in Customer Relationships, *European Management Journal* (25:4), pp. 310-319.

Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 237-263.

Sampson, S. E., & Froehle, C. M. (2006). Foundations and implications of a proposed unified services theory. *Production and operations management*, 15(2), 329-343.

Santos, J. (2003). E-service quality: a model of virtual service quality dimensions. *Managing Service Quality: An International Journal*, 13(3), 233-246.

Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of interactive marketing*, 19(4), 4-17.

Schau, Hope J, Albert M Muñiz Jr and Eric J Arnould (2009), How Brand Community Practices Create Value, *Journal of Marketing*, 73 (5), 30-51.

Schilling, M. A. (2000). Toward a general modular systems theory and its application to interfirm product modularity. *Academy of management review*, 25(2), 312-334.

Schlesinger, L. A., and J. L. Heskett. The Service-Driven Service Company, *Harvard Business Review* (69:5), Sep/Oct, 1991, pp. 71-81.

Schmenner, R. W. (2004), Service Businesses and Productivity, *Decision Sciences*, 35 (3), 333-347.

Schmenner, R. W. and M. L. Swink (1998), On Theory in Operations Management, *Journal of Operations Management*, 17 (1), 97-113.

Schneider, B., S. S. White, and M. C. Paul. (1998). Linking Service Climate and Customer Perceptions of Service Quality: Tests of a Casual Model. *Journal of Applied Psychology* (83:2), pp. 150-163.

Schultze, U. (2003). Complementing Self-Serve Technology with Service Relationships: The Customer Perspective, *E - Service Journal* (3:1), pp. 7-31.

Schwarz, A., Mehta, M., Johnson, N., & Chin, W. W. (2007). Understanding frameworks and reviews: a commentary to assist us in moving our field forward by analyzing our past. *ACM SIGMIS Database*, 38(3), 29-50.

Scott N. L. (2007). Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research, *Strategic management journal*, 28, 121-146.

Selnes, F., and H. Hansen. (2001). The Potential Hazard of Self-Service in Developing Customer Loyalty, *Journal of Service Research* (4:2), pp. 79-90.

Semeijn, J., van Riel, A. C., van Birgelen, M. J., & Streukens, S. (2005). E-services and offline fulfilment: how e-loyalty is created. *Managing Service Quality: An International Journal*, 15(2), 182-194.

Service-oriented architecture. (2005*). IBM Systems Journal*, 44:4, retrieved on 26th October 26, 2016 from www.research.ibm.com/journal/sj44-4.html.

Sharma, A., & Mehrotra, A. (2007). Choosing an optimal channel mix in multichannel environments. Industrial Marketing Management, 36(1), 21-28.

Shchiglik, C., and Barnes. S. J. (2004). Evaluating Website Quality in the Airline Industry, *Journal of Computer information systems* (44:3), pp. 17-25.

Sheehan, J. (2006). Understanding Service Sector Innovation, *Communications of the ACM* (49:4), pp. 43-47.

Shim, J. P., Shin, Y. B., & Nottingham, L. (2002). Retailer web site influence on customer shopping: exploratory study on key factors of customer satisfaction. *Journal of the Association for Information Systems*, 3(1), 3.

Shostack, G. L. (1977). Breaking Free from Product Marketing, *Journal of Marketing* (41:2), pp. 73-80.

Shugan, S. M. Finance, Operations, and Marketing Conflicts in Service Firms, *Journal of Marketing* (68:1), 2004, pp. 24-26.

Sidorova, A., Evangelopoulos, N., Valacich, J. S., & Ramakrishnan, T. (2008). Uncovering the intellectual core of the information systems discipline. *MIS Quarterly*, 467-482.

Siehl, C., & Schneider, B. (1989). A framework for analyzing customer service orientation in manufacturing. *Academy of management review*, 14(1), 75-95.

Simon, F., and J. Usunier. (2007). Cognitive, Demographic, and Situational Determinants of Service Customer Preference for Personnel-in-Contact Over Self-Service Technology, *International Journal of research in Marketing* (24:2), pp. 163-173.

Sisodia, R. S. (1992). Marketing Information and Decision Support Systems for Services, *The Journal of Services Marketing* (6:1), pp. 51-64.

Sivabrovornvatana, N., S. Siengthai, D. Krairit, and H. Paul. (2005). Technology Usage, Quality Management System, and Service Quality in Thailand. *International Journal of Health Care Quality Assurance*(18:6/7), pp. 413-423.

Slater, S. F. (1997). Developing a Customer Value-Based Theory of the Firm, *Journal of the Academy of Marketing Science* (25:2), pp. 162-167.

Smith, H. J., Dinev, T., & Xu, H. (2011). Information privacy research: an interdisciplinary review. *MIS quarterly*, 35(4), 989-1016.

Smith, K. B. (2002). Typologies, taxonomies, and the benefits of policy classification. *Policy Studies Journal*, 30(3), 379-395.

Smith, K.G.; Ferrier, W.J.; and Ndofor, H.(2001). Competitive dynamics research: Critique and future directions. In M.A. Hitt, R.E. Freeman, and J.S. Harrison (eds.), *Handbook of Strategic Management*. Oxford: Blackwell, pp. 315–361.

Solomon MR, Surprenant FC, Czepiel JA, Guttnan EG (1985) A role theory perspective on dyadic interactions: The service encounter. *J. Marketing* 49(1):99–111.

Sousa, R., & Voss, C. A. (2006). Service quality in multichannel services employing virtual channels. *Journal of Service Research*, 8(4), 356-371.

Spohrer, J., & Maglio, P. P. (2008). The emergence of service science: Toward systematic service innovations to accelerate co-creation of value. *Production and operations management*, 17(3), 238-246.

Spohrer, J.; Maglio, P.P.; Bailey, J.; and Gruhl, D. (2007). Steps toward a science of service systems. *IEEE Computer*, 40, 1, 71–78.

Srinivasan S, Hanssens DM (2009) Marketing and firm value: Metrics, methods, findings, and future directions. *J. Marketing* Res. 46(3):293–312.

Srinivasan, S. S., Anderson, R., & Ponnavolu, K. (2002). Customer loyalty in e-commerce: an exploration of its antecedents and consequences. *Journal of Retailing*, 78(1), 41-50.

Srinivasan, S. S., R. Anderson, and K. Ponnavolu. (2002). Customer Loyalty in E-Commerce: An Exploration of its Antecedents and Consequences. *Journal of Retailing* (78:1), pp. 41-50.

Stamoulis, D., D. Gouscos, P. Georgiadis, and D. Martakos. (2001). Revisiting Public Information Management for Effective E-Government Services, *Information Management & Computer Security* (9:4), pp. 146-153.

Straub, D., Limayem, M., and Karahanna, E. (1995). Measuring System Usage: Implications for IS theory Testing, *Management science* (4:18), pp. 1328-1342.

Sun, Y., Fang, Y., Lim, K. H., & Straub, D. (2012). User satisfaction with information technology service delivery: A social capital perspective. *Information Systems Research*, 23(4), 1195-1211.

Surjadjaja, H., Ghosh, S., & Antony, J. (2003). Determining and assessing the determinants of e-service operations. *Managing Service Quality: An International Journal*, 13(1), 39-53.

Sutton, R. I., and A. Rafaeli. (1988). Untangling the Relationship between Displayed Emotions and Organizational Sales: The Case of Convenience Stores, *Academy of Management Journal* (31:3), pp. 461-487.

Svensson, G. (2006). New Aspects of Research into Service Encounters and Service Quality, *International Journal of Service Industry Management* (17:3), pp. 245-257.

Tallon, P. P. (2007). A process-oriented perspective on the alignment of information technology and business strategy. *Journal of Management Information Systems*, 24(3), 227-268.

Tallon, P. P. (2008). Inside the adaptive enterprise: an information technology capabilities perspective on business process agility. Information Technology and Management, 9(1), 21-36.

Tallon, P. P., & Pinsonneault, A. (2011). Competing perspectives on the link between strategic information technology alignment and organizational agility: insights from a mediation model. *MIS Quarterly*, 35(2), 463-486.

Tam KY, Ho YS (2005) Web personalization as a persuasion strategy: An elaboration likelihood model perspective. Inform. Systems Res. 16(3):271–291.

Tam KY, Ho YS (2006) Understanding the impact of web personalization on user information processing and decision outcomes. *MIS Quarterly* 30(4):865–890.

Tan, C. W., Benbasat, I., & Cenfetelli, R. T. (2013). IT-Mediated Customer Service Content and Delivery in Electronic Governments: An Empirical Investigation of the Antecedents of Service Quality. *MIS Quarterly*, 37(1).

Tanriverdi, H. (2006). Performance effects of information technology synergies in multibusiness firms. *MIS Quarterly*, 57-77

Tax, S. S., McCutcheon, D., & Wilkinson, I. F. (2013). The service delivery network (SDN) a customer-centric perspective of the customer journey. *Journal of Service Research*, 16(4), 454-470.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, 509-533.

Teo, T. S. H., P. Devadoss, and S. L. Pan. (2006). Towards a Holistic Perspective of Customer Relationship Management (CRM) Implementation: A Case Study of the Housing and Development Board, Singapore, *Decision Support Systems* (42:3), pp. 1613-1627.

The World Bank. "Services, etc., value added (% of GDP)". Retrieved on October 25, 2016 from http://data.worldbank.org/indicator/NV.SRV.TETC.ZS.

Tinnila, M., and A. P. J. Vepsalainen. (1995). A Model for Strategic Repositioning of Service Processes, *International Journal of Service Industry Management* (6:4), pp. 57-80.

Tombs, Alastair, and Janet R. Mccoll-Kennedy (2003). Social-Servicescape Conceptual Model, Marketing Theory, 3 (4), 447-475.

Torkzadeh, G., J. C. Chang, and G. W. Hansen. (2006). Identifying Issues in Customer Relationship Management at Merck-Medco, *Decision Support Systems* (42:2), pp. 1116-1130.

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human resource development review*, 4(3), 356-367.

Tsai W, Ghoshal S (1998) Social capital and value creation: The role of intrafirm networks. Acad. Management Rev. 41(4):464–476.

Tseng, J. C. R., and G. Hwang. (2007). Development of an Automatic Customer Service System on the Internet, *Electronic Commerce Research and Applications* (6:1), pp. 19.

Tseng, Mitchell M., Ma Qinhai, and Chuan-Jun Su (1999), Mapping Customers Service Experience for Operations Improvement, *Business Process Management Journal*, 5 (1), 50-64.

Tuunanen, Tuure and Harold Cassab (2011), Service Process Modularization: Reuse versus Variation in Service Extensions, *Journal of Service Research*, 14 (3), 340-354.

Van Bruggen, G. H., Antia, K. D., Jap, S. D., Reinartz, W. J., & Pallas, F. (2010). Managing marketing channel multiplicity. *Journal of Service Research*, 13(3), 331-340.

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68(1), 1-17.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.

Venkatraman, N. (1989). The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of management review*, 14(3), 423-444.

Vessey, I. (1991). Cognitive Fit - A Theory-Based Analysis of the Graphs Versus Table Literature, *Decision Sciences* (22:2), pp. 219-240.

Vom Brocke, J., Simons, A., Niehaves, B., Riemer, K., Plattfaut, R., & Cleven, A. (2009, June). Reconstructing the giant: On the importance of rigour in documenting the literature search process. In *ECIS* (9), pp. 2206-2217.

Von Bertalanffy, L. (1976). General systems theory: foundations, development, and applications. New York. NY: George Braziller.

Voss, C. A. (1983). The Service Despatcher/Receptionist Role. *International Journal of Operations & Production Management*, 3(3), 35-39.

Voss, C., Roth, A. V., & Chase, R. B. (2008). Experience, service operations strategy, and services as destinations: foundations and exploratory investigation. *Production and operations management*, 17(3), 247-266.

Walker, R. H., M. Craig-Lees, R. Hecker, and H. Francis. (2002). Technology-Enabled Service Delivery: An Investigation of Reason Affecting Customer Adoption and Rejection, *International Journal of Service Industry Management* (13:1), pp. 91-106.

Wang, Y., Lo, H. P., & Yang, Y. (2004). An integrated framework for service quality, customer value, satisfaction: Evidence from Chinas telecommunication industry. Information systems frontiers, 6(4), 325-340.

Wang, Y., Lo, H. P., Zhang, Q., & Xue, Y. (2006). How technological capability influences business performance: an integrated framework based on the contingency approach. *Journal of Technology Management in China*, 1(1), 27-52.

Wang, Y., Shi, S., Nevo, S., Li, S., & Chen, Y. (2015). The interaction effect of IT assets and IT management on firm performance: A systems perspective. *International Journal of Information Management*, 35(5), 580-593.

Watson, R. T., Piccoli, G., Brohman, M. K., & Parasuraman, A. (2005). Customer-managed interactions: A new paradigm for firm-customer relationships. *MIS Quarterly* Executive, 4(2), 319-327.

Webster, J., and R. T. Watson. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review, *MIS Quarterly* (26:2), pp. xiii-xxiii.

Weijters, B., Rangarajan, D., Falk, T., & Schillewaert, N. (2007). Determinants and outcomes of customers use of self-service technology in a retail setting. *Journal of Service Research*, 10(1), 3-21.

Wells, J. D., Fuerst, W. L., & Choobineh, J. (1999). Managing information technology (IT) for one-to-one customer interaction. *Information & Management*, 35(1), 53-62.

Wemmerlöv, U. (1990). A taxonomy for service processes and its implications for system design. *International Journal of Service Industry Management*, 1(3), 20-40.

Wolfinbarger, M. and M. C. Gilly (2003), eTailQ: Dimensionalizing, Measuring and Predicting e-Tail Quality, *Journal of Retailing*, 79 (3), 183-197.

Wolfswinkel, J. F., Furtmueller, E., & Wilderom, C. P. (2013). Using grounded theory as a method for rigorously reviewing literature. *European journal of information systems*, 22(1), 45-55.

Woodruff, R. B. (1997). Customer Value: The Next Source for Competitive Advantage. *Academy of Marketing Science Journal* (25:2), pp. 139-153.

Xia, L. and D. Sudharshan (2002), Effects of Interruptions on Consumer Online Decision Processes, *Journal of Consumer Psychology*, 12 (3), 265-280.

Xie, C., Bagozzi, R. P., & Troye, S. V. (2008). Trying to prosume: toward a theory of consumers as co-creators of value. *Journal of the Academy of Marketing Science*, 36(1), 109-122.

Xu, J., Benbasat, I., & Cenfetelli, R. T. (2014). Research Note-The Influences of Online Service Technologies and Task Complexity on Efficiency and Personalization. *Information Systems Research*, 25(2), 420-436.

Yang, Z., & Fang, X. (2004). Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services. *International Journal of Service Industry Management*, 15(3), 302-326.

Yang, Z., Jun, M., & Peterson, R. T. (2004). Measuring customer perceived online service quality: scale development and managerial implications. *International Journal of Operations & Production Management*, 24(11), 1149-1174.

Yen, H. R. (2005). An attribute-based model of quality satisfaction for internet self-service technology. *The Service Industries Journal*, 25(5), 641-659.

Yeung, W. L., and M. Lu. (2004). Gaining Competitive Advantages through a Functionality Grid for Website Evaluation. *The Journal of Computer information systems* (44:4), 2004, pp. 67-77.

Yi, M., and Davis, F.D. (2007). Improving computer training effectiveness for decision technologies: Behavior modeling and retention enhancement. *Decision Sciences*, 32:3, 521–545.

Zaheer, A., & Zaheer, S. (1997). Catching the wave: alertness, responsiveness, and market influence in global electronic networks. *Management science*, 43(11), 1493-1509.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *The Journal of Marketing*, 2-22.

Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and strategies in services marketing. *The Journal of Marketing*, 33-46.

Zhang, M., Sarker, S., & Sarker, S. (2008). Unpacking the effect of IT capability on the performance of export-focused SMEs: a report from China. *Information Systems Journal*, 18(4), 357-380.

Zhang, T., Agarwal, R., & Lucas Jr, H. C. (2011). The value of IT-enabled retailer learning: personalized product recommendations and customer store loyalty in electronic markets. *MIS Quarterly-Management Information Systems*,*35*(4), 859.

Zhu, F. X., Wymer, W., & Chen, I. (2002). IT-based services and service quality in consumer banking. *International Journal of Service Industry Management*, 13(1), 69-90.

Zhu, Z., & Nakata, C. (2007). Reexamining the link between customer orientation and business performance: The role of information systems. *Journal of Marketing theory and practice*, 15(3), 187-203.

Zomerdijk, L. G., & Voss, C. A. (2010). Service design for experience-centric services. *Journal of Service Research*, 13(1), 67-82.

Zomerdijk, Leonieke G. and Christopher A. Voss (2010), Service Design for Experience-Centric Services, *Journal of Service Research*, 13 (02), 67-82.

CHAPTER 2

Information Systems for Customer Experience Management: Effects of Usage and Users' Perceptions on Satisfaction

Introduction

69% of the world GDP (74% in Switzerland) is realized in the service sector in 2014 (World Bank, n.a.), a sector that sees the concentration of 70% of workforce (Gržinić, 2007), and in which different theoretical paradigms have been developed along the years. Among them, the service-dominant logic claims that service provision represents the fundamental unit of economic exchange and it implies that value is defined by and co-created with the consumers rather than embedded in output (Vargo & Lusch, 2004). Firms needs to be customer-focused, leveraging on the potential of information technology (IT) to transform the marketing strategies and customers (Day, 1994), so several scholars highlighted the potential of IT to *"enable organizations to do things they could not do before and thus develop new capabilities and skills"* (for a broad review refer to Melvill et al., 2004). Therefore today service activities are necessary to directly meet customers' expectations in marketing products and offering superior services (Karimi et al., 2001).

The continuous advancement in technology and methods for collecting customers' feedback, which generates increasing data volumes, makes possible but difficult for managers to analyze and interpret this information (Ordenes et al., 2014). Also, there is the need in the literature to understand the holistic nature of customer experiences in order to design improved (customer) service systems (Patricio et al. 2011; Verhoef et al. 2009) and adapt corresponding information systems (IS) accordingly. In the business context such need is distinctly expressed, with 85% of senior business managers that believe that differentiating solely on the traditional marketing elements is no longer sustainable (Gentile, Spiller and Noci, 2007) and they consider the Customer Experience Management as the next competitive battleground (Shaw and Ivens, 2005). As a result, focus must be placed on the experience of the guests, instead of the service offered (Schael, 2009), particularly in the hotel industry, where service delivery channels and relationships with actors of the service chain have changed a lot during last few years because of the more and more tech-savvy guests, and where the evaluation of service provision is difficult due to its intangible nature and the online assessment by the customers instead of by the service providers.

From an academic standpoint, to date only few studies empirically confirmed how the perceptions of service offerings and service delivery predict customers' perceived service quality (van Riel et al., 2001; Tan et al., 2013). Also, while past studies have examined the joint effects of perceived system quality, information quality and service quality on customer value (e.g. Chen and Cheng, 2009; Wang, 2008; Wang and Liao; 2008), a study to explore their effects on user satisfaction with IT-enabled service systems represents a need for research (Sun et al., 2012), as well as the investigation of extents and types of effects of IT-enabled interventions on customer satisfaction, productivity improvement and innovation in service firms (Kude et al., 2015; Liu et al., 2015; in Mithas et al., 2016). Finally, while most of the high quality studies on CEM currently are conceptual, there is a need for further empirical investigations of the relevance of CEM strategies in the hospitality industry (Hwang and Seo, 2016).

In this context of a high need, from both the academia and the industry, for a better understanding of the impact of IS on firm performance, the objective of the study is to show how different patterns of IT usage, and different combinations of IT, people, organizational structures and processes, affect guests'' and employees' perceptions, and finally improve the overall firm performance. This helps deepening our understanding on the reasons and variables that characterize all the different facets of this new competitive challenge through CEM, from both a literature and practitioners' standpoint.

The work is organized as follows. At first, a theoretical framework is provided, showing our hypotheses from synthesizing literature in the CEM-related areas. Then, the methodology is reported, describing the context of the analysis and data used to test the theoretical constructs adopted. The study is divided in two parts, focusing on (1) analysis of perceptions of the final users of the IS involved in the research, and (2) the quantitative evaluation of the impact of an IT-enabled CEM-strategy adoption on business performance. Next, the conclusions arising from both parts of the study are reported and results are together discussed. Finally, limitations and suggestions for future researches are reported.

