



**JOÃO CARLOS
GONÇALVES DOS
REIS**

**SERVIÇOS OMNI-CANAL NA INDÚSTRIA DE
SERVIÇOS BANCÁRIOS: INVESTIGAÇÃO
QUALITATIVA MULTI-MÉTODO**

**OMNI-CHANNEL SERVICES IN THE BANKING
INDUSTRY: QUALITATIVE MULTI-METHOD
RESEARCH**



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Departamento de Economia, Gestão,
Engenharia Industrial e Turismo

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Tese apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Engenharia e Gestão Industrial, realizada sob a orientação científica da Professora Doutora Marlene Paula Castro Amorim, Professora Auxiliar do Departamento de Economia, Gestão e Engenharia Industrial e Turismo da Universidade de Aveiro e coorientação do Professor Doutor Nuno Filipe Rosa Melão, Professor Adjunto Convidado do Departamento de Gestão da Escola Superior de Tecnologia e Gestão de Viseu, do Instituto Politécnico de Viseu.

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agradecimentos

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palavras-chave

Serviços Omni-canal, Gestão de reclamações, Falha de serviços, Recuperação de serviços, Experiência multimarca, Gestão de operações, Indústria de serviços bancários, Investigação qualitativa multi-método.

resumo

O art.º 64 (modalidade alternativa à tese) do regulamento de estudos da Universidade de Aveiro contempla a possibilidade de apresentação de uma modalidade alternativa para teses de doutoramento. Esta modalidade assinala que “caso a tese seja substituída por um conjunto de trabalhos científicos já publicados, estes terão de formar um conjunto coerente e relevante para a área científica do doutoramento (...)”. Neste contexto, esta tese é baseada em 8 publicações científicas, já publicadas, ou aceites para publicação, onde estão incluídas: comunicações orais em conferências internacionais, artigos em revistas científicas e capítulos de livros. O interesse pelo tema foi aliado ao crescente desenvolvimento da estratégia omni-canal na indústria de serviços onde a banca tem sido pioneira. O objetivo é contribuir para a caracterização e compreensão das implicações decorrentes de diferentes estratégias e configurações de canal de serviço para a gestão de operações e, consequentemente para a qualidade dos serviços e satisfação dos clientes. A tese está dividida em seis capítulos. Inicia-se com duas revisões sistemáticas da literatura, para analisar as oportunidades de investigação e divulgar os caminhos de pesquisa para os serviços multicanal. Seguidamente, explicam-se as opções metodológicas e o relacionamento que existe entre a engenharia e gestão industrial e as ciências sociais. A partir desse momento, entramos na fase empírica e, analisamos os serviços omni-canal à lente das redes de negócio baseadas em tecnologia e da gestão de reclamações. Terminamos a tese com uma breve conclusão, limitações e perspetivas de investigação futura.

Com maior detalhe, a revisão da literatura sugeriu que à data, os estudos existentes estavam predominantemente formulados sob a perspetiva do marketing, sendo notória uma menor representatividade de estudos focados na gestão de processos e operações de serviço. Neste contexto, o trabalho desenvolvido vem oferecer algumas contribuições ao nível da gestão de operações de serviços com recurso a múltiplos canais, permitindo nomeadamente identificar, caracterizar e consolidar diferentes estratégias de múltiplos canais, e discutir princípios para o alinhamento entre estratégias de front-office de múltiplos canais e níveis operacionais da organização.

O trabalho adotou uma metodologia qualitativa multi-método (i.e., revisão sistemática e estudo de caso) recorrendo a diferentes métodos e fontes para a recolha de dados (e.g., entrevistas), bem como para a sua análise. O trabalho permitiu também ilustrar como a estratégia multi-método oferece múltiplas possibilidades de investigação que conduzem a resultados fiáveis para estudos na área da engenharia. É geralmente equilibrada e integra estudos teóricos e empíricos, o que dá maior ênfase às dimensões de desenvolvimento, triangulação e complementaridade.

A evidência empírica analisada no âmbito deste trabalho sugere que a prestação de serviços através de múltiplos canais potencia novas sinergias organizacionais, e cria novos desafios operacionais, ao permitir a configuração de novos sistemas de serviço que oferecem aos clientes a integração de

serviços e canais de diferentes prestadores, numa experiência única. As operações de serviços omni-canal estão agora a basear-se em redes de negócio com base tecnológica, já que as empresas estão a mudar a forma como competem entre si. As empresas estão a adotar processos e canais de modo a poderem colaborar em redes heterogéneas. Essas redes de empresas geralmente combinam mais de um canal e serviços. O que origina uma experiência multimarca, que ultrapassa claramente a experiência típica omni-canal. Nesta perspetiva, a rede heterogénea de empresas é uma experiência que envolve a combinação de uma tríade de diferentes elementos *canais-serviços-organizações*. O que está implícito é que as redes de negócios baseadas em tecnologia estão a revolucionar a indústria de serviços, embora pouco se tenha investigado. Porém, o movimento para estratégias omni-canal e de rede de negócios está longe de ser linear. Embora indesejáveis, as falhas de serviço omni-canal são inevitáveis, nesse sentido, a gestão de reclamações sempre foi considerada como uma ferramenta essencial para os gestores. Por esse facto, o trabalho incluiu ainda uma abordagem às falhas e recuperação de serviços num contexto omni-canal, bem como as debilidades da prestação de serviços associadas às novas redes baseadas em tecnologia, no contexto dos serviços financeiros. O estudo sugeriu que os clientes geralmente não estão conscientes dos atributos de recuperação de cada canal e são muitas vezes obrigados a procurar ajuda dos colaboradores de primeira linha, em particular quando a resposta nos canais virtuais não estão a reagir de acordo com as expectativas. Os clientes também já não estão dispostos a interagir com um grande número de canais, o que implica um elevado número de interações. Em alternativa, estão dispostos a aguardar por uma recuperação personalizada quando percebem que uma falha específica pode exigir um elevado nível de tomada de decisão. Essa tolerância ocorre quando os clientes percebem que uma empresa está a realizar todos os esforços necessários para a recuperação do serviço, de modo a garantir que a falha não se volte a repetir. Os resultados evidenciaram a importância da recuperação de soluções permanentes e da gestão de operações, para permitir processos de recuperação efetivos no contexto dos serviços omni-canal e de rede de negócio. No que diz respeito às redes de negócios baseadas em tecnologia, encontramos quatro tipos de debilidades: a) barreiras à estratégia de migração de canais; b) barreiras à entrega automatizada de serviços; c) barreiras baseadas na integração do serviço; d) barreiras à padronização de operações em contextos de rede. Os gestores devem estar cientes das debilidades das redes de negócio baseadas em tecnologia, porque a sua (in)atividade pode afetar positivamente ou negativamente a imagem da marca de rede. A resolução das debilidades Tb2N permite que as organizações sejam mais sincronizadas e competitivas.