Theoretical framework

A "Customer Experience Management (CEM) strategy is about ensuring that guests receive consistently outstanding service no matter when and how they interact with the firm. In the hospitality industry CEM has historically been about designing guest interactions that delight the customer – and rightly so, as this is an important part of a guest's connection with a property or brand. But the frontier of CEM is about quickly reacting to and even anticipating guest needs and

wishes throughout all phases of customer service" (Piccoli, 2015, p.1). On this stream, the literature defined CEM as "the process of strategically managing a customer's entire experience with a product or a company" (Schmitt, 2003, p.17).

In an era of innovative communications and society 2.0, customers are interested in the quality of the experience they live and thus the ability of the firm to gather information about its guests, regardless of the sources of information, becomes significant so that the integration of information systems for the customers management contributes to the creation of a better customer experience (Schael, 2009). This is done through the management of *service delivery channels*, i.e. the elements of a customer service system constituting the medium through which service is delivered. Literature (e.g. Banerjee, 2014) identifies different types of delivery channels, from physical (e.g. hotel reception desks) to technology-assisted ones (e.g. web-sites). However, today customers are slowly moving to a new channel configuration, integrating technological means within traditional ones, thus finally resulting in multichannel systems. This network of channels can enable firms to manage organizational activities for customer interaction and enhance customer experiences within and across channels (Payne and Frow, 2005), therefore representing a core elements of the customer service system.

Based on this assumption, information systems continuously create opportunities to transform the design of customer experiences, even before the first physical interaction between the guests and the firm. Particularly for the hospitality industry, it is important for the hotels to adjust their CEM approach accordingly and begin to understand how new technology can help manage guests' experiences beyond the time and geography boundaries (Piccoli, 2013). Previous works show how CEM is increasingly seen as a mean for differentiating service provided (Palmer 2010). Also, the emerging infrastructure and proliferation of real-time digital data stream and connectivity enable successful CEM strategies through information systems (Piccoli, 2013; Piccoli and Lui, 2017), therefore evaluation of service provided by firms through the usage of information systems becomes critical from both academic and management standpoint.

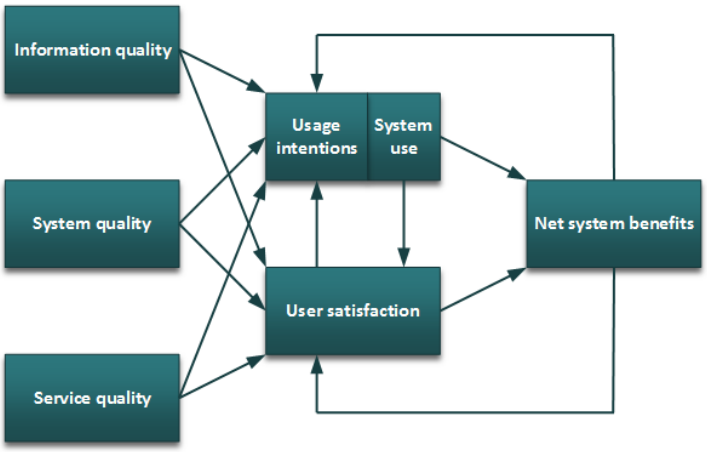

Figure 1 - Information System Success Model

Information system performance assessment represents a critical task in nowadays organizations. In the literature, several models have been developed (e.g. Wixom and Todd, 2005), but one with most considerable attention in the academic field is the Information System Success (ISS) model (DeLone and McLean, 2003). The framework, which changed since its first definition (DeLone and McLean, 1992) by adding a new construct of service quality, focuses on a comprehensive description of the main constructs needed for an IS to be successful, and their causal relationships (Figure 1). Particularly, service quality is often seen, in the marketing literature, as a the judgment made by customers about the level of service provided by the system (Parasuraman et al., 1985; 1988), as well as their subjective assessment of the degree to which specific service needs are met (Dabholkar and Overby, 2005; Gronroos, 1998; Johnston; 1995). Service quality represents one of the most widely supported determinant of service satisfaction (e.g. de Ruyter et al., 1997; Oliver, 1993; Patterson and Johnson, 1993; Cenfetelli et al., 2008; Devaraj et al., 2002; Kettinger and Lee, 1994), and customer loyalty (Gefen, 2002). This, for an information system, translates into system usage satisfaction. Based on this, service quality thus needs to be included in any information system assessment (Xu et al., 2013), and its effects on system usage needs to be assessed.

H1: Service Quality positively affects System Usage

The ISS model identifies, describes and explains all the links between the six dimensions of success for an information system (Table 1), as a base for getting business benefits, and along which to evaluate it. Examples of such benefits are improvements on decision making, productivity and efficiency in performing daily tasks, cost reductions and profit gains, creation of loyalty and satisfaction among customers. Even with its criticalities and limitations (Seddon, 1997; Urbach & Müller, 2012), scholars have tested ISS model applicability in the field studies, concluding how, among many relationships, system quality, information quality, and service quality are able to influence user satisfaction (Myers et al., 1997; Petter and McLean, 2009), which is an indicator of performance even-more relevant for mandatory adoption of IS (Hsieh, 2012).

H2: Service Quality positively affects Use Satisfaction

H3: System Quality positively affects Use Satisfaction

H4: Information Quality positively affects Use Satisfaction

As the information is produced by a system (DeLone and McLean, 1992; Mason; 1978), and thus the problems with system quality degrade the actual quality of information it produces, literature reports how system quality is able to influence the beliefs about information quality (Xu et al., 2013). The beliefs about system and information quality influence the perceptions about service quality provided, through both of the dimensions of content and delivery channel (Baker and Lamb, 1993; Gronroos, 1982; 1990; Gronroos et al., 2000; Mangold and Babakus, 1991; Rust and Olivier, 1994; Tan et al., 2013; Teo et al., 2008).

Table 1: Information System Success Dimensions

Construct	Definition	Measurements
Information quality	Accuracy validity and timeliness of the information provided (Teo et al., 2008).	The capacity of data provided to fulfill users' needs.
System quality	The flexibility and integration of the data warehouse (Wixom, 2001).	The technical and social attributes of the system such as flexibility, reliability and ease of learning.
Service quality	The consumers' judgment of overall excellence or superiority about services (Parasuraman et al., 1988)	The ability of the system to provide services in a dependable, timely and responsive way (Teo et al., 2008).
System usage / use intention	The degree to which a customer thinks he or she will rely upon the service (Kim and Son, 2009).	The real usage of the system, measured as both quantity and quality of usage, as well as the attitude toward new usage in the future.
User satisfactions	The extent to which users believe the information system available to them meets their information requirements (Simon et al., 1996).	Users, based on their beliefs and attitudes, perceive system usage as delightful, feeling pleasure and being willing to recommend it (Nadkami and Gupta, 2007).
Net benefits / Value	Overall evaluation of change related to a new information system implementation based on the comparison between benefits and costs (Kim and Kankhalli, 2009).	The external benefits representing improvements in tasks performed by individuals, groups and organizations, industries and nations.

The Wixom-Todd (WT) model (Wixom and Todd, 2005) provides an integrated model to theorize and evaluate the influence of IT on usage, by considering together information quality and satisfaction, expectations and attitudes toward usage, as well as overall usage satisfaction and net benefits generated. Other studies also described concepts of *perceived usefulness* (PU) and *perceived enjoyment* (PE), defining them as, respectively, the extent to which potential users expect that an IT system will improve their task performance (Davis, 1989) and the intrinsic reward

derived through the use of the technology or service studied (Igbaria et al., 1996; Nysveen, 2005). PE is also considered as the extent to which customers find the IT-based solution to be enjoyable, fun and pleasant to use (Dabholkar, 1996). Previous studies (e.g. Bauer et al., 2006; Hwang and Kim, 2007) describe how service satisfaction affects both PU and PE. Others highlight how PE is an antecedent of attitude toward using an IT-enabled service (Dabholkar and Bagozzi, 2002) as well as willingness to recommend such services (Johnson et al., 1998). On this base, and levering on Wixam-Todd model (2005), Xu et al. (2013) finally propose that PE and PU can influence individual's attitudes toward IT-enabled services.

The concept of trust in IT service provider is also included in the evaluation of the adoption of an IT system for CEM strategy application. Particularly, the focus in this study is on post-implementation trust. Scholars showed how investments and potential opportunity costs can rise exponentially if there are problems due to a lack of post-implementation trust in the IT services provider and its ability to deliver ongoing support for new IT system (Montoya et al., 2014). A lack of trust can also negatively affect future employees' IT efforts. Within the organizational behavior literature, trust is solidly linked to employees' satisfaction, individuals' task performance and business outcomes (for a review see Harter et al., 2002).

In the theory of task-technology fit (TTF) (Goodhue, 1995), *technologies* are tools used by individuals in carrying out their tasks, and *tasks* are broadly defined as the actions carried out by individuals in turning inputs into outputs. *Task-technology fit* describes the characteristic of a technology to be tailored to the task for which it is applied, reducing the users' effort of using it to reaching set goals and finally improving usage satisfaction. On this regard, critical is the role of data quality in affecting content and presentation of information, thus playing an important role in facilitating service providers' decisions through clear and accurate information (Torkzadeh et al., 2006). This translates into different information context and format for different tasks, ranging from unstructured ones requiring user-friendly interfaces, to more-context-relevant information for daily and routine tasks. Such a fit between the technology adopted and the task performed will finally result in enhanced trust in technology and thus in higher usage satisfaction and thus better-supported human asset (e.g. Montoya et al., 2010). For these reasons I propose that:

H5: Task-Technology Fit positively affects Use Satisfaction

The literature in the ISS shows how, in addition to service, information and system quality influence the choice to use an information system for performing a task. An information system

able to provide data to fulfill users' needs in a flexible, reliable and ease way will finally support the system usage. Based on this, I propose the followings.

H6: System Quality positively affects System Usage

H7: Information Quality positively affects System Usage

The literature synthesize the areas of ISS and TTF (Lin and Wang, 2012) by showing how elements of both TTF and ISS are able to influence an information system adoption and continuance intentions of usage, and to finally provide post-implementation trust as well as benefits to the organizations. However, to my knowledge there is no evidence of application of these joint models in the area of IT-enabled CEM strategies and hospitality industry.

In addition, merging concepts from ISS and TTF models, literature states how actual system usage, through the fit with tasks performed and the consequent use satisfaction, is able to support future usage continuance intentions, as well as the creation of improvements in tasks performed by users through the use of the information system. Based on this I propose the following:

H8: System Usage positively affects Perceived Net Benefits

H9: System Usage positively affects Use Satisfaction

Finally, users having a greater proficiency with technology adoption will find easier to use it, resulting in higher expectations from its usage (Walker et al., 2002; Wang et al., 2006). Based on this, self-efficacy is here defined as the belief that one has the ability to perform a specific behavior (Compeau and Higgins, 1995), and I propose:

H10: Self-efficacy positively affects Perceived ease of use

Operationalization of theoretical constructs, ease of use and perceived usefulness, is performed based on the Technology-Acceptance model (TAM) (Venkatesh et al., 2003; Venkatesh and Davis, 2000; Venkatesh, 2000), a theory from the Information Systems field that describes factors affecting the decision to accept a technology. It states how perceived usefulness, perceived ease of use, attitudes and behavioral intentions, together with external factors such as facilitating conditions and system quality (Fathema et al., 2015; Fathema et al., 2014), finally affect users' decision to use the system. Among them, *ease of use* is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p.320).

This study successively developed into the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), representing one of the core theories, together with user satisfaction literature (e.g. DeLone and McLean, 1992) and expectancy-value theory (Ajzen and Fishbein, 1980) among which ISS model has been developed.

It then results clear how in the literature theories evolved over time including more constructs from different perspectives, but how also elements of them are often overlying within frameworks characterized by similar subjects. "No single variable is intrinsically better than another" (DeLone and McLean, 1992, p. 80), and the choice of dimensions to investigate needs to be a function of the specific research context (Montoya et al., 2010). In my opinion, due to the strong connection of UTAUT and TAM models with constructs already included in the joint ISS-TTF model, I believe that focusing solely on the latter can represent a good choice for the analysis of the adoption of an IT-enabled CEM system. Then, results got from the study of the joint model will be easily extendable to all of the above mentioned research fields and theories, allowing the ISS-TTF joint model to be considered as a most comprehensive one.

TTF and IS success factors such as information, system and service quality are then here identified as major antecedences of system usage intentions and performance. By levering on these two perspectives, the study provides a broad picture of the relationships between ISS and TTF models, depicting a joint model which links different constructs of both and testing the causes and effects empirically through the measurement and explanation of impacts of an information system for CEM on seven hotels, with their context specificities and usage criticalities. Therefore the main contribution of the work is represented by the joint application of the two theories to the customer experience management field, then contextualizing both in the hotel industry to better capture all practical aspects driving the competitive success.

I finally analyze the Customer Service Systems as part of a more complex IT-enabled CEM strategy adoption, thus assessing the effects of usage of the system on net benefits perceived from the guests' point of view. Hypothesis 8 is therefore investigated evaluating the effects of system usage on guests' perceptions, operationalized in terms of review scores left on TripAdvisor after the stay. This will finally make possible to depict a complete picture of what elements of a CSS affect system usage, and how such usage translates into enhanced perceived benefits from both guests' and users' perspectives.

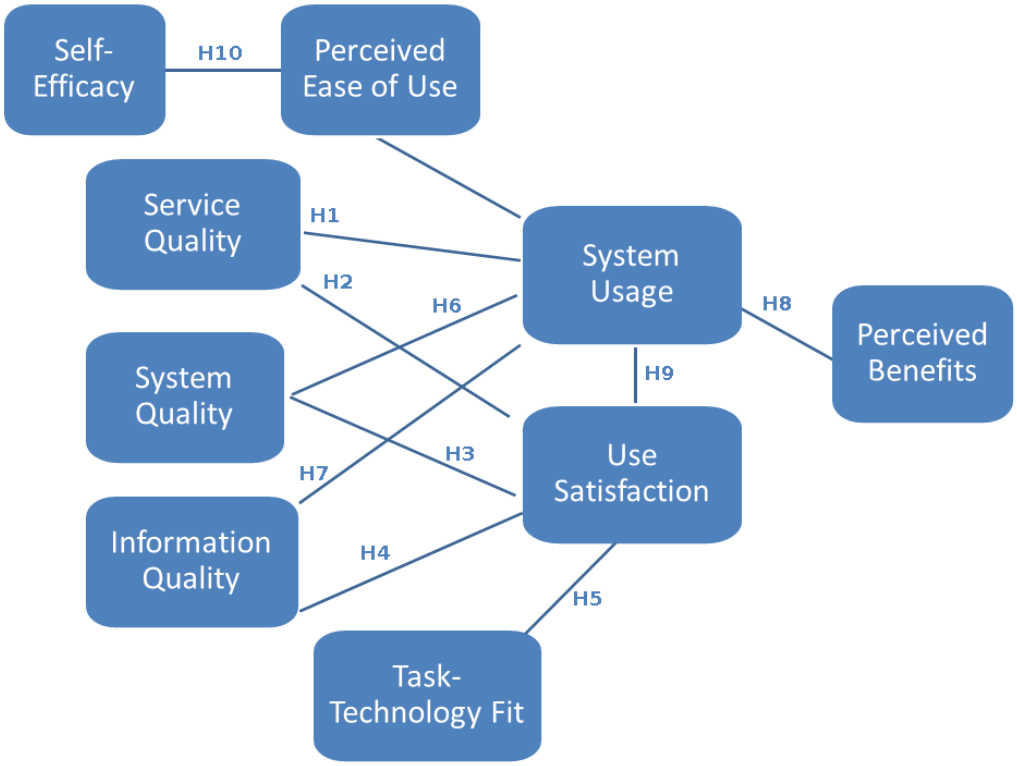

Figure 2 – Theoretical Model

Methodology

Context

The Swiss Hotel market, despite the 2007 financial crisis, remains today relatively strong in comparison with other European countries, with 12.9€ billion booking revenue and 35.5 million overnight stays in 2012 (Feminier and Bujarski, 2013). The supply of the hotel industry in the country is based on a high property density, marked by 5.396 hotels (on average one every 7 km), and 142,000 rooms ready to host guests (Feminier and Bujarski, 2013). With 56% of rooms booked by foreigners and only 44% demanded by Swiss, the country faces also a challenge on guest loyalty and generally experience management, addressing a high competition of geographically-close competitors and several online travel agencies (OTAs), such as Booking.com, which drive the

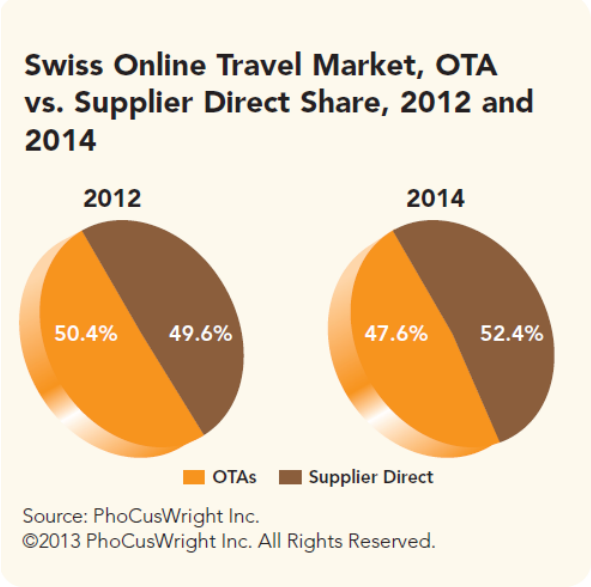

Figure 3 – Swiss Hoteliers Market Share (Feminier and Bujarski, 2013)

reservations from abroad. The Swiss lodging market is attractive to OTAs due to a number of highly profitable cities, and this is reflected in 28% of OTA-intermediated bookings in 2013. Currently, 33% of Swiss travels are booked online and it is projected that 50% of the total booking will be made via OTAs and social media by 2019, with a peak for Swiss mid-class hotels forecasted in 2016 (Feminier and Bujarski, 2013).

The study by Feminier and Bujarski (2013) reports how direct reservations via phone, fax, walk-in or websites remain the dominant reservation channels, but a negative trend existed in last years. While in 2008, 77% of reservations in the Swiss market were made via direct channels and 72% in 2010, in 2012 only 62% of bookings of Swiss hotels were received without intermediation. Online travel agencies eroded such share, increasing 3% of OTA's market share just between 2011 and 2012. Today, OTAs cover an important share of revenues, with more than 30% of hotels having around 30% of bookings canalized through OTAs' platforms, and 12% more than 40% of stays (Feminier and Bujarski, 2013). This translates into a new never-experienced challenge for hoteliers, which therefore needs to deepen opportunities offered by IT-enabled CEM strategies to face it.

On this base, today modern organizations in the hospitality industry continue to invest in IT, lured by the promise to yield efficiencies and improved competitive positioning. During an interview, a General Manager at one of participating hotels declared to spend more than 100.000 CHF per year to keep and support the whole IT infrastructure. Therefore there is no doubt that being able to wring value from such investments is critical.

In the context of the hotel industry, the study involves seven hotels affiliated to the Swiss Quality Hotels International, a non-profit organization who represents 3 and 4 stars hotels in 40 Swiss locations. These hotels recently adopted an IT-enabled Customer Experience Management strategy through the installation of Hoxell, an on-property information system developed to improve both their internal efficiency in performing daily tasks and the competitiveness at the eyes of the guests. This paper contains two studies. The first one investigates the role of an IT-enabled CEM strategy in enhancing internal efficiency and which hotels can raise value also for guests. The following study investigates the effects of guests' perceptions, completing the overall performance analysis from their perspective.

The literature states the importance of the usage of digital technologies for on-property customer experience, which represents the next wave of innovation, despite with particular challenges and opportunities (Riaz, 2015). Also considering the overall relevance of the sector, with 9% of the Swiss GDP, over 6% of the world's exports realized in the tourism sector and the increasing trend

of rooms booked by international tourists (UNWTO report, 2015), a deep study of reasons and methods of a proactive customer experience management in hospitality becomes critical.

The study investigates the effect on value perceived by employees and guests through the mandatory adoption of an IT-enabled CEM strategy, Hoxell. Hoxell focuses on generating and delivering value to both internal (employees) and external (guests) actors of a customer service system. It achieves this goal by offering functionalities for housekeeping management, as well as for stay personalization for the guests. The system aims to support housekeeping activities by offering an online tool for tracking tasks to perform, guests' arrivals and departures processes, internal messages among staff, as well as real-time reservation data availability within an iPad at their disposal. This improved communication and operations management is expected to finally result in a higher service quality delivered to guests, and finally higher value perceived by them (Lui and Piccoli, 2009).