Os resultados apresentados nesta tese revelam que as estratégias de canais múltiplos estão longe de estar ultrapassadas. Esta área de estudo requer atenção permanente da comunidade académica de modo a compreender a sua evolução, o aparecimento de novas estratégias e avançar a sua base de conhecimento. Para terminar, estimulamos o desenvolvimento de investigações futuras que permitam a realização de estudos empíricos dentro das redes de negócio baseadas em tecnologia, e que se foquem não só na recolha de dados de uma empresa, mas de toda a rede.

keywords

Omni-channel services, Complaint management, Service failure, Service recovery, Multi-brand experience, Operations management, Banking industry, Qualitative multi-method research.

abstract

The 64th article of the regulation of studies of the University of Aveiro considers the possibility of presenting an alternative to the doctoral thesis. This modality emphasizes that “if the thesis is replaced by a set of scientific papers already published, they will have to form a coherent and relevant set for the scientific area of the doctorate (...)”. In this context, this thesis is based on 8 scientific publications, some already published, some accepted for publication, which include: oral communications in international conferences, articles in scientific journals and book chapters. The interest in the subject is coined with the growing development of the omni-channel strategy in the service industry where the banks have been pioneers. The objective is to contribute to the characterization and understanding of the implications of different strategies and configurations of the service channel strategies for the management of operations and, consequently, for the service quality and customer satisfaction.

The thesis is divided into six chapters. It begins with two systematic reviews of literature: to analyze research opportunities and to disseminate research paths for multi-channel services. From here on, the methodological options are explained and so are the existing relationship between the industrial engineering and the social sciences. The empirical phase starts at this point as well as the analysis of the omni-channel services in the lens of technology-based business networks and complaint management. The literature review suggested, that, to date, the existing studies were predominantly formulated from a marketing perspective, the studies focused on process management and service operations are less represented. In this context, the work developed offers some contributions to the management of multiple channel service operations, to identify, characterize and consolidate different multiple channel strategies, and discuss principles for the alignment between multiple channel front-office strategies and operational levels of the organization.

A qualitative multi-method methodology (i.e., systematic review and case study) using different methods and sources was adopted for data collection (e.g., interviews) as well for its analysis. The work also illustrated how the multi-method strategy offers multiple research possibilities that lead to reliable results for studies in the field of engineering. This strategy is generally balanced and integrates theoretical and empirical studies, which give greater emphasis to the dimensions of development, triangulation and complementarity.

The empirical evidence analyzed in this thesis suggests that service delivery through multiple channels raises new organizational synergies and creates new operational challenges, by allowing the configuration of new service systems that offer customers the integration of different service and channels from different providers in a unique experience. The omni-channel service operations are now based on technology-based business networks, as companies are changing the way they compete with each other.

Companies are adopting processes and channels so they can collaborate in heterogeneous networks. These business networks generally combine more than one channel and services, which creates a multi-brand experience, clearly going beyond the typical omni-channel experience. In this perspective, the heterogeneous network of companies is an experience that involves the combination of a triad of different elements *channel-service-organization*. What is implicit is that, although still unexplored, technology-based business networks are revolutionizing the service industry. Nevertheless, the move to omni-channel and business network strategies is far from linear. Although undesirable, the omni-channel service failures are inevitable, thus complaint management has always been considered an essential tool for managers. As a result, this work also includes an approach to service failures and recovery in an omni-channel context, as well as the weaknesses in the service delivery concerning new technology-based networks, in the context of financial services. The study suggested that clients are generally unaware of the recovery attributes of each channel and are often forced to seek help from the frontline employees, particularly when the recovery from the virtual channels are not in agreement with the expectations. Customers are not willing to interact with a large number of channels which would lead to a high number of interactions. Alternatively, customers are willing to wait for a personalized recovery when they realize that a specific failure may require a high level of decision-making. This tolerance occurs when customers realize that a company is making all the necessary efforts over the service recovery, in order to ensure that the failure will not be repeated again. The results revealed the importance of recovering permanent solutions and operations management, in order to allow effective recovery processes in the context of omni-channel and business network services. With regard to technology-based business networks, we found four types of weaknesses: a) barriers to channel migration strategies; b) barriers to automated service delivery; c) barriers to employee-technology service integration; d) barriers to operations standardization in network contexts. Managers should be aware of the weaknesses of technology-based business networks because their (in)activity can affect either positively or negatively network brand image. Solving Tb2N weaknesses allows organizations to be more synchronized and competitive. The results presented in this thesis reveal that the multiple-channel strategies are far from being overcome. This area of study requires permanent attention from the academic community in order to understand its evolution, the emergence of new strategies and to advance its knowledge base. Finally, we encourage the development of future research that allows the conduction of empirical studies within technology-based business networks, focusing not only on collecting data from one company but from the entire network.

mots-clés

Services Omnicanal, Gestion de sinistres, Défaillance du service, Reprise du service, Expérience multi-marques, Opérations de gestion, Industrie bancaire, Recherche qualitative multi-méthode.