Data

The study employs a mixed-method approach leveraged on different data sources, with the aim to analyze performance from both internal (i.e., employees) and external (i.e., guests) perspectives. Archival data are collected from the Hoxell system and its transactional database, including staffs' actions – e.g. number of rooms cleaned, maintenance tasks performed, working shifts - and guests' reservations – e.g. booking, arrival and departure dates, number of adults and children in the room, room rates paid, booking channels adopted. Usage data are then collected using Google Analytics, tracking usage patterns of hotels' employees while using the system, operationalized as time – measured as seconds of usage - and clicks spent on the system. Guests' perceptions are finally collected via online reviews on TripAdvisor, an online review platform widely used in the global market by travellers to plan or enhance their travel experience (Miguéns et al., 2008). This makes possible to widen the dataset, including guests' assessments related to experiences' aspects. After matching the three sources of data, final dataset results in 19 monthly observations including stay data as well as staff actions and average guests' reviews, collected between June 2014 and December 2015. The final data panel reports, for each month of observation, the average review score left by guests on TripAdvisor for each aspect of the experience, as a result of Hoxell adoption in the model. For each observation, usage data are also included, as total amount of time spent by employees using the system as well as the number of clicks from them while using Hoxell. Additionally, archival data allows indicating, for each month of observation, how the system has been used and what reservations occurred during the timeframe, in order to finally control for variables such as ADR, total number of stays and total number of adults and children visiting the

hotels. Such first data panel allows investigating the relationship between usage data and reviews' scores, controlling for reservation data.

In addition to above mentioned data, two email surveys to both hotels' staff (Appendix A) and management (Appendix B) were used to extract the dynamics of the system usage from different perspectives. This made possible to investigate overall users' perceptions about Hoxell, and to examine how elements of the Information System Success and Task-Technology Fit models works together in generating performance enhancement. This represents a second dataset of the work, focused on perception data.

Both surveys have been sent using Qualtrics, online tool specifically developed for online surveys, suitable for users from both desktop and mobile platforms. The Staff survey was addressed to housekeepers, restaurant and bar clerks, and front office employees, while the second to the agent of the IT-enabled CEM strategy, namely medium and top management such as general managers and team leaders. Both surveys contain a series of specific statements, asking the respondents to share their agreement level with these statements, on a scale from 1 (totally disagree) to 100 (totally agree). The hotel's management includes the general managers and the departments' team-leaders, acting as the advocates of the strategy implementation, and participating as designers and catalysts of the system as well as of the actual organizational processes deployed after CEM strategy adoption. The survey for the hotels' management have then be focused on core aspects of CEM strategic choices, issues, expected benefits, perceptions and satisfaction with the system usage. The staff survey was sent between August and September 2015 to 150 potential respondents in 7 hotels, with a final response rate of 39%, and focusing on the constructs' of ISS and TTF models, thus investigating users' perceptions on information, system, and service quality, technology fit with daily tasks and the corresponding improvements in work efficiency, usage satisfaction and intentions, and benefits perceived. Considering the high variety of staff provenances and languages spoken, the survey was translated into 5 languages (Swiss German, Italian, English, French and Portuguese), thus ensuring a full comprehension among respondents. Out of the 59 replies, 16 were discarded due data incompleteness, and finally resulting in 47 observations. Out of them, respondents were equally distributed among hotels and mainly represented rooms and reception departments, the ones most affected by the system implementation (table 2).

The management survey was sent to 21 general managers and team-leaders between July and October 2015, with a response rate of 43%.

Table 2: Respondents to Staff Survey

	Hotel 1	Hotel 2	Hotel 3	Hotel 4	Hotel 5	Hotel 6	Hotel 7
Rooms	5	1	2	4	1	4	3
Reception	2	2	2	5	1	4	4
Maintenance	2	0	0	0	0	0	0
Food & Beverage	0	1	0	0	0	0	0
Administration	0	1	0	0	1	0	2
TOTAL	**9**	**5**	**4**	**9**	**3**	**8**	**9**

Finally, to further investigate hotels-specific dynamics and perceptions, personal interviews to 15 users, including both staff as well as department and general managers, were conducted in December 2015. During the interviews, more aspects have been investigated: (1) system quality, (2) service quality, (3) information quality, (4) implementation costs and usage satisfaction, and (5) perceived benefits. (1) System quality aimed to verify proper system operation and whether actual usage was limited by technical failures or limits. (2) Service quality questioned if technical support for both rollout and post-implementation phases was provided in a sufficient way to all system users. (3) Information quality then investigated ways Hoxell helps in performing daily tasks through the provision of the right information to the right person at the right time. (4) Overall usage satisfaction deepened how hard has been to pass from traditional to IT-intermediated operations, and how this perception changed over time. In addition, managers have been asked to describe overall costs of implementation, examining how much time and financial support the system required to invest, and how important they are in comparison with other project and tools introduced by hotels. Finally, (5) total perceived benefits have been questioned inspecting what advantages users and managers took from the usage of Hoxell. For each of the topics from 5 to 10 questions have been asked, starting an open discussion to leave interviewed encompass any other critical point. 15 users have been interviewed on December 15, ranging from housekeepers (9) to breakfast and restaurant clerks (2), team-leaders (2) and general managers (2). The interviewed showed how system quality was always considered sufficient to use Hoxell in the correct way, and how failures occurred only in the rollout phase. Consequently, service quality was perceived good by all interviewed. Information quality represented the most-appreciated benefit by all the housekeepers, which reported an important time saving related to a user-friendly management of all information about stays and guests' requests. The introduction of Hoxell crated some difficulties for senior housekeepers in forsaking traditional working tools, while younger and more tech-savvy staff

showed up a good propensity in using the tool. Therefore, interviewed helped understanding how system is properly used by all hotels, and how its usage result in benefits such as time saving, spent by housekeepers to give more attention to details during room preparation.

Therefore, the mixed-methods research approach, with a quantitatively-driven design supported by qualitative analysis through in-depth interview (Johnson, Onwuegbuzie & Turner, 2007), allows to have a holistic perspective of the effects on business, finally relying on more paradigms used in a set of related studies.

Usage on Perceptions

Management Survey

The survey results from the general managers and the team-leaders at the seven participating hotels allow deepening the understanding of the perceptions about the overall introduction of Hoxell, as well as the overall IT-enabled CEM strategy, and the support from top and medium management provided. On particular, it surveys constructs related to (1) the potential of information technology and Hoxell to support and create competitive advantage and efficiency improvements; (2) the overall perceptions about support to the project of introduction of the IT-enabled CEM strategy, and (3) the perceptions on system easiness of use for improvements generation.

From the graphical analysis (Figure 4), consistent with the literature, the responses highlight the high relevance of information technology perceived by hotels management, who agree on how IT can support a competitive positioning and the Customer Experience Management, and also enable efficiency improvements. Potentials for value creation is expected by managers, in terms of competitiveness, improved customer service and CEM and cleaning process, while minor difficulties (lower ease of use) are perceived in the implementation project of the CEM strategy (Figure 5).

Results show how IT and CEM potentialities are strongly perceived by top and medium management. The present analysis allows excluding potential constraints in benefit achievement arising from management support.

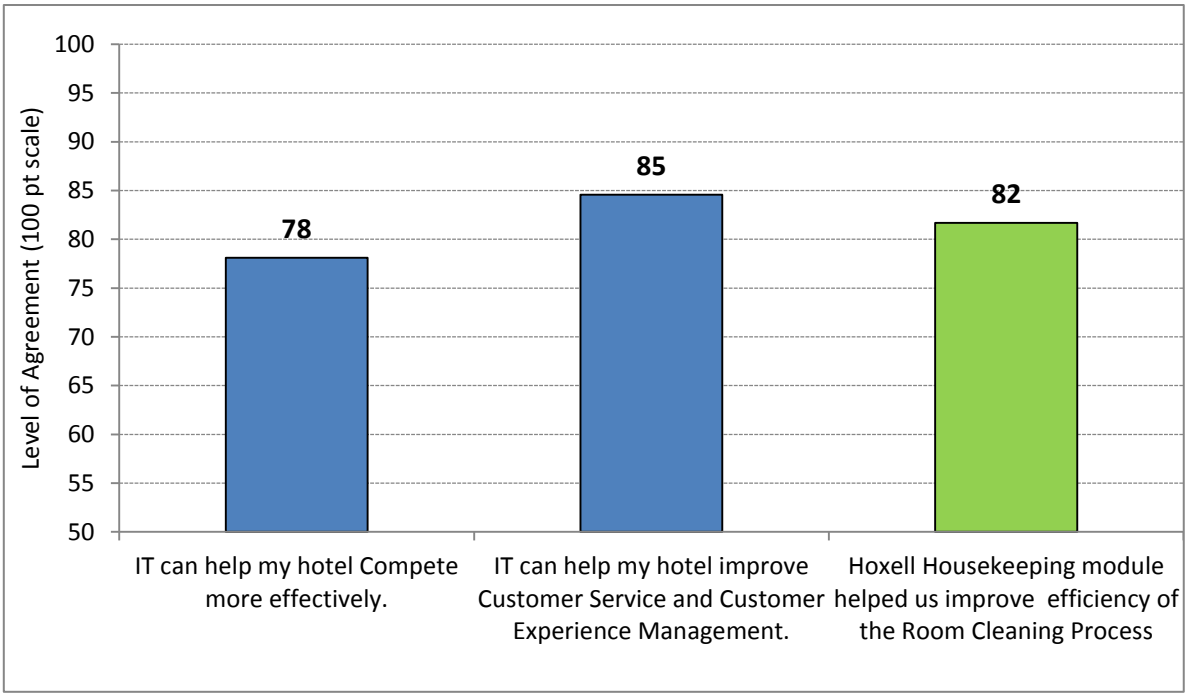

Figure 4 – Managers Perceptions about IT and CEM System potentialities

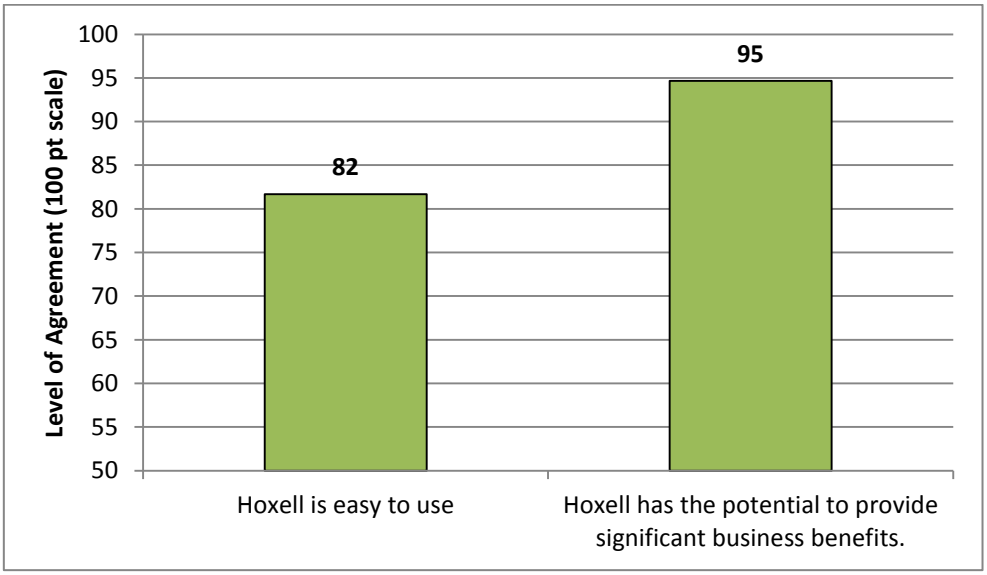

Figure 5 - Managers Perceptions about Easiness and Usefulness

Staff Survey

The objective of the staff survey is to understand the perceptions of end users of the system, their needs, expectations, issues and perceived benefits. The respondents were from different departments: rooms, administration, reception, maintenance, and food & beverage (Table 2).

Twenty-eight questions in the survey are categorized into 8 groups (Appendix C). Each group of the questions is designed to measure each of the constructs of the Information System Success and Task-Technology Fit models, with the final objective to evaluate the relationships among their constructs. All the questions are validated in the literature for each specific construct investigated (Au et al., 2008; Wang and Strong, 1996; Barki and Hartwick, 2001; Goodhue, 1995; Liang et al., 2007). Particularly, information and system quality are assessed through the investigation of the capacity of Hoxell to provide exact information without facing system failures. Ease of use and Task-Technology fit are instead jointly evaluated through perceptions about difficulty of learning to use the system, and easiness and clarity of its functionalities to perform daily tasks. Service quality is then investigated focusing on technical support from project leaders during both introduction and post-rollout phases, while system usage is questioned in terms of frequency of usage during daily routine. Then, usage satisfaction and intentions are assessed in terms of recommendation intent and overall satisfaction. Finally, perceived benefits are operationalized in terms of daily tasks and long-term housekeeping improvements. On particular, net-benefits arising from the Hoxell adoption have been focused on two areas: (a) overall benefits, i.e. advantages on general business performance such as flexibility and adaptability on the work system, easiness of use to accomplish general tasks, improvement in daily tasks speediness and accuracy and simplification of daily activities; and (b) housekeeping-specific benefits:, i.e. improvements in core activities, such as in room cleanliness, cleaning process of common areas, and finally on inspections results (i.e. checks randomly performed by housekeeping team leaders verify the correct room preparation by staff). To get such benefits, prerequisite is a full and correct system usage, which the theoretical model states to be dependent on information quality, system quality, service quality and ease of use. Therefore, all the above mentioned theoretical constructs have been investigated, together with their join relations and their effects on perceptions.

Structural Equation Modeling (SEM) is a technique which enables to estimate loading and weights of indicators of constructs, therefore allowing assessing construct validity and causal relationship among them in multi-stage models (Fornell and Bookstein, 1982). Within its set of techniques, Partial Least Square (PLS) is considered robust with fewer statistical identification issues and it is most adapt for models with formative constructs and relatively small data samples (Hair et al., 2011, in Sun et al., 2012; Sun et al., 2012). Based on these considerations, PLS is adopted to investigate all variables simultaneously, assessing the latent constructs of the joint ISS and TFF models. Specifically, it is conducted to test the model by estimating the complex cause-effect relationship among the latent constructs. Bootstrapping technique is used to test the significance of the path relationships. The resulting model is reported in Figure 6.

From the full model, 7 items – EOU5, NetBenefit5/10 - have been removed due to their low outer loadings (lower than 0.6) (Table 3).

Table 3: PLS Outer Loadings Matrix

Items	Ease of Use	Information Quality (IQ)	Net Benefit	Self Efficacy	Service Quality	TTF	Usage	Use Satisfaction
EOU1	0.626							
EOU2	0.883							
EOU3	0.802							
EOU4	0.875							
EOU5	**0.385**							
IQ1		0.688						
IQ2		0.944						
IQ3		0.121						
NetBenefit1			0.774					
NetBenefit2			0.841					
NetBenefit3			0.798					
NetBenefit4			0.906					
NetBenefit5			**0.573**					
NetBenefit6			**0.215**					
NetBenefit7			**0.574**					
NetBenefit8			**0.400**					
NetBenefit9			**0.431**					
NetBenefit10			**0.341**					
SE1				0.596				
SE2				0.969				
SQ1					0.767			
SQ2					0.884			
SQ3					0.568			
TTF						1.000		
Usage1							0.893	
Usage2							0.791	
Satisfaction								1.000

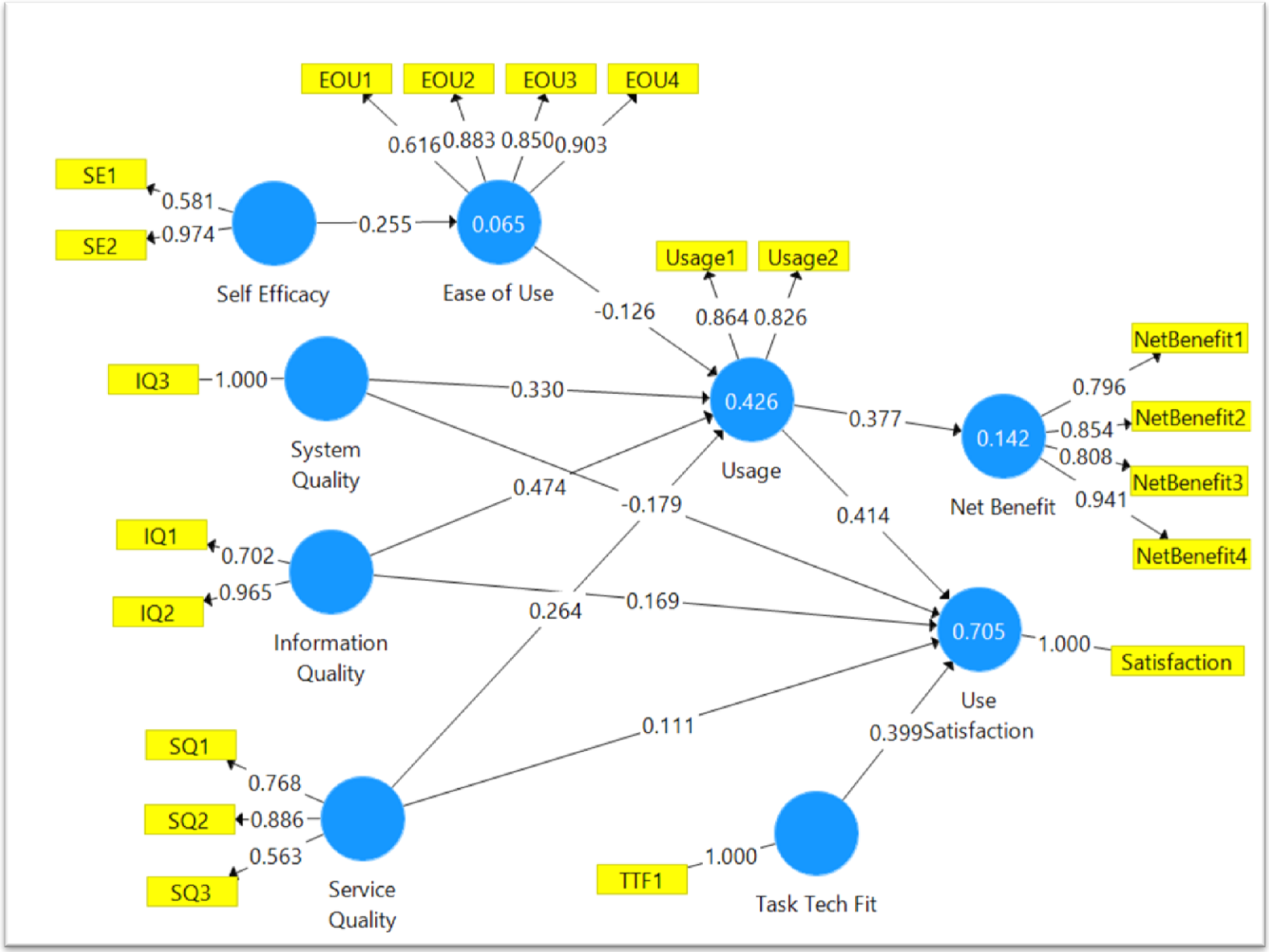

Figure 6 – Structural Equation Model applied to Information System Success Model

The model explains 14.2% of the variance in Net Benefit and 70.5% of the variances in Use Satisfaction. Constructs report the below Average Variance Extracted (AVE), which is higher than 0.5 thus acceptable for all the constructs defined (Bagozzi and Yi, 1988). Additionally, composite reliability results always greater than 0.7 (Bagozzi and Yi, 1988). Finally, to test reliability Cronbach's Alpha is used. A commonly accepted rule (George and Mallery, 2003) for describing internal consistency using Cronbach's Alpha considers the following thresholds for evaluating internal consistency:

- $\alpha \geq 0.9$: Excellent
- $0.9 > \alpha \geq 0.8$: Good
- $0.8 > \alpha \geq 0.7$: Acceptable
- $0.7 > \alpha \geq 0.6$: Questionable
- $0.6 > \alpha \geq 0.5$: Poor
- $0.5 < \alpha$: Unacceptable

Based on it, results shows a generally acceptable composite reliability found in the model, with only four constructs between 0.5 and 0.7 (poor or questionable). Literature identifies how Cronbach's Alpha tends to be underestimated in a PLS model (Hair et al., 2016) due to its prioritization of indicators according to individual reliability. Additionally, it is more appropriate to apply a different measure of internal consistency reliability, such as the composite reliability, since it considers different outer loadings of the indicator variables (Hair Jr. et al., 2017). Therefore, considering also AVE and composite reliability found, I consider Cronbach's Alpha only as a conservative measure of internal consistency reliability, and thus results over 0.5 still acceptable for the study purposes.

Table 4 reports analysis of reliability described.

Table 4: PLS model Reliability

Constructs	AVE	Comp. Reliability	Cronbach's Alpha
Ease of Use (EOU)	0.674	0.890	0.836
Information Quality (IQ)	0.711	0.828	0.657
Net Benefit	0.725	0.913	0.875
Self Efficacy (SE)	0.643	0.772	0.551
Service Quality (SQ)	0.564	0.790	0.601
System Quality (IQ)	1.000	1.000	1.000
Task-Technology Fit (TTF)	1.000	1.000	1.000
Usage	0.715	0.833	0.602
Use Satisfaction	1.000	1.000	1.000

To investigate multi-collinearity, Variance Inflaction Factor (VIF) is adopted. Particularly, due to the reflective measures used in the PLS model, inner VIF is checked. In general, a value of VIF below 10 reflects the absence of collinearity (Hair et al., 1995), while values lower than 3.3 represent excellent values (Diamantopoulos and Siguaw, 2006). In the present model, all constructs defined have inner VIFs below 2.5, reflecting a strong reliability of model adopted (Table 5).

Table 5: Inner Variance Inflaction Factors

	EOU	IQ	NB	SE	SQ	SysQ	TTF	Usage	US
Ease of Use (EOU)								2.212	
Information Quality (IQ)								2.294	2.346
NetBenefit (NB)									
Self-Efficacy (SE)	1.000								
Service Quality (SQ)								1.417	1.475
SystemQuality (SysQ)								1.094	1.328
TTF									1.799
Usage			1.000						1.723
Use Satisfaction (US)									

Finally, discriminant validity is investigated, checking cross-loadings and analyzing whether variables have higher loadings to their factors than to the ones of the others. Results support discriminant validity among all questions and constructs (Table 6).

Once verified reliability and validity of the PLS model adopted, six paths are found significant for the analysis and consistent with literature model (Table 7).

Results highlight how the three critical dimensions of the IS success (information, system and service quality) enhance usage, operationalized as both actual usage and future intention, and how its usage translates into net benefits and satisfaction among the staff who use the information system and execute the overall IT-enabled CEM strategy. Additionally, as expected from the literature, task-technology fit positively affects staff satisfaction with system usage. Surprisingly, ease of use does not positively correlate with actual use.

After conducting the online survey, personal interviews were conducted to validate the results and to deepen the understanding of the hotels-specific dynamics. A significant difference between the extent of system adoption (i.e., whether the hotels adapt the entire system or only the basic system functionalities) emerged, which affects the usage behaviors and thus representing a possible study limitation. To overcome it, the survey responses are split into two groups, based on level of actual

adoption, measured as number of functionalities really used out a total of 7. The two groups are then defined as high-usage (20 samples) and low-usage (23 samples) and the analysis are conducted separately.

Table 6: PLS Cross-loadings

	EOU	IQ	NB	SE	SQ	SysQ	TTF	Usage	US
EOU1	**0.616**	0.430	0.332	0.187	0.215	0.153	0.401	0.106	0.317
EOU2	**0.883**	0.610	0.598	0.271	0.549	-0.060	0.611	0.343	0.524
EOU3	**0.850**	0.720	0.583	0.202	0.337	-0.106	0.687	0.314	0.554
EOU4	**0.903**	0.595	0.617	0.168	0.302	0.104	0.723	0.277	0.490
IQ1	0.564	**0.702**	0.397	0.246	0.304	-0.083	0.303	0.211	0.259
IQ2	0.682	**0.965**	0.713	0.383	0.447	-0.074	0.675	0.503	0.747
NetBenefit1	0.572	0.513	**0.796**	-0.100	0.560	0.005	0.462	0.241	0.512
NetBenefit2	0.421	0.624	**0.854**	0.098	0.394	0.060	0.589	0.313	0.590
NetBenefit3	0.614	0.524	**0.808**	-0.066	0.441	0.008	0.490	0.195	0.339
NetBenefit4	0.676	0.688	**0.941**	0.121	0.499	0.143	0.659	0.443	0.603
SE1	0.075	0.262	0.283	**0.581**	0.407	0.400	0.243	0.508	0.298
SE2	0.269	0.366	-0.027	**0.974**	0.194	0.358	0.278	0.455	0.219
SQ1	0.293	0.313	0.522	0.051	**0.768**	0.226	0.184	0.327	0.178
SQ2	0.459	0.400	0.473	0.228	**0.886**	0.090	0.341	0.507	0.451
SQ3	0.211	0.297	0.243	0.299	**0.563**	0.210	0.189	0.211	0.411
SysQ	-0.001	-0.085	0.082	0.414	0.208	**1.000**	0.119	0.345	0.020
TTF1	0.749	0.643	0.661	0.304	0.338	0.119	**1.000**	0.382	0.683
Usage1	0.398	0.510	0.316	0.508	0.459	0.292	0.257	**0.864**	0.537
Usage2	0.160	0.281	0.323	0.463	0.370	0.291	0.398	**0.826**	0.546
Use Satisfaction	0.588	0.689	0.0621	0.266	0.490	0.020	0.683	0.640	**1.000**

Table 7: PLS model of significant relationships

Hypothesis	Relation	Coefficient	p-value
H1	Service Quality → Usage	0.264	0.07
H5	Task-Technology Fit → Use Satisfaction	0.399	<0.01
H6	System Quality → Usage	0.330	<0.01
H7	Information quality → Usage	0.474	0.04
H8	Usage → Net Benefits	0.377	<0.01
H9	Usage → Use Satisfaction	0.414	<0.01

As expected, by comparing coefficients resulting from the PLS analysis on the two groups, some important differences emerges (Table 8). The staff in the low-usage group perceives a positive impact of information quality on use satisfaction and of usage on net benefits, while the staff in the high-usage group does not exhibit any significant effect. The staff in the low-usage group experience higher use satisfaction and net benefit when the information quality and usage are higher. This phenomenon does not exist in the high usage group. During the interviews, this phenomomen is found to be due to a higher-commitment in the high-usage group pushing the limits of the work system and thus understanding its limits. Indeed, the more the staffs use the CEM system, the higher expectation they have and thus the lower the satisfaction exhibited. These unexpected results highlight how subjective perceptions can be affected by contingent situations. Additionally, these results are consistent with previous studies (Hsieh, 2012) which described how user satisfaction have a higher impact on employee service quality, and then on customer satisfaction, for employees with a lower level of service knowledge.

Table 8: PLS analysis for high and low usage groups

Path	Coefficients (Low)	Significance (Low)	Coefficients (High)	Significance (High)	Significance (Difference)
Information Quality → Usage	0.191	0.460	0.275	0.501	0.597
Information Quality → Use Satisfaction	0.426	0.092	-0.096	0.723	0.080
System Quality → Usage	0.454	0.004	0.358	0.199	0.373
System Quality → Use Satisfaction	-0.070	0.756	-0.148	0.604	0.404
Service Quality → Usage	0.514	0.007	0.402	0.351	0.420
Service Quality → Use Satisfaction	0.083	0.788	-0.200	0.645	0.292
Ease of Use → Usage	0.107	0.649	-0.504	0.399	0.153
Self-Efficacy → Ease of Use	0.414	0.424	0.296	0.476	0.386
Task Tech Fit → Use Satisfaction	0.141	0.539	1.013	0.007	0.971
Usage → Net Benefit	0.445	0.061	-0.377	0.410	0.035
Usage → Use Satisfaction	0.394	0.151	0.308	0.306	0.403

The overall positive expectations from a CEM strategy are common among groups of usage, and derive from the top and medium management good support. In mandatory-use contexts, employees' system use is highly determined by managerial expectations (Hsieh, 2012), therefore a positive management support has the potential to influence system success in mandatory contexts (Brown et al., 2002). However, people working more with the system can easily reach its limits, reducing the final effect on perceived benefits. User satisfaction is indeed discretionary (Hsieh, 2012), and can thence generate psychological tensions which finally reduce service quality delivered through the IS. Figure 7 compares perceptions of high- and low-usage users.

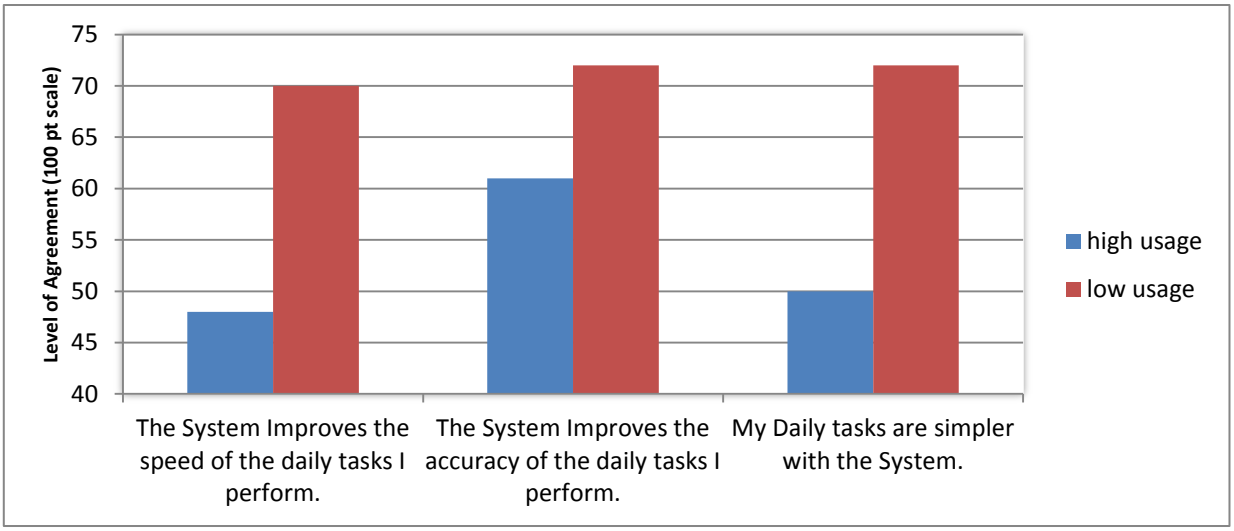

Figure 7 – Differences in Perceptions among Groups of Usage

Effects on Process Performance

The objective of the second study is to further investigate the impact of system usage on the perceived net benefits (H8) from the guests' point of view. Specifically, we would like to understand whether the system usage will lead to a positive effect on guests' perceptions, which nowadays represent one of the most important KPIs in every hospitality firm. To do so, considering the high relevance of the housekeeping tasks, assessments of cleanliness via online reviews on TripAdvisor are used to operationalize the performance constructs.

Event study via graphical analysis is used at first, looking for an overall pattern. Particularly, the monthly average cleanliness scores for all the hotels are plotted, distinguishing between months before and after the introduction of the system (month zero), and detecting changes due to it (Figure 8). Despite a potential ceiling effect due to the high scores of the sample hotels, the graph shows important impacts of Hoxell on the cleanliness score at the month of installation, signaling an improvement in value as immediately perceived by guests who visited the hotel after CEM strategy adoption. Differently, value score and room score reports an unclear pattern, with a jump at the month zero and a negative trend successively, thus requiring a further regression analysis to better understand causal effects.

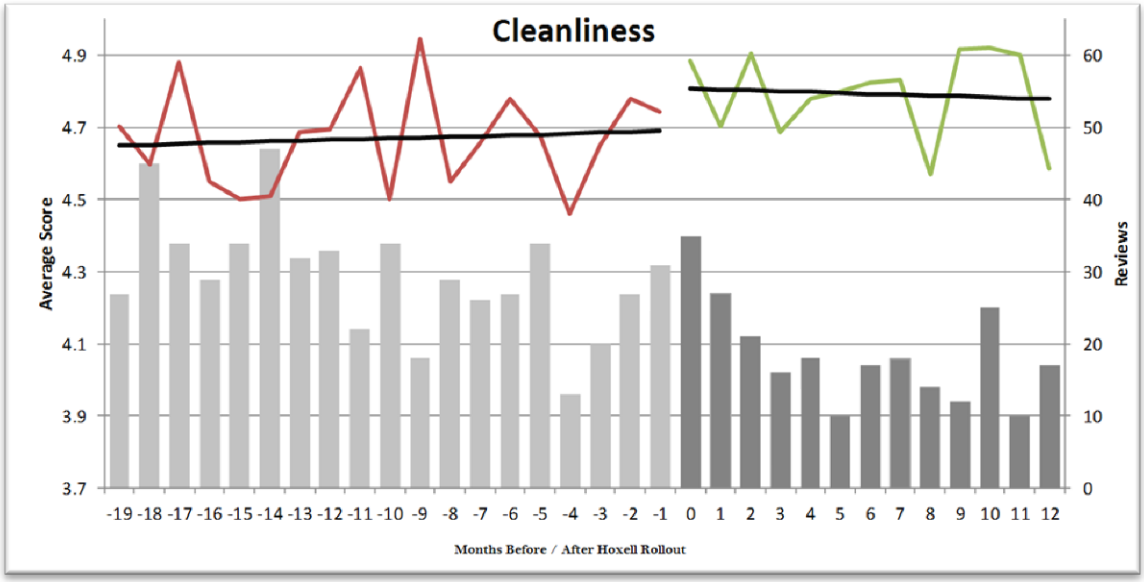

Figure 8 – Hoxell adoption on Cleanliness Score – Average cleanliness score (lines) and number of reviews left (bars) for each month since adoption of Hoxell system.

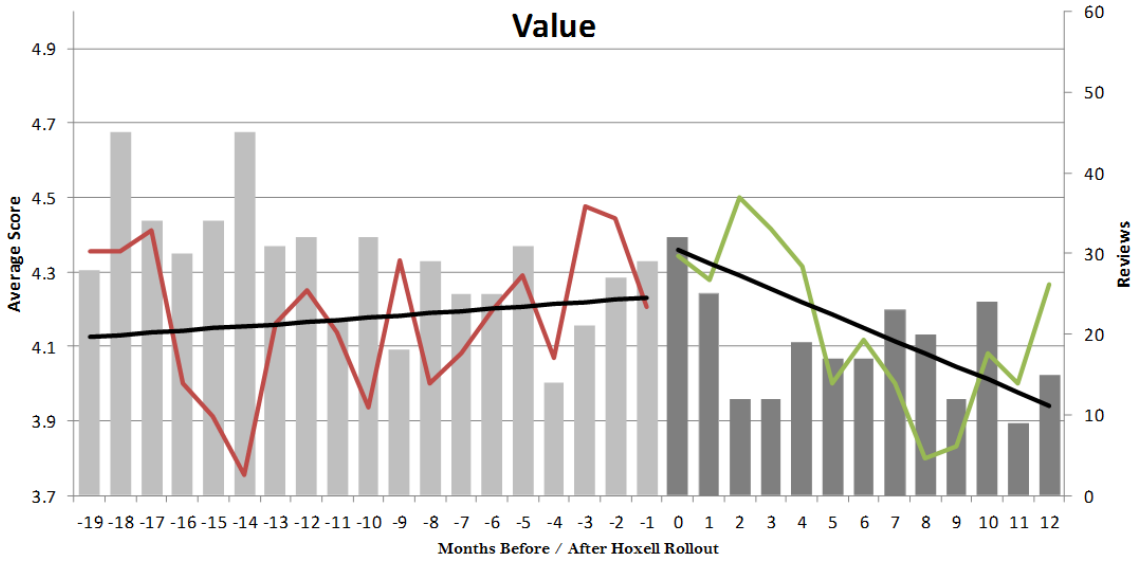

Figure 9 – Hoxell adoption on Value Score – Average value score (lines) and number of reviews left (bars) for each month since adoption of Hoxell system.

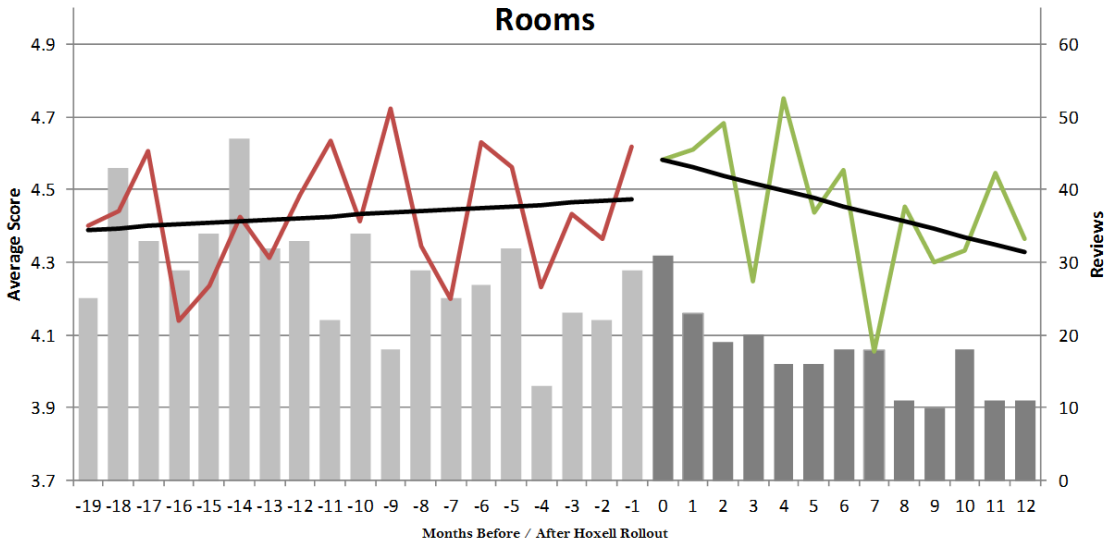

Figure 10 – Hoxell adoption on Rooms Score – Average rooms score (lines) and number of reviews left (bars) for each month since adoption of Hoxell system.

After the graphical analysis, Generalized Estimated Equations (GEE) model is run to evaluate the strength of a linear relationship between actual system usage – the independent variable - and guest perceptions on cleanliness, room and value – the dependent ones. Actual system usage is measured from Google Analytics and is operationalized in terms of total amount of time spent in reading information (in seconds), as well as the number of pages viewed on Hoxell in a month. Guests' reviews on TripAdvisor are finally used to measure perceptions, aggregating them based on the month of stay declared in the review. A potential confounding effect can be a high system usage related to high number of occupied rooms and high number of working housekeepers, as well as individual characteristics of the hotels, such as the reflection of a different hotels' commitment in final usage. Therefore, the hotel occupancy percentage, dummy variables for each hotel and the number of working staff are included in the model as control variables.

The results from GEE show the differences in performance on guests' perceptions for all the three variables. The effect of the introduction of the system is different among the two groups (Table 9). Particularly, as also reported in Figure 8, the high-usage hotels see a positive sustained difference in cleanliness scores before and after CEM strategy adoption, while low usage hotels do experience a jump in scores at implementation but a decrease over time, leading to no significant sustained difference after system implementation. Similar patterns are shown for rooms and value perceptions.

Table 9: Results of GEE

All Hotels	Before CEM	After CEM	Difference	p-value
Cleanliness	4.67	4.76	**+0.09**	0.12
Rooms	4.40	4.44	**+0.04**	0.14
Value	4.16	4.14	**-0.02**	0.45
High Usage Hotels				
Cleanliness	4.58	4.74	**+0.15**	< 0.01
Rooms	4.24	4.45	**+0.21**	< 0.01
Value	4.10	4.21	**+0.11**	< 0.01
Low Usage Hotels				
Cleanliness	4.76	4.82	**+0.06**	0.07
Rooms	4.53	4.42	**-0.10**	0.08
Value	4.20	4.01	**-0.19**	0.33

As expected, a common positive effect exists for cleanliness scores for all of the hotels in aggregate, which represents the part of the performance mostly affected by the housekeeping module of Hoxell. A statistically significant effect is also present on the overall room preparation and the perceived guests' value. However, this relation exists only for the hotels which adopted the system more. On the contrary, the usage of the system results in a negative effect among the hotels who adopted the system only for the basic functionalities.

Despite the limited amount of data, it is possible to conclude that the implementation of Hoxell, together with the overall change of processes and organizational aspects arising from adoption of an overall of IT-enabled CEM strategy, results in a positive and sustained effect on guests' perceptions for those hotels that incorporate the system in their operations, particularly on ability to manage hotel's cleanliness. The analysis supports the research question, showing how adoption of the IT-enabled CEM strategy positively affects guests' assessments, which nowadays represents one of the most important performance indicators in the hospitality industry.

Discussion

The objective of the study is to show how different IS usage, together with different perceptions toward technology acceptance, affects perceptions of users on value provided by adoption of a IT-enabled CEM strategy. It then aims to show how such strategy is able to sustain firms' competitiveness, leveraging on technology to increase value perceived by guests.