résumé

Le 64^{ième} article sur la réglementation des études de l'Université d'Aveiro fait état de la possibilité de présenter une alternative dans le cadre des thèses doctorales. Ainsi, "si la thèse succède à une série d'études scientifiques d'ores et déjà publiées, l'ensemble devra alors former une unité cohérente et pertinente au regard de l'environnement scientifique du doctorant (...)". Dans ce cadre, cette thèse se base sur 8 études scientifiques déjà publiées, ou en cours de validation incluant des communications orales lors de conférences internationales, des articles de journaux scientifiques ou certains chapitres de livres. L'intérêt du sujet est lié au développement croissant de la stratégie "omnichannel" (ou stratégie reposant sur plusieurs canaux de vente) au sein des industries de service et notamment au sein des banques qui ont été les pionnières en la matière. L'objectif est de contribuer à la description et à la compréhension des implications des différentes stratégies et configurations des canaux sur la gestion des opérations, et par voie de conséquence, sur le service qualité et la satisfaction client. Cette thèse se compose de 6 chapitres. En premier lieu, deux revues littéraires permettent d'analyser les projets de recherche en matière de service multi-canaux. Les hypothèses méthodologiques sont ensuite abordées en appuyant sur la relation existant entre le génie industriel et la sociologie humaine. A partir de ces hypothèses, nous avons commencé la phase empirique et analysé les services multiple canaux au travers des réseaux d'affaires et de la gestion des réclamations. Plus précisément, la revue littéraire suggère, qu'à ce jour, les études existantes sont majoritairement élaborées à partir d'un point de vue « marketing ». A contrario, les études centrées sur la gestion des processus et les opérations de service sont sous représentées. Dans ce contexte, l'étude présente plusieurs alternatives dans le management des services opérations multiple canaux et invite au dialogue sur le principe d'un alignement des stratégies multiple canaux des instances décisionnaires sur les niveaux des opérations des entreprises.

L'étude se base sur une approche qualitative multiple (revue littéraire, étude de cas) utilisant différentes méthodes et sources de données (interviews).

L'approche multiple offre des possibilités de recherche variées permettant l'accès à des données fiables dans le domaine de l'ingénierie, par un jeu équilibré d'études théoriques et empiriques.

Le résultat observé dans cette thèse suggère que le service livraison au travers des canaux multiples ont permis de créer de nouvelles synergies d'entreprise ainsi que de nouveaux défis opérationnels offrant aux clients l'intégration de différents services, provenant de différents fournisseurs, au sein d'une expérience unique. Les opérations de service multiple canaux reposent dorénavant sur les réseaux d'affaires puisque les entreprises ont modifié leur axe de compétitivité. Les sociétés ont adopté des processus et des canaux leur permettant d'intégrer au sein d'un réseau hétérogène. Leur réseau d'affaires concilie généralement plus d'un canal ou service créant une marque plurielle rompant avec l'expérience typique d'un canal unique. Ce réseau hétérogène d'entreprises induit une triple combinaison associant *canal-service-organisation* et c'est en cela qu'il vient révolutionner l'industrie du service, bien que ce domaine reste encore à ce jour sous-exploité.

Toutefois, l'évolution des stratégies multiple canaux et des réseaux d'affaires est loin d'être linéaire. Bien qu'indésirables, les échecs des services multiple canaux restent inévitables. Ainsi, la gestion des réclamations a toujours été identifiée comme un outil essentiel pour les managers. Par conséquent, ce travail de recherche intègre dans son analyse les erreurs de service et les réponses apportées pour y faire face dans un contexte multiple canaux, ainsi que les faiblesses des services livraison basés sur les réseaux d'entreprises du secteur financier. L'étude révèle que les clients ignorent très souvent les systèmes de dépannage des réseaux et font généralement appel aux conseillers en ligne, surtout lorsque le dépannage ne correspond pas à leurs attentes. Les clients ne cherchent pas forcément à rentrer en interaction avec un très grand nombre de canaux. Successivement, ils vont chercher un dépannage personnalisé en cas de problème spécifique demandant une expertise particulière. Ils réalisent alors que l'entreprise est enclin à réaliser tous les efforts possibles pour réparer l'erreur et afin que celle-ci ne se répète pas à l'avenir. Cela prouve l'importance portée aux solutions de dépannage permanentes et à la gestion des opérations dans un contexte multiple canaux et de réseau d'affaires. Au regard du réseau d'affaires, nous avons identifié 4 faiblesses : a) les barrières liées aux stratégies d'intégration des canaux ; b) les barrières liées à l'automatisation des services livraison ; c) les barrières liées à l'intégration des services dédiés aux personnels ; d) les barrières liées au processus de standardisation des opérations. Les managers doivent être conscients des faiblesses des réseaux d'affaires car leur in(activité) peut influencer positivement ou négativement l'image de marque de leur entreprise. Solutionner les faiblesses de Tb2N améliorer l'harmonisation et la compétitivité des entreprises.

Les résultats présentés dans cette thèse révèle que les stratégies multiple canaux sont loin d'appartenir au passé. L'environnement de cette étude demande une attention permanente de la communauté académique afin de comprendre l'évolution, l'émergence de nouvelles stratégies et ainsi faire avancer les connaissances sur le sujet. Enfin, nous encourageons les futures recherches qui permettront de conduire des études empiriques sur les services multi-canaux au sein des réseaux d'affaires et au travers d'une étude comparative de plusieurs entreprises.

Publications Related to this Thesis

Some parts of this thesis has its origins in the following publications/proceedings:

Oral Communications in International Scientific Conferences

(Papers with Peer Review)

- Reis, J., Amorim, M. and Melão, N. (2014). Research opportunities in multi-channel services: A systematic review. *Proceedings of the 21st International European Operations Management Association Conference (EurOMA)*, Palermo, Italy, 20–25th June.
- Reis, J., Amorim, M. and Melão, N. (2017). Omni-channel services failure and recovery: A case study research. *Proceedings of the 21st International European Operations Management Association Conference (EurOMA)*, Edinburgh, Scotland, 1st–5th July.
- Reis, J., Amorim, M. and Melão, N. (2017). Service failure and recovery through multiple channels and networks: Exploratory research in the banking service industry. *20th Conference on Quality and Service Science (QMOD)*, Copenhagen/Elsinore, Denmark and Helsingborg, Sweden, 5th–7th August.

Book Chapters in Proceedings of International Scientific Conferences (Publication with Peer Review)

- Reis, J., Amorim, M. and Melão, N. (2015). Disclosing paths for multi-channel service research: A contemporaneous phenomenon and guidelines for future investigations. *Exploring Service Sciences – Lecture Notes in Business Information Processing (Springer International Publishing)*, 201, 289–300.
- Reis, J., Amorim, M. and Melão, N. (2017). New ways to deal with omni-channel services: Opening the door to synergies, or problems in the horizon? *Exploring Service Sciences – Lecture Notes in Business Information Processing (Springer International Publishing)*, 279, 51–63.