The first part of the study, by merging archival and survey data with the staff's personal perceptions, analyzed how each element of the ISS model affecting the adoption of an IT-enabled CEM system will finally influence benefits perceived from the overall system usage. Results show that a general positive expectation from its adoption exists, particularly on top and medium management, and among the hotels which use the system less and still have the possibility to enhance their performance by leveraging on it. On the other side, the ones using Hoxell more clearly know what it can or cannot do, increasing their expectations and finally perceiving a lower benefit.

Second research on the effects of quantity of system usage on guests' perceptions confirms what literature states about positive relationship between customer service systems and perceived service quality. The results show, in general, a positive overall effect of the IT-enabled customer service system on perceived guests' perceptions. More interestingly, this effect is commonly valid on cleanliness, which represents a core characteristic in guests' assessment of a hotel. Effects on quality of the rooms and finally value instead are positive only for those using all functionalities of the system, thus fully leveraging on it to reach the CEM strategic objective.

The study meets the fields of information systems and customer service, showing how information technology if rightly sustained by a good organizational structure made of people and processes with their perceptions, attitudes and facilitating structures, can help facing today challenges in today hotel industry. By doing so, the work extends the literature on IT-enabled Customer Experience Management strategies, reporting evidence of empirical results in the hospitality industry that can be easily extended to other markets. The choice to analyze the relationships between the elements of an information system through the lens of a case study brings the impossibility to generalize the results over the boundaries of the hospitality industry. However, complexities and heterogeneity of hotels involved make results easily extendable not only to Swiss market, but to the whole hotel industry, which is characterized by a continuous search for new competitive levers and innovations through technology.

The work is based on guests' reviews from TripAdvisor, an online platform where it is impossible to verify whether the guests who wrote the review actually visited the hotels or not. This represents a limitation of this study and the possibility for further research, moving from numerous-reviews on TripAdvisor to other alternatives such as Booking.com, where it is able to guarantee the actual visit of the reviewers.

The study describes the effects of service quality, information quality and system quality on customer value and satisfaction. However, scholars highlight the need for an empirical testing of the relationships among such variables (Xu et al., 2013), so that this can represent a further extension of the research.

In addition, due to limited sample size, no further analysis is conducted on survey results. Future works have the possibility to replicate the study and collect a higher set of replies, and correlate constructs of management expectations and perceived service quality and user-friendliness.

Finally, the present work investigates the effects of perceptions and attitudes toward an IT enabled customer service system, without considering the factors affecting post-implementation trust in the IT service provider. Trust has been clearly reported as a strong predictor of employee satisfaction, customer satisfaction and business performance (Harter et al., 2002). This can therefore represent a future path of research (Montoya et al., 2010).

Appendix A - Staff Survey Questions

Welcome to the Innotour survey.
We're conducting research on the different aspects that are crucial for any hotelier to best perform his/her job through the IT.
We'd love to hear from you about what you think about the Hoxell system and the use of innovative systems for hotel management. This will help us make improvements to the existing tool and prioritize new features. The survey should only take 5 minutes, and your responses will remain confidential and not shared together with your personal details.
You can only take the survey once, but you can stop and restart it, as well as change your previous replies, everytime you prefer!
All questions are required.
If you have any questions about the survey, please email us.
We really appreciate your input!

Questions

1. Please select your Hotel
2. Please select your Department
   - Rooms
   - Reception
   - Maintenance
   - Breakfast
   - Bar
   - Administration
3. Please indicate how long you are using Hoxell.
   - Less than 1 month
   - Between 1 and 3 months
   - Between 3 and 6 months
   - More than 6 months

Please indicate how much you agree with the following statements.

4. Hoxell provides output that is exactly what I need (e.g. rooms occupied or not, already cleaned or not, list of arrivals).
5. Hoxell provides me with sufficient information to do my tasks.
6. Hoxell has errors in the program that I have to work around.
7. Learning to use Hoxell was easy for me.
8. I find Hoxell flexible to interact in performing work-related tasks and activities.
9. I find it easy to get Hoxell to do what I want to do in performing work-related activities.
10. My interaction with Hoxell at work is clear and understandable.
11. The quality of system functionality I originally expected was high.
12. I find Hoxell appropriate for my daily job tasks.
13. Reverting to our old methods would be very difficult.
14. I think Hoxell has improved the speed.
15. I think Hoxell has improved accuracy.
16. My daily tasks are simpler with Hoxell.
17. The Hoxell project was adequately funded
18. The Hoxell project had enough team members to get the work done.
19. The Hoxell project provided me enough training to learn to use the system.
20. It is too early to tell if the Hoxell housekeeping module can have beneficial effects for my hotel.
21. Using the Hoxell housekeeping module helped me to improve my inspections results.

22. Using the Hoxell housekeeping module helped us to improve the cleanliness of our rooms.
23. Using the Hoxell housekeeping module helped us to improve the efficiency of the room cleaning process.
24. Using the Hoxell housekeeping module helped me to avoid forgetting about small tasks.
25. I am perfectly able to use Hoxell for rooms preparation.
26. I use all the functionalities of Hoxell.
27. I always use Hoxell during my daily routine
28. I am perfectly able to use Hoxell for communications with my colleagues.
29. I am perfectly able to globally use Hoxell
30. If I had my own hotel I would recommend using Hoxell.
31. I am happy to do my job using Hoxell.

Appendix B - Top-Medium Survey Questions

Welcome to the Innotour survey.
We're conducting research on the different aspects of the information systems that are crucial for any hotelier to best perform his/her job through the IT.
We'd love to hear from you about what you think about the Hoxell system, the whole Innotour project and the use of innovative systems for hotel management. This will help us make improvements to the existing tool and prioritize new features. The survey should only take 5 minutes, and your responses will remain confidential and not be shared together with your personal details.
You can only take the survey once, but you can stop and restart it from where you left off last time.
You have to answer all questions before proceeding to the next section of the survey.
If you have any questions about the survey, please email us.
We really appreciate your input!

Questions

1. Please rank how important each element of a guest experience is to enable your hotel to compete effectively with direct competitors. Please do it by dragging and dropping the elements by the order of importance from top to bottom, where top one is the most important aspect.
   - Cleanliness
   - Location
   - Accuracy of reservations
   - Friendliness of the staff
   - Price

Please indicate how much you agree with the following statements.

2. I believe that it is imperative for my hotel to offer a level of customer service that is superior to that of my direct competitors.
3. I believe that it is important for my hotel to help our guests to personalize their experience with us.
4. I believe that managing customer experiences proactively is critical to my hotel's survival .
5. I believe that hoteliers have lost control of their distribution to on-line intermediaries (e.g., Booking)
6. I believe that hoteliers have lost control of their branding and messaging to on-line reputation sites (e.g., TripAdvisor)
7. I believe that nowadays there is too much competition in my destination for my hotel to be successful.
8. I think that Information Technology can help my hotel compete more effectively.
9. I think that Information Technology can help my hotel improve customer service and customer experience management.
10. I believe that using the Hoxell housekeeping module helped us to improve the cleanliness of our rooms
11. I believe that using the Hoxell housekeeping module helped us to improve the efficiency of the room cleaning process
12. The Hoxell project was adequately funded.
13. The Hoxell project had enough team members to get the work done.
14. The Hoxell project was given enough time for completion.

Please rank the Hoxell service level for the following aspects.

15. The quality of information accuracy I experienced.
16. The quality of information availability I experienced.
17. The quality of information presentation I experienced.
18. The quality of system functionality I originally expected.
19. The quality of system user friendliness I experienced.
20. The quality of system ease of integration with other systems I experienced.

Please indicate how much you agree with the following statements.

21. It is important for me that the data are user friendly.
22. The system is easy to use
23. The senior management of our hotel believes that Hoxell has the potential to provide significant business benefits.

Please tell us how regularly you perform the following activities.

24. I think about how to improve service quality and make customers happier.
25. I change internal processes to adapt my organizations to changes in guests preferences.
26. I monitor on-line reviews and social media sites.
27. I think about a strategy to respond to on-line reviews.
28. I think about a strategy to elicit feedback from customers during their stays.
29. I think about a strategy to elicit feedback from customers after their stays.
30. I think about a strategy to direct appropriate customers to contribute to on-line reputation.

Please tell us how much you are committed to your hotel

31. How willing are you to put in effort beyond that normally expected of a GM in order to help your hotel be successful?
32. How committed are you to ensuring that your hotel is the customer service leader in your competitive set

Appendix C – Staff Survey Scores

#	Construct	Code	Questions	Mean	St.Dev.	Missing	Min	Max
4	Information & Systems Quality	IQ1	Hoxell provides output that is exactly what I need (e.g. rooms status, list of arrivals).	69.279	17.913	-	26	100
5	Information & Systems Quality	IQ2	Hoxell provides me with sufficient information to do my tasks.	70.465	20	-	25	100
6	Information & Systems Quality	IQ3/SysQ	Hoxell has system errors that I have to work around. (reverse coding)	68.093	806	-	23	100
7	Ease of Use and TTF (Net Benefits)	EOU1	Learning to use Hoxell was easy for me.	84.535	22.162	-	30	100
8	Ease of Use and TTF (Net Benefits)	EOU2	I find Hoxell flexible to interact with in performing work-related tasks and activities.	71.791	18.471	-	30	100
9	Ease of Use and TTF (Net Benefits)	EOU3	I find it easy to get Hoxell to do what I want to do in performing work-related activities.	70.279	19.582	-	5	100
10	Ease of Use and TTF (Net Benefits)	EOU4	My interaction with Hoxell at work is clear and understandable.	75.395	22.628	-	20	100
11	Ease of Use and TTF (Net Benefits)	EOU5	The quality of system functionality I originally expected was high.	79.814	19.501	-	30	100
12	Ease of Use and TTF (Net Benefits)	TTF1	I find Hoxell appropriate for my daily job tasks.	76.186	15.843	-	20	100
13	Daily Tasks Improvements (Net Benefits)	NetBenefit1	Reverting to our old methods of work when we did not have Hoxell would be difficult.	43.047	20.644	-	0	100
14	Daily Tasks Improvements (Net Benefits)	NetBenefit2	I think Hoxell has improved the speed of the daily tasks I perform.	58.442	32.636	-	0	100
15	Daily Tasks Improvements (Net Benefits)	NetBenefit3	I think Hoxell has improved the accuracy of the daily tasks I perform.	66.419	28.276	-	20	100
16	Daily Tasks Improvements (Net Benefits)	NetBenefit4	My daily tasks are simpler with Hoxell.	60.326	20.343	-	0	100
17	Hoxell project (Service Quality)	SQ1	The Hoxell project had enough team members to get the work done.	59.558	28.097	-	0	100
18	Hoxell project (Service Quality)	SQ2	The Hoxell project was adequately funded.	65.209	21.686	-	4	100
19	Hoxell project (Service Quality)	SQ3	The Hoxell project provided me enough training to learn to use the system.	72.651	20.357	-	29	100

20	Improved Housekeeping Performance (Net Benefits)	NetBenefit5	Using the Hoxell housekeeping module helped me improve my inspections results.	64.444	30.322	25	0	100
21	Improved Housekeeping Performance (Net Benefits)	NetBenefit6	It is too early to tell if the Hoxell housekeeping module can have beneficial effects for my hotel.	65.000	25.952	25	5	100
22	Improved Housekeeping Performance (Net Benefits)	NetBenefit7	Using the Hoxell housekeeping module helped us to improve the cleanliness of our rooms.	35.611	29.115	25	1	83
23	Improved Housekeeping Performance (Net Benefits)	NetBenefit8	Using the Hoxell housekeeping module helped us to improve the efficiency of the room cleaning process.	53.111	29.205	25	4	97
24	Improved HK Performance (Net Benefits)	NetBenefit9	Using the Hoxell housekeeping module helped me to avoid forgetting about small tasks.	59.222	30.296	25	0	91
25	Improved HK Performance (Net Benefits)	NetBenefit10	I am perfectly able to use Hoxell for rooms preparation.	71.000	29.565	25	4	100
26	(System) Quantity of usage	Usage1	I use all of the functionalities of Hoxell.	60.535	25.166	-	6	100
27	(System) Quantity of usage	Usage2	I always use Hoxell during my daily routine.	77.930	26.066	-	2	100
28	Self-efficacy	SE1	I am perfectly able to use Hoxell for communications with my colleagues.	97.907	25.317	-	0	100
29	Self-efficacy	SE2	I am perfectly able to globally use Hoxell.	87.093	16.579	-	22	100
30	User Satisfaction and Usage intentions	UsageIntention	If I had my own hotel I would recommend using Hoxell.	75.116	24.692	-	1	100
31	User Satisfaction and Usage intentions	Satisfaction	I am happy to do my job using Hoxell.	77.465	21.723	-	14	100

IQ = Information Quality SysQ = System Quality
EOU = Ease of Use TTF = Task-Technology Fit
SQ = Service Quality SE = Self-Efficacy

Appendix D – Top-Medium Management Survey Scores

#	Construct	Questions	Mean	St.Dev.	Missing	Min	Max
1	CEM Strategy	Please rank how important each element of a guest experience is to enable your hotel to compete effectively with direct competitors:	(1 most important, 5 less important)				
		A) Cleanliness of the room	3.00	1.34	-	1	5
		B) Location	2.20	1.17	-	1	4
		C) Accuracy of reservations	4.40	1.02	-	2	5
		D) Friendliness of the staff	2.40	1.11	-	1	4
		E) Price	3.00	1.26	-	1	5
2	Customer Service	I believe that it is imperative for my hotel to offer a level of customer service that is superior to that of my direct competitors.	92.80	14.03	-	52	100
3	Personalization	I believe that it is important for my hotel to help our guests to personalize their experience with us.	82.80	16.37	-	50	100
4	CEM Strategy	I believe that managing customer experiences proactively is critical to my hotel's survival.	70.60	22.34	-	25	100
5	Competitive Environment	I believe that hoteliers have lost control of their distribution to on-line intermediaries (e.g., Booking)	64.33	11.94	-	50	80
6	Competitive Environment	I believe that hoteliers have lost control of their branding and messaging to on-line reputation sites (e.g., TripAdvisor)	54.67	16.25	-	25	80
7	Competitive Environment	I believe that nowadays there is too much competition in my destination for my hotel to be successful.	23.56	14.95	-	0	41
8	IT-enabled CEM	I think that Information Technology can help my hotel compete more effectively.	78.11	13.28	-	50	93
9	IT-enabled CEM	I think that Information Technology can help my hotel improve customer service and customer experience management.	84.56	9.84	-	70	100
10	Net Benefits	I believe that using the Hoxell housekeeping module helped us to improve the cleanliness of our rooms	57.67	28.90	-	15	98
11	Net Benefits	I believe that using the Hoxell housekeeping module helped us to improve the efficiency of the room cleaning process	81.67	14.93	-	60	100
12	Hoxell project (Service Quality)	The Hoxell project was adequately funded.	68.11	22.09	-	30	100
13	Hoxell project	The Hoxell project had enough team members to get the work done.	69.67	17.44	-	40	90

	(Service Quality)						
14	Hoxell project (Service Quality)	The Hoxell project was given enough time for completion.	76.33	15.87	-	50	100
15	Information & Systems Quality	The quality of information accuracy I experienced.	71.89	13.26	-	50	85
16	Information & Systems Quality	The quality of information availability I experienced.	76.11	15.48	-	50	100
17	Information & Systems Quality	The quality of information presentation I experienced.	77.00	15.27	-	50	100
18	Information & Systems Quality	The quality of system functionality I originally expected.	70.89	11.41	-	50	91
19	Ease of Use	The quality of system user friendliness I experienced.	76.78	16.03	-	50	100
20	Information & Systems Quality	The quality of system ease of integration with other systems I experienced.	58.22	18.08	-	30	83
21	Information & Systems Quality	It is important for me that the data are user friendly.	95.89	4.15	-	90	100
22	Ease of Use	The system is easy to use	81.67	14.14	-	50	100
23	Net Benefits	The senior management of our hotel believes that Hoxell has the potential to provide significant business benefits.	94.67	6.72	-	80	100
24	CEM Strategy	I think about how to improve service quality and make customers happier.	84.00	12.08	1	65	100
25	CEM Strategy	I change internal processes to adapt my organizations to changes in guests preferences.	77.63	15.07	1	50	95
26	CEM Strategy	I monitor on-line reviews and social media sites.	78.75	14.92	1	50	96
27	CEM Strategy	I think about a strategy to respond to on-line reviews.	60.75	28.82	1	0	89
28	CEM Strategy	I think about a strategy to elicit feedback from customers during their stays.	67.13	28.26	1	0	90
29	CEM Strategy	I think about a strategy to elicit feedback from customers after their stays.	67.63	29.08	1	0	90
30	CEM Strategy	I think about a strategy to direct appropriate customers to contribute to on-line reputation.	69.25	28.47	1	0	90
31	Commitment	How willing are you to put in effort beyond that normally expected of a GM in order to help your hotel be successful?	92.13	8.78	1	76	100

32	Commitment	How committed are you to ensuring that your hotel is the customer service leader in your competitive set	85.13	15.10	1	50	100

Reference

Ajzen, I., and Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior, Englewood Cliffs, NJ: Prentice-Hall.

Au, N., E.W.T. Ngai, and T.C.E. Cheng (2008), "Extending the understanding of end user information systems satisfaction formation: An equitable needs fulfillment model approach", MIS Quarterly, 32, 43-66.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, 16(1), 74-94.

King, W. R., & He, J. (2005). Understanding the role and methods of meta-analysis in IS research. *Communications of the Association for Information Systems*, 16(1), 32.

Watson, R. T. (2001). Introducing" MISQ Review": A New Department in" MIS Quarterly". *MIS Quarterly*, 103-106.

Baker, J. A., and Lamb, Jr., C. W. (1993). "Measuring Architectural Design Service Quality," *Journal of Professional Services Marketing* (10:1), pp. 89-106.

Barki, Henri, and Jon Hartwick (2001), "Interpersonal Conflict and its Management in Information Systems", MIS Quarterly, 25, 195-228.

Bauer, H. H., Falk, T., and Hammerschmidt, M. (2006). "eTransQual: A Transaction Process-Based Approach for Capturing Service Quality in Online Shopping," *Journal of Business Research* (59:7), pp. 866-875.

Brown, S. A., Massey, A. P., Montoya-Weiss, M. M., and Burkman, J. R. (2002). "Do I Really Have to? User Acceptance of Mandated Technology," *European Journal of Information Systems* (11:4), pp. 283–295.Day G. 1994. Continuous Learning About Markets. California Management Review.

Cenfetelli, R., Benbasat I., and Al-Natour, S. (2008). "Addressing the What and How of Online Services: Comparing Service Content and Service Quality for E-Business Success," Information Systems Research (19:2), pp. 161-181.

Chen, C. W. D., and Cheng, C. Y. J. (2009). "Understanding Consumer Intention in Online Shopping: A Respecification and Validation of the DeLone and McLean Model," Behaviour and Information Technology (28:4), pp. 3335-345.

Compeau, D. R., and C. A. Higgins. Computer Self-Efficacy: Development of a Measure and Initial Test, MIS Quarterly (19:2), 1995, pp. 189-211.

Dabholkar, P. A. (1996). "Consumer Evaluations of New Technology-Based Self-Service Options: An Investigation of Alternative Models of Service Quality," *International Journal of Research in Marketing* (13:1), pp. 29-51.

Dabholkar, P. A., and Bagozzi, R. P. (2002). "An Attitudinal Model of Technology-Based Self-Service: Moderating Effects of Consumer Traits and Situational Factors," *Journal of the Academy of Marketing Science* (30:3), pp. 184-201.

Dabholkar, P. A., and Overby, J. W. (2005) "Linking Process and Outcome to Service Quality and Customer Satisfaction Evaluations: An Investigation of Real Estate Agent Service," *International Journal Service Industry Management* (16:1), pp. 10-27.

Davis, Fred D. (1989), "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology", MIS Quarterly, 13, 318-340.

Day G. (1994). Continuous Learning About Markets. California Management Review. DBK. GOD XVI. pp. 81-98.

de Ruyter, K., Bloemer, J., and Peeters, P. 1997. "Merging Service Quality and Service Satisfaction. An Empirical Test of an Integrative Model," *Journal of Economic Psychology* (18:4), pp.387-406.

DeLone, W.H., & McLean E.R. (1992). Information systems success: The quest for the dependent variable. *Information systems research*, 3(1), pp. 60-95.

DeLone, W.H., & McLean, E.R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19(4), pp. 9–30.

Devaraj, S., Fan, M., and Kohli, R. (2002). "Antecedents of B2C Channel Satisfaction and Preference: Validating E-Commerce Metrics," Information Systems Research (13:3), pp. 316-333.

Diamantopoulos, A., & Siguaw, J. A. (2006). Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, 17(4), 263-282.

Erickson S., Rothberg H. October (2015). Data, Knowledge, and Intelligence in Hospitality Industries. *Cornell Hospitality Report*, (15:16).