- Reis, J., Amorim, M. and Melão, N. (2017). Omni-channel service architectures in a technology-based business network: An empirical insight. *1st EAI International Conference on Technology, Innovation, Entrepreneurship and Education. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (Springer International Publishing)*. (forthcoming).

Articles in Proceedings of International Scientific Conferences

(Publication with Peer Review)

- Reis, J., Amorim, M. and Melão, N. (2017). Omni-channel service operations: Building technology-based business networks. *IEEE Xplore Digital Library. International Conference on Service Operations and Logistics and Information*. (forthcoming).

Publications in National Journals

(Publication with Peer Review)

- Reis, J., Amorim, M. and Melão, N. (2017). Breaking barriers with qualitative multi-method research for engineering studies: Pros, cons and issues. *Proelium*, 7(12), 275–292.

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List of abbreviations and acronyms

ATM	Automated Teller Machines
B2C	Business-to-Consumer
cf.	Confer
CVTSC	Customer-perceived Value for the Total Service Concept
e-channel	Electronic Channel
e-Ticket	Electronic Ticket
e.g.	For example
EurOMA	European Operations Management Association Conference
FbOS	Firm-based Omni-channel Strategy
IB	Internet Banking
IS	Information Systems
IT	Information Technology
M-Payments	Mobile Payments
NTBF	New Technology-based Firms
NVivo	Qualitative data analysis computer software package
O2O	Online-to-Offline or Offline-to-Online
POS	Point-of-Sale
RQ	Research Question
RQ	Research Question
SDSE	Service Delivery Systems Execution
SFR	Service Failure and Recovery
SJR	SCImago Journal & Country Rank
SLR	Systematic Literature Review

SSDC	Strategic Service Design Choices
SST	Self-service Technologies
TAP	Portuguese Airline Company
TB	Telephone Banking
Tb2N	Technology-based Business Network
USA	United States of America

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CHAPTER I.

General Introduction and Objectives

I.1. Purpose

This thesis addresses the management of operations in service systems that employ multiple channels for customer interaction and experience. Specifically, the purpose of the research work is to contribute to the characterization and understanding about the implications that result from different service channel strategies and configurations for the management of operations, and consequently for service quality and customer satisfaction. The work builds on prior investigations in the domain of services and service channels to identify gaps and research opportunities (Neslin *et al.*, 2006; Sousa and Voss, 2006; Sousa and Amorim, 2009). The empirical work addresses four lines of enquiry: a first line of investigation addresses the characterization of the technology-based business networks that are emerging from the combination of different channels, services and companies in new integrated service experiences; a second focus of the work is on the analysis of the challenges facing the alignment between the different channels and companies in such business networks for a seamless front-office service; a third line is more focused and examines the way service providers are employing different channels to support interactive service processes related to the handling customer complaints, offering an innovative perspective to the body of knowledge on service recovery; lastly, the work investigated key service delivery debilities that derive from the misalignment between channel strategies and operations practices in a technology-based business network (Tb2N) context.

I.1.1. Research questions

This research work builds on several concepts and phenomena whose characteristics are particularly challenging and call for new knowledge for the management of services involving different channels, namely: i) Omni-channel service failure; ii) Omni-channel service recovery; and iii) Technology Based Business Networks.

The management of failures and recovery processes has been extensively acknowledged as featuring a key importance for the attainment of service quality, customer satisfaction and loyalty (Komunda and Osarenkhoe, 2012). In the context of service delivery involving

the use of multiple channels this topic creates new and unaddressed challenges that stem both from the emergence of new types and sources of failure that result from the combination of different channels in the handling of customer service flows; and from the need to make use of multiple channels in the handling of the failure and recovery process itself.

Overall, the research work presented in this thesis was oriented to address 3 research questions (RQ) in this context:

RQ 1: What are the research opportunities in the omni-channel service arena?

Contemporaneous service delivery is a complex process, to a great extent determined by the proliferation of technologies that over the last years has extraordinarily changed the nature and the diversity of nodes for customer interaction with service providers. Financial services, in particular, have been pioneering these advancements, starting with the establishment of the first automated teller machines by banks (Dabholkar, 1996), followed by online and mobile banking (Hoehle *et al.*, 2012; Proença and Rodrigues, 2011). The adoption of channel strategies to reach customers are now the norm rather than the exception (Kim *et al.*, 2005; Webb and Lambe, 2007). As these strategies gained popularity in recent years, an increasing number of single-channel retailers are transforming themselves into multiple channel retailers (Wang *et al.*, 2016), knowing little of the path that they have to follow and the challenges that are expected. Despite the proliferation of the adoption of multiple channel service¹ practices there is a paucity of knowledge to inform managerial action and decision making, notably for the management of operations in such contexts. To this date the focus of the existing academic contributions has come from marketing scholars, addressing issues related with communication and customer relationships employing multiple channels. The topics related to the allocation of resources and to the management of channels and processes, from an operations perspective remain largely unaddressed for a longer period. This change is partly explained by the calls for organizational adaptation, where

¹ The term “multiple channel services” is adopted as an indistinct form of channel strategies. The aforementioned term may span from multi- to omni-channel services, as actually other authors do (please cf. Beck and Rygl, 2015; or Verhoef *et al.*, 2015). If a specific channel strategy is intended to be addressed in the text, we will use the adequate term i.e. single, multi-, cross- or omni-channel service.

companies have found themselves having advantages in serving their customers using an integrated network of channels, but operational changes normally require process adjustments (Roth and Menor, 2003; Hübner *et al.*, 2016). The literature review conducted for the purpose of our research has supported the identification of this knowledge gap. Moreover, the investigation of the emerging configurations of processes and organizations for the delivery of multiple channel services supported the identification of new forms of collaboration and alignment among service providers, enabled by the emerging channels and related technologies, the “technology-based business networks”.

RQ 2: Which challenges are offered to omni-channel service operations in a technology-based business network context?

The literature and evidence on the field of multiple channel services provision has been suggesting that the adoption of new channels (Geyskens *et al.*, 2002), and the increased levels of channel interconnectedness between firms are leading to unprecedented levels of customer connection and empowerment (Chou *et al.*, 2016). The literature mentions that the progressive adoption of technology to support customers introduced profound changes in the operations of service delivery systems and led to the establishment of an early tradition of multi-channel service delivery (McKechnie *et al.*, 2006; Reis *et al.*, 2015). At the same time, companies are taking the advantage of new IT/IS to interact and to underpin value co-creation in a collaborative relation. In the field of technological development is the networked nature of the development and production of services, making companies with limited competencies to ally with others (Helander, 2004; Ritala and Hurmelinna-Laukkanen, 2009; Palo and Tahtinen, 2011). Therefore, companies need to develop capabilities to grow new businesses that take ideas and technologies to market (Chesbrough, 2010). Firms which do not cooperate reduce their ability to enter into exchange relationships (Pittaway *et al.*, 2004) and lose the ability to share markets (Holm *et al.*, 1999). Such cooperation still remains under-studied (Moller and Rajala, 2007), while research is still focused on the supply chain and logistics flows (Moller and Svahn, 2009). Measuring the pros and cons, manufacturing firms as well as

service firms are actively entering into new service areas based on technology (Kim *et al.*, 2015). The operations management analysis of business network in a omni-channel context is still a novelty, as networks are introducing new dynamics to companies and to the group. These dynamics go through the redesign of structures and processes in order to fully-integrate individual companies into heterogenic business networks. The service operations alignment between different companies is highly relevant since probably results in a connectivity incensement. If not, a failure of a single company might damage all network image. Aligning the customer needs and the business networking opportunities can be one of the keys to success, as partnering becomes an effective skill needed by companies to survive in a turbulent business environment (Rikkiev and Makinen, 2009).

RQ 3: What are the challenges to operations management dealing with service failure and recovery in omni-channel services and technology-based business networks?

While companies are struggling to consistently maintain high service standards through all channels, service delivery systems are not fail proof, and, thus, service failures are inevitable (Hart *et al.*, 1990). Managers have to focus on maintaining high standards of service delivery, but they must also be prepared to address/deal with service failures by effectively setting up and managing service recovery processes (Shapiro and Nieman-Gonder, 2006). Service failure and recovery has been considerably studied in the last decades. Despite the insights gained and the consensus reached we still have a somewhat limited understanding on the topic. When a service breaks down, there is a disconnection between customer expectations and reality; these breakdowns, or service failures, present a challenge to organizations, but also create an opportunity to interact with customers to restore customer satisfaction (Shapiro and Nieman-Gonder, 2006). Research suggests that customers are often more dissatisfied by an organization's inability to recover from a service failure than by the initial failure (Smith *et al.*, 1999). While these studies have shed some light on the impact of customer reactions to service recovery encounters, there is a paucity of relevant studies in a multiple channel context (Holloway *et al.*,

2009). Therefore, organizations must be prepared to manage service failures and recovery to offset the negative impact of a breakdown (Zemke and Schaaf, 1989), specifically in a omni-hannel context where the recovery can be more complex by involving the management of forward and backward flows through different channels, and their corresponding operational resources. For instance, Yang *et al.* (2015) argued that recovery activities are a core process of service operations, and frontline employees play an important role in performing such activity. The need to further advance the knowledge on this regard is due to the fact that customers have now a wide range of channels at their disposal, beyond the traditional face to face interaction possibilities, and that it is not always evident what are each channel attributes and functionalities. Business networks are also not fail-safe and is a topic never studied before in a multiple channel context. While the service providers are employing their channels to support the handling customers' complaint, the implications from an existing misalignment between the service delivery and the complexity of business networks are now of paramount importance.

I.2. Design/methodology/approach

Each chapter of this thesis was developed in accordance with a specific methodology, aligned with its objectives in the overall research work, and explicitly detailed in the corresponding dedicated sections. The research work involved systematic literature reviews (cf. chapter II), case studies (cf. chapters IV and V) and multi-methods research (cf. chapters III and V). In the preliminary stages of the research work, the choice was for the adoption of single methods research (i.e. systematic reviews, case studies). However, in the latter phases of the work and to counterbalance the acknowledged weaknesses that are inherent to the individual methods, the research strategy employed multi-methods in order to generate comprehensiveness and rich knowledge (cf. chapter III). As Yin (2003, p.3) remarks, "a common misconception is that the various research strategies should be arrayed hierarchically", but the hierarchical view may be questioned, as the goal is to avoid gross misfits, when investigators plan to use one type of strategy, but another is really more advantageous (Mills *et al.*, 2010). In order to adequately explain the methodological choices an entire chapter is devoted to this concern. With more detail, the systematic literature review tailed a comprehensive approach which followed a single database

collection, in order to provide greater transparency and easy reproduction of the results. To improve the review process, filters were applied to exclude irrelevant papers, save time and ensure the viable results. The case study and the multi-method research, all included several sources of data collection i.e., interviews, direct observations and institutional documents. The data analysis was performed with the help of a qualitative data analysis software (NVivo), to support the analysis and organization of unstructured data in order to achieve a more efficient use of time and to discover new paths.

I.2.1. Why is this thesis appropriate to the banking industry research?

The research work developed in this thesis has addressed core management challenges that are resulting from the proliferation of multiple channel service delivery. The relevance of the thesis is justified by several arguments, including at the forefront the impressive and undeniable importance of multiple channel services, systems and users that characterize modern economies (Stojković, *et al.*, 2016). The particular relevance and timeliness of the work specifically for the banking industry is also justified by an argument of volume, i.e. the generalized adoption of multiple channel services by banks and its mass adoption by consumers in very diversified markets, contexts and conditions (Sousa *et al.*, 2015; Xue *et al.*, 2011), therefore making the results of this work relevant to a wide audience. Moreover, literature and empirical evidence have consistently argued that the design and management of service processes in multiple channel contexts is still addressed largely in an ad-hoc manner, and the knowledge about the management of these systems is far from being complete (Carrol and Guzmán, 2013; Wind and Hays, 2016).