Fathema, N., Ross, M., Witte, M., (2014). Student acceptance of university web portals: A quantitative study. *International Journal of Web Portals*. 6(2).42-58.

Fathema, N., Shannon, D., & Ross, M., (2015). Expanding the Technology Acceptance Model (TAM) to examine faculty use of Learning Management Systems (LMS). *Journal of Online Learning and Teaching*, 11(2), 210-233.

Feminier S, Bujarski L. (2013). European Market Spotlight: Navigating Switzerland's Travel Market Complexities. *PhocusWright's Spotlight*.

Gefen, D. (2002). "Customer Loyalty in E-Commerce," *Journal of the Association for Information Systems* (3:1), pp. 27-51.

Gentile, C., Spiller, N., & Noci, G. (2007). How to sustain the customer experience: An overview of experience components that co-create value with the customer. *European Management Journal*, (25:5), pp. 395-410.

George, D., and Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon.

Goodhue, D. (1995). "Task-Technology Fit and Individual Performance", MIS Quarterly, 19, 213-236.

Grönroos, C. (1982). Strategic Management and Marketing in the Service Sector, Helsingfors, Sweden: Swedish School of Economics and Business Administration.

Grönroos, C. (1990). Service Management and Marketing, Lexington, MA: Lexington Books.

Grönroos, C. (1998). "Marketing Services: The Case of a Missing Product," *Journal of Business & Industrial Marketing* (13:4/5), pp. 322-338.

Grönroos, C., Helnomen, F., Isoniemi, K., and Lindholm, M. 2000. "The NetOffer Model: A Case Example from the Virtual Marketplace," Management Decision (38:4), pp. 243-252.

Gržinic J. (2007). Concepts of Service Quality Measurement in Hotel Industry .*Ekon*. Misao Praksa.

Hair JF, Ringle CM, Sarstedt M (2011) PLS-SEM: Indeed a silver bullet. J. Marketing Theory and Practice 19(2):139–152.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications.

Hair, J.F., Anderson R.E., Tatham R.L. and Black W.C. (1995) Multivariate data analysis: with readings, *Englewood Cliffs*, New Jersey, Prentice-Hall.

Harter, J.K.; Schmidt, F.L.; and Hayes, T.L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87:2, 268–279.

Hsieh, J. P. A., Rai, A., Petter, S., & Zhang, T. (2012). Impact of user satisfaction with mandated CRM use on employee service quality.

Hwang, J., Seo, S. (2016). A critical review of research on customer experience management: theoretical, methodological, and cultural perspectives. *International Journal of Contemporary Hospitality Management*, 28(10).

Hwang, Y., and Kim, D. J. (2007). "Customer Self-Service Systems: The Effects of Perceived Web Quality with Service Contents on Enjoyment, Anxiety, and E-Trust," Decision Support Systems (43:3), pp. 746-760.

Igbaria, M., Parasuraman, S., and Baroudi, J. (1996). "A Motivational Model of Microcomputer Usage," *Journal of Management Information Systems* (13:1), pp. 127-144.

Johnson, M., Zinkhan, G. M., and Ayala, G. S. (1998). "The Impact of Outcome, Competency and Affect on Service Referral," *Journal of Services Marketing* (12:5), pp. 397-415.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition Mixed Methods Research. *Journal of Mixed Methods Researc*h, (1), pp. 112-133.

Johnston, R. (1995). "The Determinants of Service Quality: Satisfiers and Dissatisfiers," International *Journal of Service Industry Management* (6:5), pp. 53-71.

Karimi, J., Somers, T. M., & Gupta, Y. P. (2001). Impact of information technology management practices on customer service. *Journal of Management Information Systems*, (17:4), pp. 125-158.

Kettinger, W. J., and Lee, C. C. (1994). "Perceived Service Quality and User Satisfaction with the Information Services Function," Decision Sciences (25:5/6), pp. 737-766.

Kim, Hee-Woong, and Atreyi Kankanhalli (2009), "Investigating user resistance to information systems implementation: A status quo bias perspective", MIS Quarterly, 33, 567-582.

Kim, Sung S., and Jai-Yeol Son (2009), "Out of dedication or constraint? A dual model of post-adoption phenomena and its empirical test in the context of online services", MIS Quarterly, 33, 49-70.

Kude T, Schmidt CT, Mithas S, Heinzl A (2015) Disciplined autonomy and innovation effectiveness: The role of team efficacy and task volatility. Humphreys J, ed. Proc. Acad. Management Ann. Meeting, Vancouver. http://proceedings.aom.org/content/2015/1/18802.short?related-urls=yes&legidDamproc;2015/1/18802&cited-byDyes&legidDamproc;2015/1/18802.

Liang, Huigang, Nilesh Saraf, and Qing Hu (2007), "Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management", MIS Quarterly, 31, 59-87.

Lin, Wen-Shan, and Wang C.H. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education*, 58(1), pp. 88-99.

Liu CW, Kude T, Mithas S (2015) How strategy and governance choices influence innovation success in software products and services. Carte T, Heinzl A, Urquhart C, eds. Proc. 35th Internat. Conf. Inform. Systems (AIS, Fort Worth, TX), 1–18.

Lui, T. W., & Piccoli, G. (2009). Toward a theory of IT-enabled customer service systems. Handbook of research on contemporary theoretical models in information systems, 364-383.

Mangold, G. W., and Babakus, E. (1991). "Service Quality: The Front-Stage Perspective vs the Back-Stage Perspective," *Journal of Services Marketing* (5:4), pp. 59-70.

Mason, R. O. (1978). "Measuring Information Output: A Communication Systems Approach," Information and Management (1:5), pp. 219-234.

Melville, N., Kraemer, K., and Gurbaxani, V. 2004. “Review: Information Technology and Organizational Performance: An Integrative Model of IT Business Value,” MIS Quarterly (38:2), pp. 283-322.

Miguéns J., Baggio R., and Costa C., (2008). “Social media and tourism destinations: TripAdvisor case study.” Advances in Tourism Research, (Aveiro).

Mithas, S., Krishnan, M. S., & Fornell, C. (2016). Research Note—Information Technology, Customer Satisfaction, and Profit: Theory and Evidence. Information Systems Research, 27(1), 166-181.

Montoya M.M., Massey A.P. & Khatri V. (2010). “Connecting IT Services Operations to Services Marketing Practices”, *Journal of Management Information Systems*, 26:4, pp. 65-85.

Myers BL, Kappelman L.A., Prybutok V.R. (1997). A comprehensive model for assessing the quality and productivity of the information systems function: toward a contingency theory for information systems assessment. *Information Resources Management Journal*, 10(1), pp. 6–26.

Nadkarni, S., & Gupta, R. (2007). A task-based model of perceived website complexity. Mis Quarterly, 501-524.Ajzen, I., and Fishbein, M. 1980. Understanding Attitudes and Predicting Social Behavior, Englewood Cliffs, NJ: Prentice-Hall.

Nysveen, H. Pedersen, P. E., and Thorbjørnsen, H. (2005). “Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons,” *Journal of Academy Marketing Science* (33:3), pp. 330-346.

Oliver, R. L. (1993). “A Conceptual Model of Service Quality and Service Satisfaction: Compatible Goals, Different Concepts,” in Advances in Services Marketing Management, Vol. 2, T. A. Swartz, D. E. Bowen, S. W. Brown (eds.), Greenwich, CT: JAI Press, pp. 65-85.

Ordenes, F. V., Theodoulidis, B., Burton, J., Gruber, T., & Zaki, M. (2014). Analyzing Customer Experience Feedback Using Text Mining A Linguistics-Based Approach. *Journal of Service Research*.

Palmer, A. (2010). Customer experience management: A critical review of an emerging idea. *Journal of Services Marketing* , 24(3), pp. 196–208. doi: 10.1108/08876041011040604

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1985). “A Conceptual Model of Service Quality and its Implications for Future Research,” *Journal of Marketing* (49), pp. 41-50.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1988). “SERVQUAL: A Multiple-Item Scale for Measuring Customer Perceptions of Service Quality,” *Journal of Retailing* (64:1), pp. 12-40.

Patrìcio, L., Fisk R.P., e Cunha J.F., and Larry C. (2011), ‘‘Multilevel Service Design: From Customer Value Constellation to Service Experience Blueprinting,’’ *Journal of Service Research*, (14:2), pp. 180-200.

Patterson, P. G., Johnson, L. W. (1993). “Disconfirmation of Expectations and he Gap Model of Service Quality: An Integrated Paradigm,” *Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior* (6), pp. 90-99.

Petter, S., & McLean, E. R. (2009). A meta-analytic assessment of the DeLone and McLean IS success model: An examination of IS success at the individual level. *Information & Management*, 46(3), pp. 159-166.

Piccoli G. (2013). Customer Experience Management: New Technology Leads to New Benefits. *Spotlight*.

Piccoli G. (2015). Customer Experience Management at the Speed of Data: The New Frontier of Value Creation in Hospitality. *PhocusWright*.

Piccoli, G., Lui, T. W. (2017). The Impact of IT-enabled Customer Service Systems on Service Personalization, Customer Service Perceptions, and Hotel Performance. Tourism Management, forthcoming.

Riaz U. October 2015. Transforming the Customer Experience through Technology in the Hospitality Industry. *Cornell Hospitality Report*, (15:18).

Rust, R. T., and Oliver, R. L. (1994). "Service Quality: Insights and Managerial Implications from the Frontier," in Service Quality: New Directions in Theory and Practice, R. T. Rust and R. L. Oliver (eds.), Thousand Oaks, CA: Sage Publications, pp. 1-19.

Schael T. (2009). Customer Experience Management, Quali processi e tecnologie per fidelizzare il cliente al brand aziendale attraverso la sua esperienza positiva? *Focus.*

Schmitt, B. (2003). Customer Experience Management: A Revolutionary Approach to Connecting with Your Customers'. John Wiley & Sons. Hoboken, NJ.

Seddon P.B. (1997). A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*, 8(3), pp. 240–253.

Shaw, C. and Ivens, J. (2005). Building Great Customer Experiences. *MacMillan*, New York.

Simon, Steven J., Varun Grover, and James T.C. Teng (1996), "The Relationship of Information System Training Methods and Cognitive Ability to End-user Satisfaction, Comprehension, and Skill Transfer: A Longitudinal Field Study", Information Systems Research, 7, 466-490.

Sun, Y., Fang, Y., Lim, K. H., & Straub, D. (2012). User satisfaction with information technology service delivery: A social capital perspective. Information Systems Research, 23(4), 1195-1211.

Tan, C. W., Benbasat, I., and Cenfetelli, R. (2013). "IT-Mediated Customer Service Content and Delivery in Electronic Governments: An Empirical Investigation of the Antecedents of Service Quality," MIS Quarterly (37:1), pp. 77-109.

Teo, Thompson S.H., Shirish C. Srivastava, and Li Jiang (2008), "Trust and Electronic Government Success: An Empirical Study", *Journal of Management Information Systems*, 25, 99-131.

The World Bank. "Services, etc., value added (% of GDP)". Retrieved on October 25, 2016 from http://data.worldbank.org/indicator/NV.SRV.TETC.ZS.

UNWTO. (2015). UNWTO Tourism Highlights. Retrieved on 15.10.16 from http://www.e-unwto.org/doi/pdf/10.18111/9789284416899.

Urbach, N., and Müller B. (2012). The updated DeLone and McLean model of information systems success. *Information systems theory*. Springer New York, pp. 1-18.

van Riel, A. C. R., Liljander V., and Jurriens P. (2001). "Exploring Consumer Evaluations of E-Services: A Portal Site," International *Journal of Service Industry Management* (12:3/4), pp. 359-377.

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of marketing*, (68:1), pp. 1-17.

Venkatesh, V. (2000), "Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model", Information systems research, 11 (4), pp. 342–365.

Venkatesh, V.; Davis, F. D. (2000), "A theoretical extension of the technology acceptance model: Four longitudinal field studies", Management Science, 46 (2): 186–204, doi:10.1287/mnsc.46.2.186.11926.

Venkatesh, V.; Morris, M. G.; Davis, G. B.; Davis, F. D. (2003), "User acceptance of information technology: Toward a unified view" (PDF), MIS Quarterly, 27 (3): 425–478.

Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, L. A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of retailing*, (85:1), pp. 31-41.

Walker, R. H., M. Craig-Lees, R. Hecker, and H. Francis. (2002). Technology-Enabled Service Delivery: An Investigation of Reason Affecting Customer Adoption and Rejection, International Journal of Service Industry Management (13:1), pp. 91-106.

Wang, Richard Y., and Diane M. Strong (1996). "Beyond Accuracy: What Data Quality Means to Data Consumers", *Journal of Management Information Systems*, 12, 5-34.

Wang, Y. S., (2008). "Assessing E-Commerce Systems Success: A Respecification and Validation of the DeLone And McLean Model of IS Success," *Information Systems Journal* (18:5), pp. 529-557.

Wang, Y. S., and Liao Y. W. (2008). "Assessing E-Government Systems Success: A Validation of the DeLone and Mclean Model of Information Systems Success," Government Information Quarterly (25), pp. 717-733.

Wang, Y., Lo, H. P., Zhang, Q., & Xue, Y. (2006). How technological capability influences business performance: an integrated framework based on the contingency approach. Journal of Technology Management in China, 1(1), 27-52.

Wixom, B. H., and Todd, P. A. (2005). "A Theoretical Integration of User Satisfaction and Technology Acceptance," Information Systems Research (16:1), pp. 85-102.

Wixom, Barbara (2001), "An Empirical Investigation of the Factors Affecting Data Warehousing Success", MIS Quarterly, 25, 17-41.

Xu, J., Benbasat, I., & Cenfetelli, R. T. (2013). Integrating service quality with system and information quality: an empirical test in the e-service context. MIS Quarterly, 37(3), 777-794.

CHAPTER 3

The Impact of IT-enabled Customer Experience Management on Service Perceptions and Performance

Introduction

Information Systems (IS) have had a dramatic impact on the hospitality industry in the last few decades (Law, Leung, Au and Lee 2013; Piccoli and Ott 2014). The effective use of technology to manage and personalize customer experience is expected to be a major brand differentiator in the hospitality industry (Talwar 2012). As a consequence, firms are increasingly using IT to provide high quality and personalized service (Buhalis and Law 2008), with IT being at the core of a hospitality organization's competitive profile (Zamani 2016). These technology advances have enabled the emergence of a holistic approach to managing service encounters in the industry, namely, Customer Experience Management (CEM).

Despite the importance of CEM in the hospitality and tourism industry, little empirical research to date investigated the role of IT in service personalization (Xu et al., 2014; Hwang and Seo, 2016). Past studies on personalization in the industry focus on extracting and delivering personalized information to users (Kim and Mattila, 2011), such as focusing on e-service personalization, and the recommendation of products and service through online websites in order to help users handle the increasing information overload problem (Lu et al,. 2015). Particularly, e-recommendation has been discussed in several research areas (e-government, e-business, e-commerce, e-learning) identifying different techniques to be used for each of them. In e-government context most of the studies deepened ways to increase efficiency in health-care management (e.g. Vergados, 2010), while in financial research area works investigated personalization of services such as to improve accuracy and relevance of customers' feedbacks to finally develop new business practices (Huang and Lin, 2005). Within the tourism area of research, only few studies explored personalization as one of the factors affecting hotel services and hospitality (Ariffin and Maghzi 2011). Others focused on the dilemma between personalization and privacy (e.g. Morosan and DeFranco 2015) or on e-tourism complementary services recommendation (Buhalis and Deimezi, 2004), studying new tools for helping travelers create their own trip-package. However, to my knowledge no study focused on the

usage of IT solutions for service personalization in hotel industry and delivery fulfillment, and how this can help hotels improving guests' experiences as part of an overall CEM initiative (Xu et al., 2014).

Personalization, the ability to tailor products, services, and the transactional environment to individual customers' needs, is a general process. A Customer Service System (CSS) empowers the firm to predict and identify customer needs (Chatzipanagiotou and Coritos 2010) and to react to their requests promptly and effectively, thus allowing providers to personalize service delivery (Tan et al., 2013).

Given the strategic significance of service and personalization to the hospitality industry, and the widespread use of IT-enabled CSS, it is important to investigate the role of technology in service personalization (Lui and Piccoli 2016).

The objectives of the study is to empirically evaluate the immediate impact of IT-enabled CEM on preference elicitation and its distal effects on customers' satisfaction and hotel performance. It extends research on IT-enabled service personalization by showing how the use of technology as part of a CEM initiative leads to greater preference elicitation. In addition, while previous studies focused on IT-enabled customization for recommendation of digital goods (e.g. TV channels; Zimmerman et al., 2004; Lee and Yang, 2003; Gutta et al., 2000) or complementary products while shopping online (Zhang et al., 2011; Lee and Park, 2009), the present work discusses the usage of IT for service personalization of travel experiences and it does so ahead of the service delivery. To my knowledge, previous studies focuses more on Personalized Production Recommendation (PPR) systems (Zhang et al., 2011; Zhang, 2005), leaving a gap in the use of IT for personalization of services. The present works then fills such gap in the literature, contributing to a new literature area.

It then empirically demonstrates how tailored customer experiences increase customer satisfaction. Finally, it shows how superior satisfaction translates into financial benefits by way of disintermediation and share shift from costly intermediated travel agencies to inexpensive direct distribution channels.

Theoretical Framework

Digital technologies have been transforming customer service since their widespread adoption in business organisations in the 1970s and 80s. The emerge of the public Internet accelerates this trend (Piccoli, Spalding and Ives 2001) and nowadays IT-enabled CSS represents a critical resource for hospitality firms (Piccoli and Lui 2014).

IT-enabled Customer Service Systems (CSS) is the collection of information systems that mediate and enable the delivery of service experiences with the objective of increasing overall customer value (Piccoli et al., 2004). Service experiences represent "the outcomes of the interactions between organisations, related systems/processes, service employees and customers (Bitner et al., 1997, p. 193). "Such interactions occur through touch-points, defined as "any place at which a company seeks to manage a relationship with a customer, whether through people, technology, or some combination of both" (Rayport and Jaworski 2005, p. 49). The recent interdisciplinary literature on IT-enabled customer value creation and service experience has coalesced around the notion of Customer Experience Management (CEM). Gartner defines CEM as "the practice of designing and reacting to customer interactions to meet or exceed customer expectations and, thus, increase customer satisfaction, loyalty and advocacy" (Gartner n.d.). The scholarly literature echoes this definition by referring to CEM as "the process of strategically managing a customer's entire experience with a product or a company" (Schmitt 2003, p.17).

The hotel industry is very competitive, with customers demanding high level of quality and value (Niininen et al. 2007). As a consequence, by enabling tailored experiences and service personalization, CEM is increasingly seen as a vehicle for differentiation and strategic advantages (Palmer 2010). Specifically, the literature posits how CEM initiatives lead to value equity (i.e., customer satisfaction), brand equity (i.e., brand image), and retention equity (i.e., increased loyalty) (Rust and Oliver 2000). However, empirical validation of these claims is limited.

Service personalization is the process of using individuals' own information to tailor the service and improve the benefits delivered to them (Lee and Cranage 2011). In the context of service personalization, IT can be deployed to enable preference elicitation and personalization fulfillment. The property of a technology design that communicates, implicitly or explicitly, available behavior to a user is called a signifier (Norman 2013). Signifiers are important to ensure that options provided to guests don't remain latent, but are in fact recognized, helping to reduce the high cognitive burden and difficulties in making choices during personalization (Broniarczyk and Griffin 2014). Customers may not be aware of, or clear about, their own preferences for personalized service thus failing to make requests that would ultimately improve their experience (Padmanabhan, Zheng and Kimbrough 2001). CEM is predicated on the firm's ability to elicit customer preferences; therefore a CEM initiative that supports preference elicitation will result in enhanced customers' awareness of personalization options, ensuring that those who are interested in personalizing their experience are more likely to communicate their requests to the firm.

Hypothesis 1a: Use of IT-enabled CEM increases the intensity of preference elicitation.

Hypothesis 1b: Use of IT-enabled CEM increases the frequency of service personalization.

Service quality theory predicts that individuals that better specify their service requirements experience a narrowing of the expectation-delivery gap (Parasuraman et al., 1985), with a subsequent improvement in perceived satisfaction (Ho and Zheng 2004). A CEM initiative that elicits appropriate customer preferences will lead to higher perceived service quality and comfort ratings (Murthi and Sarkar 2003). That is, a proactive service personalization effort through CEM makes available the benefits of personalization to individuals who were unable to experience it before, translated as both judgment of perceived service quality and comfort.

Hypothesis 2a: IT-enabled service personalization increases service ratings.

Hypothesis 2b: IT-enabled service personalization increases comfort ratings.

Customer value can be defined as an individual's "overall assessment of the utility of a product based on perceptions of what is received and what is given" (Zeithaml 1988, p. 14). Previous research has shown that service personalization may affect either or both of the dimensions of customer value, thus enhancing customers' perceived service quality and value (Coelho and Henseler 2012).

Hypothesis 2c: IT-enabled service personalization increases value ratings.

Literature reports how customers' loyalty is driven by 4 main elements: satisfaction, trust in the firm, communication and complaint-handling (Ball et al., 2004). Within this model, service personalization is able to indirectly sustain loyalty by positively sustain customer satisfaction and trust, and by improving communication resorting on personalized mails, website interactions and in-person contacts (Ball et al., 2006). Also, service personalization can directly affect loyalty of customers, which view personalized services as difficult to replace with another provider (Ball et al., 2006).

Through an IT-enabled CEM strategy, an organization can thus develop an electronic relationship (O'Toole 2003) with those individuals that adopt the service personalization process. Service personalization indeed increases perceived service quality, customer satisfaction, customer trust and ultimately customer loyalty toward the firm (Coelho and Henseler 2012). Based on such findings, service personalization is then seen as a critical cause of long-term guests' loyalty and then the most-relevant driver of any CEM approach.

Customers' perception of participation and firm's responsiveness when engaging in a personalized service process can lead to a long-term relationship with the firm (Lee et al., 2012) and provide economic benefits through disintermediation (Sheth and Sharma 2005; Buhalis and Law 2008). In the hotel industry, a direct reservation corresponds to a substantially higher profit margin than intermediated reservations due to the saving on the commission paid to a third party online travel agency. Thus, fostering disintermediation from high-cost distribution channels to low-cost direct ones is an imperative for hospitality firms. Considering how personalization induces affective attachment and customer commitment to stay with the website (Fung 2008), it follows that service personalization through CEM initiatives should contribute to shifting transactions to the direct channel.

Hypothesis 3a: service personalization through IT-enabled CEM system increases direct transaction.

Hypothesis 3b: service personalization through IT-enabled CEM system decreases intermediated transaction.

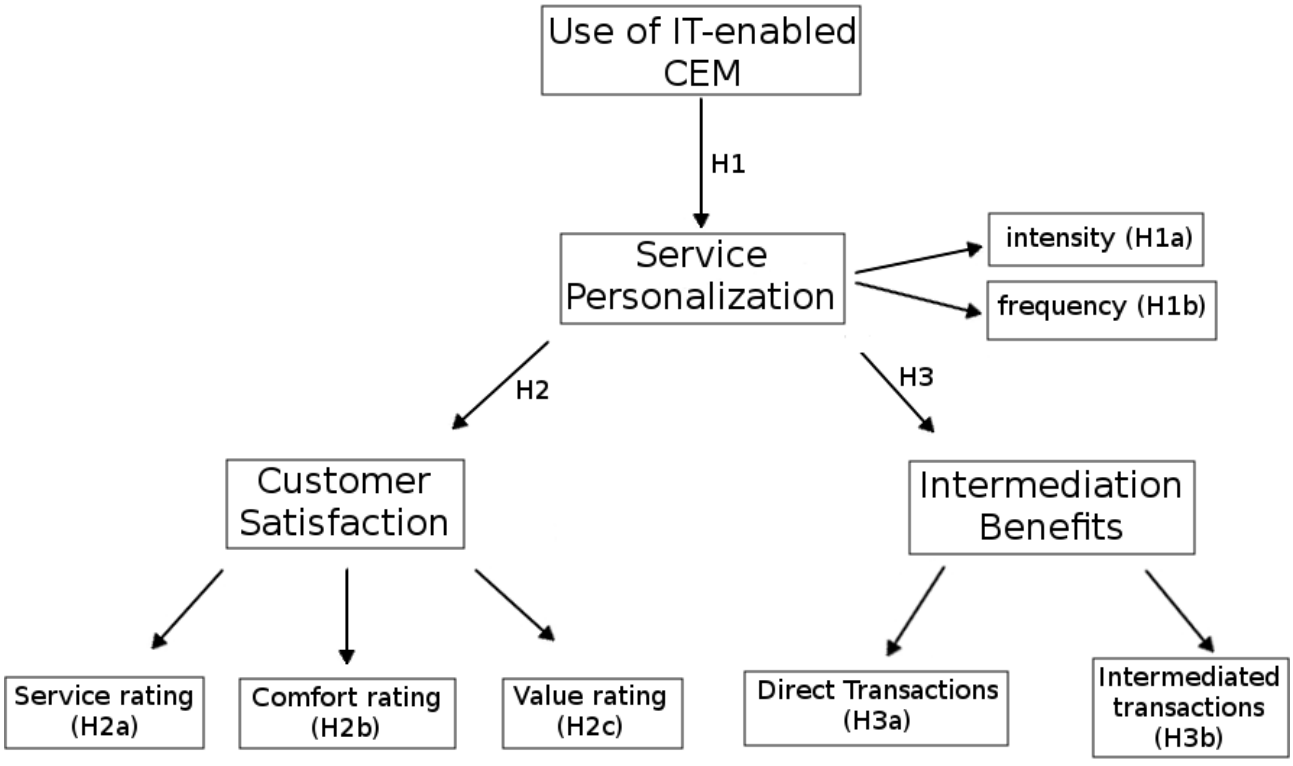

Figure 1 – Theoretical Model

Methodology

Context

This study uses an archival research methodology in the context of 7 independent Swiss three- and four-star hotels. The properties belong to the Swiss Quality Hotels International (SQHI) chain and represent a range of sizes (45 to 106 rooms), segment focus (leisure and business) and locations (city and resort).

SQHI, a believer in the value of IT-enabled CEM as a competitive lever, partnered with Innotour, a Swiss association focused on the improvement of competitiveness of Swiss tourism. Hotels applied for a project on a voluntary base, implementing a CEM work system, called Hoxell, which enables a deep interaction between guests and hotel staff at multiple touch points in the customer experience – including pre-arrival, occupancy and post-departure. It offers tools for hoteliers to enhance housekeeping operations and enable guests to personalize reservations, prior to arrival and during their stay. A key element of the Hoxell system is the service personalization process, enabled by a dedicated site called MyPage. When guests receive a reservation confirmation, they are directed to a personal page (i.e., MyPage) where they can select different options for personalizing their hotel stay. The SQHI hotels in the study provided a range of personalization items (from 52 to 133 based on hotel, of which 43% for free) ranging from preferred room temperature to pillow and bedding types, to drink and touristic amenities, thus strongly embedding the personalization process into the IT-enabled CEM initiative. The preferences are laid out by categories with images and restrictions, thus serving as signifiers and making guests aware of the specific possibilities to customize their experience. Personalization delivery is then ensured by transmitting stored preferences to service personnel on the date of the guests' arrival via an iPad, available to all housekeepers during the shift to access the information about guests' requests.

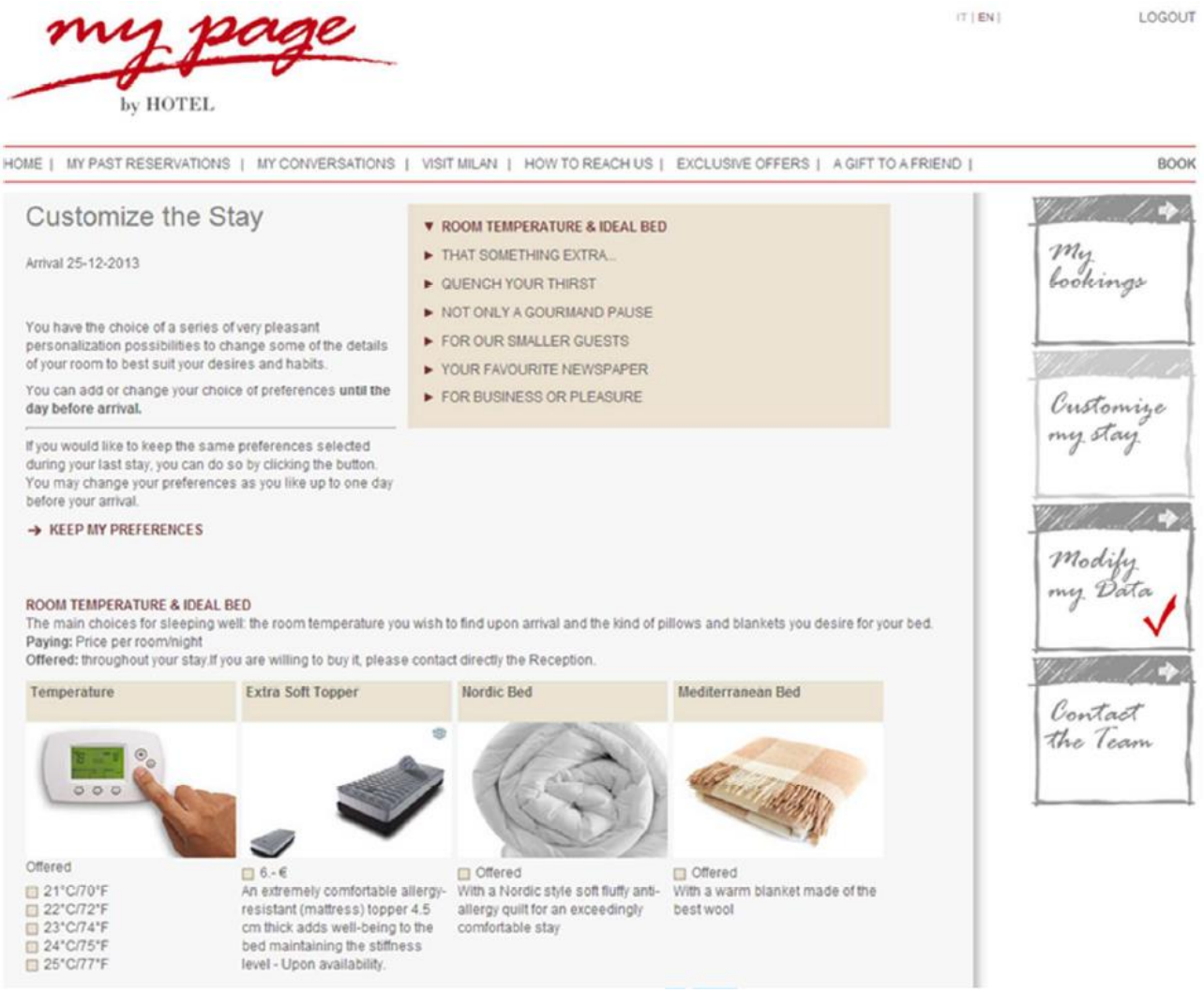

Figure 2 – MyPage Personalization Interface

Data

Through virtual channel (MyPage) as well as via traditional means (e.g., in person, phone call), and at any time between placing a reservation and checking-out, guests can request any product or service that will make their experience more pleasant. When requests are received via traditional means, such as via phone or reception desk, hotel staff annotates them in a specific field of the Property Management System (PMS), referred to as traces. In addition, Hoxell's MyPage allows guest to convey extra-requests, storing them within the information system.

The dataset is comprised of 104,465 reservations, with related information about guests' profiles and personalization requests, beginning one year prior to the implementation of the IT-enabled CEM initiative. Particularly, after 11 months from the introduction of MyPage, 2,219 stays have been personalized through it, resulting in a dataset of 7,964 items requested via virtual means, while data about guests' requests done via traditional means (e.g., phone) corresponds to 6,786 stored traces, out of which 1,704 related to personalization. Two raters separated traces referring to service

personalization requests from those not asking for personalization, reaching an agreement percentage of 94% (Landis and Koch 1977). Hypotheses 1 is tested with data on stays whether personalized through virtual means (i.e., MyPage), traditional means or not requesting personalization.

Hypotheses 2 are tested by matching reservations with online review scores from Booking.com, allowing collecting ordinal evaluations on the dimensions of value, staff, services, cleanliness, comfort and location. In the period between 2014-06-06 and 2016-07-27, 2,410 reviews have been collected. Two hotels were dropped from this analysis. The first one had internal policy restrictions resulting in more than 80% of requests not being delivered. The other had a small number of reviews on Booking.com, thus resulting in no personalized reservations having a corresponding review. Final dataset then includes information regarding 1,170 reservations complete with a guest's review.

To test hypothesis 3, the proportion of guests who move from intermediated channels on their first visit to a direct channel on their second visit (positive share-shift) is used.

Measures

Preference elicitation has been operationalized (a) as the number of personalization items that customers requested for service personalization; and (b) as the number of personalizing reservations, including the number of instances where individuals engaged in the personalization process via traditional means (e.g., phone) as well as via virtual ones (i.e. MyPage) once the system became available.

Review ratings are collected from Booking.com, where only verified guests are allowed to share their perceptions about service aspects. These are assessed on a four-point ordinal scale with anchors "poor," "fair," "good," and "excellent", and then converted into a quantitative scale: 2.5, 5.0, 7.5, and 10. This data have been directly linked to reservation data stored in the Hoxell system, allowing for individual guests' analysis. Ratings are collected for all dimensions investigated by Booking.com, i.e. Comfort, Service, Value, Location, Cleanliness and Staff. Reviews about location, cleanliness and staff were excluded from the analysis since the intermediated influence of virtual personalization on them can occur only through the intermediation of the other three aspects. Therefore, only Comfort, Service and Value are included in the analysis.

Booking channel is investigated through classification of reservations among ones related to (a) direct channels (i.e., hotels' webpages, call, walk-in, or a partner national association), (b) Online

Travel Agencies (OTAs) (i.e., Booking.com, Expedia) and (c) third channels (i.e. tourism organizations, travel agencies, tour operators, Global Distribution Systems).

Controls for Average Daily Rate (ADR), Length Of Stay in days (LOS), price paid for personalized items, number of adults and children on the reservations are used for H2. Controls for ADR, number of adults and children are used for H3.

Results

Hypothesis 1a is tested using 5,143 reservations of guests who personalized their stays (2,219 through virtual and 2,924 via traditional means), and the data include service personalization channel as the independent variable and the number of items requested as the dependent one.

I model the number of items requested (μ_i) via a Poisson regression with log link:

$$\ln(\mu_i) = \beta_1 + \beta_2(MethodVirtual_i), \qquad i = 1, \ldots, 5143 \ (n = 5143).$$

where μ represents the expected number of items requested by a guest through either the MyPage module of the Hoxell system (virtual channel) or via a traditional channel of communication (e.g., phone call).

A value of 1 for the dependent dummy variable indicates service personalization requested through virtual mean and 0 refers to the traditional personalization process. The results provide strong support for preference elicitation increase showing that, on average, guests request 1.05 items per stay when using the traditional personalization process (p-value < 0.01) and that the average number of items increases to 3.59 item per reservation when guests use MyPage, with a significant effect of virtual personalization (p-value < 0.01) (Table 1, 2).

Table 1: Personalization Requests

	mean	sd	min	max
Stays	3974.05	1150.87	2046	6977
Traditional Personalization: Stays	128.83	36.16	87	202
Virtual Personalization: Stays	186.08	56.61	37	245
Traditional Personalization: Items	1.05	0.23	1	3
Virtual Personalization: Items	3.59	3.04	1	22

Table 2: Preference Elicitation (H1a)

	Estimated	Std.error	t value	p-value
Intercept	0.051	0.031	1.66	0.097
MethodVirtual	1.226	0.034	36.336	<0.001

I tested hypothesis 1b using the entire dataset of 104,465 reservations, estimating the proportion of guests engaging in service personalization with a binomial regression with logit link:

$$logit\left(P\left(Personalization_{ij}\right)\right) = \ln\left[\frac{P\left(Personalization_{ij}=1\right)}{1-P\left(Personalization_{ij}=1\right)}\right]$$
$$= \beta_1 + \beta_2\left(MethodVirtual_j\right) + \beta_3(PersModule_i),$$

i = 1, …, 104465 (n = 104465), j = 1, 2.

Personalization is a dummy variable where *Personalization* sub-index j = 1 indicates personalization via the IT-enabled process (i.e., MyPage), while sub-index j = 2 indicates personalization via the traditional process. *MethodVirtual* is 1 for sub-index j = 1 and 0 for sub-index j = 2, while *PersonalizationModule* is coded as 1 for reservations occurring after the introduction of the IT-enabled service personalization process and 0 when the only available option was the traditional personalization process. The binomial regression thus models the possibility of guests' requesting personalization (i.e., the possibility of the independent dummy variable is equal to 1, where 1 indicates that the guest requested personalization via either the traditional or virtual channel). The model controls for actual availability of the virtual channel, via a dummy variable coded as 1 for reservations occurring after the introduction of the IT-enabled service personalization process and 0 when the only available option was the traditional personalization process.

Results provide strong support for preference elicitation increase, showing that the IT-enabled service personalization process generates an increase in personalization, and that customer experience management initiative does not cannibalize the traditional personalization process, but rather it has an additive effect (coefficient = 0.354) that stimulates an increase in personalization through traditional means (Table 3).

Table 3: Personalization Extent Differences (H1b)

	Estimated	Std.error	t value	p-value
Intercept	-3.722	0.035	-105.571	<0.001
MethodVirtual	0.329	0.033	9.860	<0.001
PersonalizationModule	0.354	0.043	8.163	<0.001

Hypotheses 2a and 2b are tested using reservations for which there was a matching review posted to Booking.com. *Personalization* is a dummy independent variable, with 1 indicating personalization requested through MyPage and 0 representing the lack of request of personalization via the CSS.

Due to the ordinal nature of the dependent variables in hypotheses 2a, 2b and 2c, the following proportional odds regression models are used to test the hypotheses.

$$\text{logit}[P(Service_i \leq j)] = ln\left[\frac{P(Service_i \leq j)}{P(Service_i > j)}\right] = \theta_j - \beta_1(Personalization_i) - \beta_{2(}(PrefPrice_i) - \beta_3(ADR_i) - \beta_4(LOS_i) - \beta_5(Children)$$

$$\text{logit}[P(Comfort_i \leq j)] = ln\left[\frac{P(Comfort_i \leq j)}{P(Comfort_i > j)}\right] = \theta_j - \beta_1(Personalization_i) - \beta_{2(}(PrefPrice_i) - \beta_3(ADR_i) - \beta_4(LOS_i) - \beta_5(Adults)$$

$$\text{logit}[P(Value_i \leq j)] = ln\left[\frac{P(Value_i \leq j)}{P(Value_i > j)}\right] = \theta_j - \beta_1(Personalization_i) - \beta_{2(}(PrefPrice_i) - \beta_3(ADR_i) - \beta_4(LOS_i) - \beta_5(Adults) - \beta_6(Children)$$

j = 1, . . . , 3 index the review's score categories of poor, fair and good

i = 1, . . . , 1388 index all observations (n = 1388)

The results generally support the contention that an IT-enabled CEM initiative significantly improves ratings of service (Table 4) and comfort (Table 5). Specifically, the odds ratios for *Personalization* are 1.58 when measuring service (p=0.01) and 1.69 when measuring comfort (p=0.03). Thus, for each rating level in the scale, customers who experience IT-enabled service personalization have a 58% (and 69%) higher chance than their counterparts to give a higher service (and comfort) rating category.

Table 4: Hypothesis 2a – Service

	Estimated	Std.error	t value	p-value	Odds ratio
2.5|5	-5.26	0.39	-13.49	<0.001	
5|7.5	-2.82	0.15	-18.85	<0.001	
7.5|10	-0.18	0.1	-1.7	0.09	
Personalization	0.46	0.2	2.28	0.02	1.58
PrefPrice	-0.02	0.01	-1.19	0.24	0.98
ADR	-0.1	0.07	-1.43	0.15	0.91
LOS	-0.12	0.04	-2.75	0.01	0.89
Children	0.25	0.12	2.03	0.04	1.28

Table 5: Hypothesis 2b – Comfort

	Estimated	Std.error	t value	p-value	Odds ratio
2.5|5	-4.75	0.37	-12.7	<0.001	
5|7.5	-2.79	0.26	-10.63	<0.001	
7.5|10	-0.39	0.24	-1.61	0.11	
Personalization	0.52	0.21	2.51	0.01	1.69
PrefPrice	-0.03	0.01	-2.03	0.04	0.97
ADR	0.11	0.08	1.48	0.14	1.12
LOS	-0.11	0.04	-2.59	0.01	0.89
Adults	0.01	0.11	0.08	0.93	1.01

Contrary to expectations hypothesis 2c is not supported (Table 6), indicating that personalization has no effect on guests' perception of value. A potential confounding effect is the adoption of a variable exchange rate between the Swiss Franc and the Euro, decided by the Bank of Switzerland (SNB) on January 2015. The decision suddenly made Swiss tourism more expensive for foreign guests impacting 65.6% of days in the study. Moreover, this effect was unevenly distributed across the customer base. Swiss tourists (35% of guests in the sample) did not experience any difference while foreign visitors suffering a 20% increase in price for the hotels and destinations in the sample. While I model controls for ADR in the model, effect of the SNB decision cannot be isolated, since

it involves all data-points related to stays after introduction of IT-enabled CEM initiative, with a volatile effect over time (12% of total fluctuation in the time range of the study).