While this work investigates the developments in the banking industry, it contributes to the advancements in the sector and the strengthening of the banking system. The relevance of the banking sector to world economies is blatant. Tabak and Tecles (2010) pointed out the importance of this sector to the growth and stability of economies. Strengthening this idea, Berger *et al.* (2009) exemplified the Chinese high growth rate in recent years, which cannot persist without a better financial market and banking reforms. For example, while banks are introducing new and sophisticated technologies in their processes, multiple channel failure and recovery is an important subject that should not be disregarded. Song *et al.* (2013) underlined that service failure research aids companies to maintain their competitive edge; and Yang *et al.* (2015) argued that scholars and practitioners perceive service recovery as an important means to retain customers after service failure. For

instance, we focused on the complaint management in the banking sector, which has been considered an important tool for managers when dealing with failures. The complaint management has not been addressed in the specific context of omni-channel service delivery, as its limited understanding poses new challenges to operations management and provides a research opportunity worth pursuing. The results of this thesis may be generalized to other service industries, namely industries that shows many cross-channel flows, mostly informal, and therefore prone to digitalization, like those we have observed in the banking industry.

I.2.2. Why is this particular bank (unit of analyse) relevant to the study?

All sources of data collection were gathered from a single unit of analysis – a bank which operates in Portugal. Generally, the banking industry offers rich settings of multiple channels since, over the past three decades, they have been pioneers in the adoption of new information and communication technologies (Cortiñas *et al.*, 2010) and, therefore, the adoption of new channels in service delivery (Sousa and Amorim, 2009). Our unit of analysis is no exception, since is implementing sophisticated technologies into their processes (cf. Chapter IV.2.5., e.g. introduction of iPads). These reforms are being applied mainly due to the financial crisis, to strengthen and to improve their operations by e.g. dematerializing their administrative processes, and to be ecologically friendly. Moreover, the unit of analysis has recently joined a technology-based business network that allowed us to study the operations management in this environment by e.g. understanding the way this company is/should adapt their omni-channel services/processes to this new reality (cf. Chapter IV.2. and Chapter IV.3.). Third, the main researcher had privileged access to the bank that started during his master degree thesis and continued until these days. Such long relationships (10 years) allowed the researcher to have access to confidential data that would not immediately be possible in other means (e.g. by conducting a formal request).

I.2.3. How was the theoretical saturation achieved?

In the context of case studies, where the theoretical saturation is sought and highlighted by Saunders and Townsend (2016), we conducted several interviews. The respondents were selected because of their knowledge, they were able to view the banking phenomenon from different perspectives, as they were chosen according to different functional areas, different levels of responsibility and different customer contact points.

Besides the aforementioned interviews, we collected data from several sources, which also helped us to achieve the theoretical saturation. We forward to the appendix section a detailed representation of all sources of data collection, in order to avoid extensive tables in the introduction chapter. The table 1 is only a representation of the primary source of data collection, which shows a generic illustration of a branch.

Table 1. Informants’ details

Levels of responsibility	Employees	Functional areas	Years of experience (average)	Academic degree (higher degree)
Head of the branch	1	Director	22	Master degree
Deputy chief	1	Deputy director/Manager (B2C/B2B)	16	Bachelor
Manager(s)	3	B2C Manager; B2B Manager; Manager of Premium Clients	24	Bachelor
Intern(s)	1	Customer Service	0,7	Bachelor

Normally, the interviews on this thesis were conducted in Lisbon, but not limited to this location. Each branch has generally the following structure: a director; a deputy director, which is also a manager; one manager to deal with business-to-consumer (B2C); and another manager to deal with to business-to-business (B2B). We aforementioned “generic” representation of a branch, because the branches may integrate specificities such as: a manager dedicated to premium customers, interns or it may be further reinforced as often happened.

As employees tend to follow similar rules and procedures across branches, it is not expected to find substantial differences (on their overall duties) from other national branches. Moreover, field notes from our diary have identified that employees are obliged to comply with very strict rules, one example is the “phone sales”, where employees have to read a protocol, also called as *scripts*. We also made use of the employees’ network to identify the respondents who were in best position to provide replies to the interview protocol (Appendix A). Subsequently, these respondents were asked to facilitate new interviews within the branch office. This sampling strategy is known as convenient and

snowball sampling (Merriam and Tisdell, 2015). All the interviews were conducted via face-to-face in the managers' offices and lasted about 45-90min. We conducted more interviews than initially estimated, as new themes emerged, and continued until the theoretical saturation was achieved to each case (Glasser and Strauss, 1967; Guest *et al.*, 2006); informal interviews also took place with front line staff up to director level, mainly during field observation. By reaching saturation, the respondents started to suggest names that we had already interviewed and the themes started to be recurrent. Sounders and Townsend (2016) considered 15 to 60 interviews to be the norm for case research inside organizations. We have performed over 42 formal semi-structured interviews, which resulted up to 1,890 hours interviewing the bank employees. Even so, per case study, and according to our records, our data is below Sounders and Townsend (2016) recommendations. However, we still consider these numbers reasonable, in order to achieve the theoretical saturation, given the fact that researchers at the banking industry field usually face difficulties on getting access to banking data and some of their employees, just as we had.

I.2.4. Why is the multi-method research feasible to operations management?

Prof. Tsan-Ming Choi articulated the value of adding multi-methods as a research strategy to operations management. Choi *et al.* (2016) remarked that, when properly adopted, multi-method research helps advance the field and makes operations management research more scientifically sound, rigorous, and practically relevant. The same authors observe that a high proportion (50% in total) of award-winning of operations management best papers published in *Manufacturing & Service Operations Management* and *Management Science* are actually multi-method research papers. Boyer and Swink (2008) reiterate views on multi-method research benefits, while they encourage the diversity of empirical approaches in the *Journal of Operations Management*. Combining multiple methods can potentially strengthen the research rigor, and convince reviewers and editors that the research is robust and meaningful (Choi *et al.*, 2016).