Table 6: Hypothesis 2c – Value

	Estimated	Std.error	t value	p-value	Odds ratio
2.5|5	-3	0.28	-10.67	<0.001	
5|7.5	-1.13	0.24	-4.67	<0.001	
7.5|10	1.23	0.24	5.22	<0.001	
Personalization	0.08	0.19	0.44	0.66	1.09
PrefPrice	-0.02	0.01	-1.59	0.11	0.98
ADR	-0.17	0.07	-2.38	0.02	0.85
LOS	0.02	0.04	0.45	0.65	1.02
Adults	0.22	0.11	2.04	0.04	1.24
Children	0.15	0.11	1.36	0.17	1.17

Hypothesis 3a is tested using a sample of 1,611 guests who visited the same hotel more than once during the timeframe of the study. Of them, a total of 107 guests engaged in IT-enabled service personalization on their first visit. As described earlier positive share-shift is here defined as the proportion of guests shifting from a high-cost intermediated channel (e.g., Booking.com), to a zero-transaction-cost direct online channel (e.g., the hotel's own website). I measure the effect of personalization on share-shift by analyzing the proportion of guests who move from intermediated channels on their first visit to a direct channel on their second visit (positive share-shift) or the reverse (negative share-shift).

Table 7: Reservations by channel

	OTAs-intermediated reservations	Direct reservations	Other reservations from returning guests
First Visit	1293	237	131
Second Visit	1316	226	119

Following binomial regression models with logit link are used to evaluate the effect of personalization on positive and negative share-shift respectively:

$$\text{logit}(P(Direct_{ti} = 1)) = \ln\left[\frac{P(Direct_{ti} = 1)}{1 - P(Direct_{ti} = 1)}\right]$$
$$= \beta_1 + \beta_2(Personalization_{ti}) + \beta_3(ADR_{ti}) + \beta_4(Adult_{ti}) + \beta_5(Children_{ti})$$

i = 1, …, 1293.

$$\text{logit}(P(Indirect_{ti} = 1)) = \ln\left[\frac{P(Indirect_{ti} = 1)}{1 - P(Indirect_{ti} = 1)}\right]$$
$$= \beta_1 + \beta_2(Personalization_{ti}) + \beta_3(ADR_{ti}) + \beta_4(Adult_{ti}) + \beta_5(Children_{ti})$$

i = 1, …, 237

Direct is a dummy variable where 0 indicates the use of an intermediated channel and 1 indicates a reservation made through a direct channel. *Indirect* is a dummy variable where 0 indicates a reservation placed through a direct channel and 1 indicates an intermediated reservation. *Personalization* represents whether the guest used MyPage to engaged in IT-enabled service personalization (1) or not (0) during the first visit (at time 0). The results show that IT-enabled service personalization at first stay increases beneficial share-shift (p=0.03). Specifically, the odds of transacting using the direct booking channel in their next stay more than double for customers who experienced IT-enabled CEM in their first visit than for customers who did not (Table 8). Surprisingly results do not support hypothesis of a reduction in negative share-shift due to personalization (Table 9).

Table 8: Hypothesis 3a - Beneficial Share-Shift

	Estimated	Std.error	z-value	p-value	Odds ratio
Intercept	-3.91	0.51	-7.75	<0.001	0.02
Personalization.0	1.24	0.56	2.22	0.03	3.45
ADR.1	-0.53	0.21	-2.54	0.01	0.59
Adults.1	0.25	0.40	0.61	0.54	1.28
Children.1	-12.87	894.34	-0.01	0.99	0.00

Table 9: Hypothesis 3b - Detrimental Share-Shift

	Estimated	Std.error	z-value	p-value	Odds ratio
ntercept	-0.63	0.47	-1.34	0.18	0.53
Personalization.0	-16.00	1318.32	-0.01	0.99	0.00
ADR.1	0.59	0.19	3.05	<0.001	1.80
Adults.1	-0.42	0.36	-1.14	0.25	0.66
Children.1	-15.16	2086.97	-0.01	0.99	0.00

Discussion

This study focuses on the effects of IT-enabled Customer Experience Management (CEM), making three contributions to the theory and practice of service personalization through CEM. First, it demonstrates the positive role of IT-enabled CEM in guest preference elicitation. Second, it shows that service personalization through IT-enabled CEM increases guest satisfaction in the form of service quality and comfort. Finally, it validates the firm-level impact of service personalization through CEM initiatives in terms of revenue share-shift and disintermediation.

The first objective of the work is to validate the finding that IT can be used to improve preference elicitation from guests, as consequence of the lower effort of selecting preference items when using CEM tools instead of traditional means. The ability to tailor the guest experience, a prerequisite for effective CEM, is predicated on collecting customer preferences. Previous work shows how CSS that employs signifiers to support the learning phase of the service personalization process (Murthi and Sarkar 2003) leads to an increase in both the number of guests who engage in personalization and the number of items they request (Piccoli and Lui 2017). The study finds that, across the hotels in the sample, IT-enabled service personalization enables guests to tailor the experience by identifying appropriate items to personalize their stays. It ascribes the result to the reduced friction created by the online system as well as the presence of signifiers (Norman, 2013) that direct guests' attention to the available options. This process is not feasible without IT, such as via phone, where guests end up only requesting critical personalization items, despite the best effort of the hotel to welcome personalization requests (Piccoli and Lui 2017).

More interestingly, not only the number of preferences increases, but their variety as well. It can be conjectured that those individuals who requested specific personalization using the traditional approach focus on items that are essential during their visit. Conversely, when given the opportunity to better clarify their preferences by way of an IT-enabled customer service system, individuals are empowered to express a more diverse set of preferences, including non-essential. This is corroborated with a follow-up analysis of the specific items requested by customers. For the traditional approach to service personalization the highest relative frequency preferences are: extra bed (24.2%), special occasions (19.1%), and kids amenities (17.2%). These can be classified as requests that are critical for customers to enjoy their experience. Conversely, the highest relative frequency preferences expressed via the customer service system are non-essential items: drinks (44.5%), pillow type (42.4%) and bath amenities (38.9%). Moreover, these categories less-frequently appear in requests made via the traditional process: drinks (21.9%), pillow type (10.7%) and bath amenities (2.4%), such as most-requested critical preferences are equally not often

requested via traditional means: no possibility to choose extra-bed, special occasion and room decorations (2.6%) and kids amenities (2.4%).

The work also corroborates CSS literature proposing that IT-enabled CEM enables the firm to foster direct relationships with customers (Becerra et al., 2013) and, as consequence, improves loyalty. More specifically, it finds that the hotels in the study achieved strong positive share-shift and were able to shift returning guests to the low cost direct channels.

CEM is posited to increase customer satisfaction and loyalty. This hypothesis is corroborated by showing that those individuals who benefit from the hotels CEM initiative are significantly more likely to rate the experience more positively on the dimensions of service and comfort.

In addition, the work discusses the usage of IT for service personalization of travel experiences, reporting a case of service personalization ahead of the service delivery. This distinguishes it from previous study on IT-enabled personalization, focused on personalized product recommendations (PPR), thus filling a gap in the literature of IT-enabled customer service personalization.

Finally, the work contributes to the call for a better understanding of IT-enabled service personalization by investigating the return on CEM investment from the standpoint of the firm. Increased loyalty is theorized as a key outcome of CEM initiatives (Rust, et al. 2000). I support this notion and corroborate CSS literature proposing that IT-enabled CSS enables the firm to foster direct relationships with customers (Piccoli et al. 2004; Becerra et al. 2013) and, as consequence, improve loyalty. More specifically, I find that the hotels in the study achieved strong positive share-shift and were able to shift returning guests to the low cost direct channel. Surprisingly, I did not detect a significant reduction in negative share-shift imputable to the CEM initiative, which is explained by a lack of a commercial initiative of the hotels to move OTA-intermediated reservations to direct channels, such as via dedicated discounts.

Limitations and Future Research

The study examines the effects of service personalization on three review scores left by verified guests, namely Service, Comfort and Value. However, through the influence of service personalization on these three, a mediated effect on perceptions about Cleanliness, Location and Staff scores could exist. This would be possible due to the concurrent introduction of functionalities to improve cleanliness in the seven hotels involved, the possibility for guests to personalize their stay through the purchase of touristic amenities, and finally the critical role covered by staff employees in the service personalization delivery flow. Therefore a positive mediated effect of

service personalization is expected to exist. This represents a limit and a path for future expansions of the present study.

The work assumes how, relying on a common rollout phase of the tool for all the seven hotels involved, improvements could be obtained by all of them at the same level. However, the dataset includes hotels ranging from 3 to 4 stars, and located in city centers as well as in mountain destinations, finally serving different customers. This requires a further investigation of hotels' idiosyncrasies and their moderating effects on the relations between service personalization and guests' perceptions. In the present study, due to limit in data sample – only 11 months since full system adoption -, this investigation has not been possible. This represents a limit of the present study.

In addition to limits, significant questions still remain. As guests move increasingly to the mobile as the platform of choice for interaction with firms (Tesoriero et al., 2014), how should the preference elicitation process be redesign? As conversational interfaces and natural language voice interfaces become increasingly common, how can hotels ensure that guests can easily customize their travel experiences?

The work then calls for future research in the field of user interface, evidencing a need to deepen effects of different information system designs and related effects of changes in languages, colours and graphical functionalities, which are able to foster or limit final usage during service personalization. Also, further directions are represented by the investigation of different usage behaviours from mobile- and desktop-users, such as on the investigation of joint effects of IT-enabled CEM strategy and other commercial and organisational initiatives, and finally of the role of intermediation of top management support in leveraging benefits from CEM strategy.

Reference

Ariffin, A. A. M, Maghzi, A. (2012). A preliminary study on customer expectations of hotel hospitality: Influences of personal and hotel factors. *International Journal of Hospitality Management* 31(1): 191-198.

Becerra, M., Santaló, J., Silva, R. (2013). Being Better vs. Being Different: Differentiation, Competition, and Pricing Strategies in the Spanish Hotel Industry. *Tourism Management* 34:71-79.

Bitner, M. J., Faranda, W.T., Hubbert, A.R., Zeithaml, V.A. (1997). Customer contributions and roles in service delivery. *International Journal of Service Industry Management* 8(3):193 – 205.

Broniarczyk, S. M., Griffin, J.G. (2014). Decision Difficulty in the Age of Consumer Empowerment. *Journal of Consumer Psychology* 24(4): 608-625.

Buhalis, D., Law, R. (2008). Progress in Information Technology and Tourism Management: 20 Years On and 10 Years after The Internet – The State of eTourism Research. *Tourism Management* 29(4): 609-623.

Chatzipanagiotou, K. C., Coritos, C.D. (2010). A Suggested Typology of Greek Upscale Hotels Based on Their MrkIS: Implications for Hotels' Overall Effectiveness. *European Journal of Marketing* 44(11/12): 1576-1611.

Coelho, P. S., Henseler, J. (2012). Creating Customer Loyalty through Service Customization. *European Journal of Marketing* 46(3/4): 331-356.

Fung, T. K. F. (2008). Banking with a Personalized Touch: Examining the Impact of Website Customization on Commitment. *Journal of Electronic Commerce Research* 9(4): 196-309.

Customer Experience Management (CEM). (n.d.). In *Gartner IT Glossary*. Retrieved September 10, 2016, from http://www.gartner.com/it-glossary/customer-experience-management-cem/.

Gutta, S., Kurapati, K., Lee, K. P., Martino, J., Milanski, J., Schaffer, J. D., & Zimmerman, J. (2000). *Tv content recommender system*. AAAI/IAAI, 2000.

Hwang, J., Seo, S. (2016). A critical review of research on customer experience management: theoretical, methodological, and cultural perspectives. *International Journal of Contemporary Hospitality Management* 28(10).

Ho, T. H., Zheng, Y. S. (2004). Setting Customer Expectation in Service Delivery: An Integrated Marketing-Operations Perspective. *Management Science* 50(4): 479-788.

Kim, S., Mattila, A. S. (2011). An examination of electronic video clips in the context of hotel Websites. *International Journal of Hospitality Management* 30(3): 612-618.

Law, R., Leung, D., Au, N., Lee, H.A. (2013). Progress and Development of Information Technology in the Hospitality Industry: Evidence from Cornell Hospitality Quarterly. *Cornell Hospitality Quarterly* 54(1): 10-24.

Lee, W. P., & Yang, T. H. (2003). Personalizing information appliances: a multi-agent framework for TV programme recommendations. *Expert Systems with Applications*, 25(3), 331-341.

Lee, E. J., & Park, J. K. (2009). Online service personalization for apparel shopping. *Journal of Retailing and Consumer Services*, 16(2), 83-91.

Lee, C. H., Cranage, D. A. (2011). Personalisation–Privacy paradox: The Effects of Personalisation and Privacy Assurance on Customer Responses to Travel Web Sites. *Tourism Management* 32(5): 987-997.

Lee, Y. H., Hu P. J., Cheng T.H. Hsieh Y. F. (2012). A Cost-Sensitive Technique for Positive-Example Learning Supporting Content-Based Product Recommendations in B-to-C e-commerce. *Decision Support Systems* 53(1): 245-256.

Lui, T. W., Piccoli, G. (2016). The Effect of a Multichannel Customer Service System on Customer Service and Financial Performance, *ACM Transactions on Management Information Systems* 7 (1), 2.

Morosan, M., DeFranco, A. (2015). Disclosing personal information via hotel apps: A privacy calculus perspective. *International Journal of Hospitality Management* 47: 120-130.

Murthi, B. P. S., Sarkar, S. (2003). The Role of the Management Sciences in Research on Personalization. *Management Science* 49(1): 1344-1362.

Norman, D. A. (2013). The Design of Everyday Things: Revised and Expanded Edition. *New York: Basic Books*

O'Toole, T. (2003). E-relationships - Emergence and The Small Firm. *Marketing Intelligence &Planning* 21(2): 115-122.

Padmanabhan, B., Zheng, Z., Kimbrough, S. O. (2001). Personalization from Incomplete Data: What You Don't Know Can Hurt. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, San Francisco, CA.

Palmer, A. (2010). Customer experience management: A critical review of an emerging idea. *Journal of Services Marketing* 24(3): 196–208. doi: 10.1108/08876041011040604

Piccoli, G., Brohman, M. K., Watson, R. T., Parasuraman, A. (2004). Net-Based Customer Service Systems: Evolution and Revolution in Web Site Functionalities. *Decision Sciences* 35: 423–455.

Piccoli, G., Spalding, B. R., Ives, B. (2001). The customer-service life cycle: A framework for improving customer service through information technology. *The Cornell Hotel and Restaurant Administration Quarterly* 42(3): 38-45.

Piccoli, G., Lui, T. W. (2014). The Competitive Impact of Information Technology: Can Commodity IT Contribute to Competitive Performance? *European Journal of Information Systems* 23(6): 616-628.

Piccoli, G., Lui, T. W. (2017). The Impact of IT-enabled Customer Service Systems on Service Personalization, Customer Service Perceptions, and Hotel Performance. *Tourism Management*, forthcoming.

Piccoli, G., Ott, M. (2014). Impact of Mobility and Timing on User-Generated Content. *MIS Quarterly Executive* 13(3): 147-157.

Rayport, J. F., Jaworski, B. J., (2005). Best Face Forward: Why Companies Must Improve Their Service Interfaces with Customers. *Harvard Business School Press*.

Rust, R., Oliver, R. (2000). Should we delight the customer? *Journal of the Academy of Marketing Science* 28(1): 86-94.

Schmitt, B. (2003). Customer Experience Management: A Revolutionary Approach to Connecting with Your Customers'. *John Wiley & Sons*. Hoboken, NJ.

Sheth, J. N., Sharma, A. (2005). International e-marketing: Opportunities and Issues. *International Marketing Review* 22(6):611-622.

Tan, C. W., Benbasat, I., Cenfetelli, R. T. (2013). IT-mediated Customer Service Content and Delivery in Electronic Governments: An Empirical Investigation of the Antecedents of Service Quality. *MIS Quarterly* 37(1):77-109.

Tesoriero, R., Gallud J. A., Lozano, M. D., Penichet, V. M. R. (2014). Enhancing Visitors' Experience in Art Museums Using Mobile Technologies. *Information Systems Frontiers* 16(2): 303-327.

Talwar, R. (2012). Hotels 2020 – Responding to Tomorrow's Customer and the Evolution of Technology, In R. Conardy and M. Buck (eds.). *Trend and Issues in Global Tourism 2012*: 21-31.

Xu, J., Benbasat, I., Cenfetelli, R. T. (2014). Research Note – the Influences of Online Service Technologies and Task Complexity on Efficiency and Personalization. *Information Systems Research* 25(2): 420-436.

Zamani, M. (2016). Proposing a strategic Roadmap to improve Effective Decision-making toward IT Adoption in Hotels, using Business Model Canvas, in *ENTER 2016 PhD Workshop Research Proposals Proceedings*.

Zhang, T. (2005). The Value of IT-Enabled Retailer Learning: Can Personalized Product Recommendations (PPRs) Improve Customer Store Loyalty in Electronic Markets? *(Doctoral dissertation, University of Maryland).*

Zhang, T., Agarwal, R., & Lucas Jr, H. C. (2011). The value of IT-enabled retailer learning: personalized product recommendations and customer store loyalty in electronic markets. *MIS Quarterly*, 35(4), 859.

Zimmerman, J., Kurapati, K., Buczak, A., Schaffer, D., Gutta, S., & Martino, J. (2004). TV Personalization system. Design of a TV Show Recommender Engine and Interface. In Ardissono, L., Kobsa, A., & Maybury, M. (eds.), *Personalized Digital Television: Targeting Programs to Individual Viewers Dordrecht*, NL: Kluwer, 27-51.

Conclusions

Three articles constituting the present dissertation aim to review what a Customer Service System is by describing its social and technical components, and how their relationships with functionalities impact the generation of value to customers, and finally how this translates into higher satisfaction. At first, Chapter 1 reviews the cross-disciplinary literature on service science and information system, offering a consolidated theoretical model which collects all aspects related to people, organization and technology affecting the final capacity of a firm to generate value within the service context. Afterwards, Chapter 2 and Chapter 3 report empirical evidence of such model contextualizing results in the hotel industry and investigating the impact of a Customer Experience Management work system. The former evidences how different social and technical attributes of a CSS are able to generate benefits for both customers and users through different patterns of usage of the functionalities offered by the CSS. The latter article, then, complements evidence of the positive effect that service personalization and different service delivery channels can have on guests' perceptions, and how this turns into a stronger relationships with customers, potentially affecting hotels' financial performance. By means of the three articles, the study provides its contribution to both literature and industry by offering a comprehensive review of the elements characterizing a CSS, describing how it can be incorporated within a CEM strategy, and how IT can helps firms facing today challenges and reaching strategic advantages of differentiation.

The contributions offered by the study are however limited by the context of investigation. While results of Chapter 1 can be indeed considered generally valid within any industry, empirical results are instead collected within the hospitality industry, and particularly the hotel industry, founding results of the application of a specific CEM work system. A further contribution to the literature would then be represented by the replication of the study to a different set of hotels and firms, and with a different CEM strategy, offering the possibility to make results more generally valid.

Moreover, while service personalization represents today the core mean of strategic differentiation for hotels via CEM, other elements of the experience and their effects on customers' perceptions demand for further investigation. Particularly, as reported in Chapter 1, also functionalities addressed to build a stronger relationship with customers, facilitate transactions, better collect information about customers' needs and finally provide tailored information to them can help firms enhancing service quality delivered, with a consequent thinning of the expectation-delivery gap. Therefore future studies could extend the present work, reporting additional empirical evidences of the theoretical model depicted within Chapter 1, such as investigating effects of specific loyalty

programs and of self-service interfaces for managing the overall experience, as well as deepening the potentiality of social media data for automatic system service personalization proposition.

With the widespread adoption of mobile devices, future researches as well have the opportunity to extend results of the present study, controlling for the potentially-moderating effect of graphic user interface of the CEM work system on its ability to supports guests during preference elicitation.

Lastly, relevant would be to extend the present research by comparing different pricing policies adopted by the hotels within different countries, to finally investigate the role of macro-economic aspects on guests' assessments on overall value perceived.