Based on a multi-method research, our thesis uses qualitative techniques to allow the identification of patterns and inter-relationships between concepts. It helped the researchers to interpret the phenomenon through a wider lens than quantitative methods would allow to, since the latter are appropriate to research issues that are clearly defined and constrained by rigid limits (Voss *et al.*, 2002). The thesis generally ties together two

methods, namely, a systematic review and a case research. While a traditional review frequently lacks rigor (Tranfield *et al.*, 2003), a systematic review is often claimed the best option to identify, evaluate and synthesize the existent body of knowledge (Fink, 2005). The systematic review assisted to build the theoretical background, contributing to avoid conceptual ambiguity. Indeed, as many authors (e.g. Beck and Rygl, 2015; Verhoef *et al.*, 2015) state, multi-channel concepts are being used indistinctively in the literature and are commonly overlapped; therefore, other types of literature review might be unable to accurately distinguish different channel strategies. In the article, the first method theoretically supports the case research, which is focused on a contemporaneous and complex phenomenon. The case study was particularly suited to investigate the phenomenon in its natural setting, whose boundaries were unclear and technically difficult to define (Meredith, 1998; Yin, 2003). The case study enabled to acquire an in-depth and holistic understanding of multiple aspects of the phenomenon and therefore to provide new and relevant insights.

Although this thesis as a whole is a qualitative multi-method research, *de facto*, each chapter is a single-method research, with the exception of Chapter IV.1 (cf. Appendix A). The mentioned chapter is based on a multi-method research since it came across a new transition: from omni-channel services to a prior technology-based business networks perspective. Therefore, the multi-method option was taken to strengthen this particular article, instead of showing the results from an exploratory single-case study. The multi-method research proved to be a fruitful choice, since it included empirical results and a systematic review that identified articles reporting similar findings. A common peer-review suggestion recommends to divide the research into two separate papers:

i.e. "It would have been beneficial to split the paper into two independent articles to ensure a good understanding and the connected reproducibility. Scientific rigor is needed to make it possible for the research community to replicate the study. Considering that, it can be said that the paper has its contribution, but the important methodology section is too brief" Double-blind peer review comments (1st reviewer of chap IV.1)

Nevertheless, we have observed contradictory reviews:

i.e. *“The topic is well explained and deeply debated through a well-done literature review. The methodology, a multi-method approach is clearly described and motivated. The implication and connections between theory and case are explained and limits of this study are highlighted”* Double-blind peer review comments (2rd reviewer of chap IV.1)

and *“The author(s) implemented a qualitative multi-method approach which generated comprehensiveness and rich knowledge. The literature review consisted of interesting results and the case study is chosen properly”* Double-blind peer review comments (3rd reviewer of chap IV.1)

We came across a lack of consensus in the academia. Therefore, we present our results from two different perspectives. On one hand, it seems reasonable to include the overall thesis as a multi-method research. Our arguments are presented in the conclusions chapter, where we explain the articles’ alignment. On the other hand, from the sceptic viewpoint, where this thesis might be seen in parts, where most parts of our empirical articles were individually published as single-case research.

I.2.5. Final remarks

As shown in this section, a qualitative multi-method research design is a suitable methodology to understand a phenomenon which is vague, fairly unexplored and that requires empirical clarification. In light with the above, we draw the following remarks. First, there is a level of agreement that multi-method research is methodologically superior in comparison to single method research (Given, 2008; Seawright, 2016). Second, a multi-method research, when properly adopted, helps advancing the field and makes operations management scientifically more relevant and rigorous. Third, renowned researchers have recently opened the path to a multi-method perspective (Choi *et al.*, 2016); we are following the same path. Fourth, qualitative techniques are used to study complex and contemporaneous themes, enhancing the search for patterns and inter-relationships between concepts. Last, multi-method research combines unique advantages of corroboration and complementarity, which allows one method to support, enhance and elaborate the results of the other method.

I.3. Overview of the main findings

The results of the systematic literature reviews suggested that existing studies are mainly focused on the analysis of consumer interactions services adopting a multiple channel front-office, whereas the management of back-office processes aspects remained largely unaddressed (cf. chapter II.1). In order for companies to move from multiple channel service strategies towards more complex and integrated omni-channel delivery systems, they need overcome many organizational challenges, which require academics and practitioners to focus on its operations management (cf. chapter IV.1).

The results suggest that organizational synergies are changing the omni-channel landscape and may provide several opportunities for gaining competitive advantages by implementing new technologies and anticipating customer needs. It is possible that organizations are transcending omni-channel concept; as we realized that this move may incorporate new challenges and it requires a transition based on operations management (cf. IV.2.). Operations management allows firms to adapt their processes and channels in order to be able to collaborate in a heterogeneous network of firms or to integrate innovation technologies, that enable the combination of firm capabilities that underpin collaborative relations. From a Tb2N perspective, we have also identified four types of omni-channel architectures in a business network context (cf. IV.3.)

Lastly, the study addressed the back-office operations, to fill the gap previously identified in the literature (cf. chapter II.1). The focus was on the management of complaints in both, firm-based omni-channel strategy (FbOS) and technology-based business network (Tb2N). Although undesirable, the omni-channel service failures are an inevitable reality. In that extent, complaint management is considered in the academia as an essential tool for managers (Matos *et al.*, 2009). The results suggested that the degree of customers' (dis)satisfaction is not directly linked to the nature nor the severity of the existing failure, but rather with the quality of the service recovery process. When a failure occurs, the customers are not willing to interact with a large number of channels which leads to a high number of interactions, rather, they are willing to wait when a service failure requires a high level of decision-making (complex recovery). The recovery process is thus, considered as a key point, because it allows customers to maintain some degree of satisfaction with the service delivery process. Regarding the Tb2N we found four types of debilities, in what concerns the channel migration to new technologies; automated physical

and virtual barriers in accessing the firms' common channel; non- automated barriers concerning the employees cross-training and, lastly, barriers concerning the service operations management (cf. chapter V.2.).

I.4. Overview of the originality/value of this thesis

Whereas the adoption of multi-channel service delivery strategies was in vogue in the last decade, such service landscape has experienced an evolution and a sophistication to the so-called omni-channel strategies that offer more integrated and rich customer experiences (Verhoef *et al.*, 2015), therefore emphasizing the quote of Heraclitus of Ephesus “nothing is permanent except change” (Majdi, 2012, p.6). Still, no consensus exists in defining the omni-channel concept making this topic is an opportunity and a challenge for academics and practitioners, since most part of the companies operating in the world are using multiple channels in their business processes. The originality of this thesis stems from the empirical evidence about new organizational synergies in the omni-channel service context that are resulting from the integration of service organizations into technology-based business networks supported by different channels. The omni-channel strategy is increasingly becoming a multi-brand experience; which presupposes the combination of a triad of different elements *channels-services-organizations*, assuming the involvement more than one channel and services, and a set of organizations in partnership. This research work offers an innovative perspective adding to the literature omni-channel services by opening its conceptualization to embrace the integration of multiple service providers in a unified service experience, supported by a multiple channel front-office.

I.5. Introduction

The service industry is steadily changing, innovation cycles are becoming shorter (Ahn and Skudlark, 2002) and market requirements are changing quickly (Schön *et al.*, 2017). Internet technologies have enabled banks to evolve towards modern banking where the interactions between customers and providers has become intrinsically infused with technologies (Mojoodi *et al.*, 2013). Technological interfaces, such as Internet and mobile devices have facilitated a shift from interpersonal to interactive service delivery (Wang *et al.*, 2013). These self-service technologies (SSTs) enable customers to produce a service independently from the direct involvement of service employees (Meuter *et al.*, 2000). In a SST context, the widespread of mobile devices and its proximity to users make them

eligible for mobile payment (m-payment), a scenario without the need for a physical wallet (Mallat, 2007; Oliveira *et al.*, 2016). Thus, the benefits of self-service are evident in terms of speed of delivery, customization, and cost saving, since firms need fewer employees (Dabholkar, 1996; Wisner *et al.*, 2014). Multiple channels collectively provide an opportunity to expose customer to a larger and more diverse package of service outputs, this has critical strategic implications in the form of enhanced customer satisfaction and leads to customer loyalty (Wallace *et al.*, 2004). Although, a seamless purchase across multiple channels continue to be a distant future goal rather a reality, retailers face constraints such as channel integration difficulties, or challenges such as decentralized organizations structures (Zhang *et al.*, 2010; Beck and Rygl, 2015). In turn, when channels work independently of each other they create fragmented supply chains, and struggle to deliver a consistent and reliable consumer experience (Saghiri *et al.*, 2017). Omni-channel strategy aims to address this issue by coordinating processes and technologies across all channels to provide seamless, consistent and reliable services for consumers (Brynjolfsson *et al.*, 2013; Verhoef *et al.*, 2015; Picot-Coupey *et al.*, 2016; Saghiri *et al.*, 2017). Therefore, the omni-channel strategy guarantees maximum information availability, visibility and consistency across multiple channels (Piotrowicz and Cuthbertson, 2014). Although the evolution of these strategies is far from being straightforward the move from multi- to omni-channel (Verhoef *et al.*, 2015) renews the topicality of the associated channel challenges (Picot-Coupey *et al.*, 2016), as many firms still struggle to find a profitable and effective way to serve customers in multiple channels (Rangaswamy and Van Bruggen, 2005). Banking has always been highly information intensive activity, that relies heavily on information technology (IT) to acquire, process and deliver the appropriate information to users and differentiate their products and services (Giovanis *et al.*, 2012; Mojoodi *et al.*, 2013). Therefore, traditional banking or branch banking is increasingly being replaced by technology-based banking (Ganguli and Roy, 2011), as some of the most popular form of technology-based banking are Internet Banking (IB), ATMs and telephone banking (TB) (Mojoodi *et al.*, 2013). The banking services are easily accessible to consumers and the industry is seeking new approaches to growth, in order to enhance competitiveness by developing synergies between different companies and channels (Lee and Grewal, 2004; Steinfeld *et al.*, 2002). While Portugal has made a remarkable transition from an agrarian society (Barata, 1981) to an industry- and service-

based economy (Pereira and Lains, 2011), Bettis and Hitt (1995) has argued that the technology was dramatically changing the basis of competition in the late twentieth century, moving the United States towards a new competitive landscape in the twenty-first century. In this context, technological innovations are often developed and exploited within large companies or through the creation of new technology-based firms (NTBF) (Del Palacio *et al.*, 2006; Storey and Tether, 1998). New technology-based firms is broadly defined as all new firms whose business is in high tech sectors (Storey and Tether, 1998), and the innovation is central to the survival and growth of firms, and ultimately to the health of the economies of which they are part (Ganotakis and Love, 2012). However, these firms are vulnerable and likely to face problems because of the liabilities associated with being new and small (Soetanto and Jack, 2013), and most emerging technology firms struggle to survive the first year of operations (Aspelund *et al.*, 2005). Moreover, one important characteristic of NTBFs is the combination of high research costs, with high market uncertainties and high risk of failure due to the high-velocity environments, in which these firms operate (Talaular *et al.*, 2005). While most of the existent literature on technology strategy analyzes the case of large companies or of the organizations in general (Campos *et al.*, 2009), the way which omni-channel service operations are building technology-based business networks and the way technology-based firms are recruiting companies to join the network remains unexplored. An example is SIBS, a well established company in Portugal with more than three decades of existence, operating mainly in the payments sector and that recently launched new technologies, which act as channels connecting several companies (e.g. banks, retail) together in business networks. Although SIBS is not considered a NTBF, it generates, develops and introduces new technologies, ideas and innovations to the business sector in particular and society more broadly (Campos *et al.*, 2009). It is from this point of view that SIBS can be useful, insofar as it is a well-established technology-based business firm, that is recruiting other companies and linking these companies by using a network-preferred channel. Using this case, we were able to analyze if the omni-channel strategy can be extrapolated to the network, rather than being viewed as a strategy within a particular company. To this end, we carried out a case study within a bank that is part of this firm's network and uses the network-preferred channel to make business. To complete our study, we considered essential to add a service failure and recovery perspective concerning the technology-based firms since, in our best

knowledge that subject remains unexplored in the literature. Although there are some studies that already reflect about the service failure and recovery in using technology-based self-service (Meuter *et al.*, 2000; Dabholkar and Spaid, 2012). Due to limited time and resources, it remained to be studied the impact of a company break up in the technology-based business network as we refer to future investigations.

This thesis is divided in six chapters and is organized in the following sections: literature review, methodology, findings and conclusion. The first chapter highlight the general framework and is followed by a literature review to conceptualize the state of the art. The third chapter tackles down the methodology, to explain the methodological options during the course of this thesis. It is followed by a demonstration of the way service providers are employing their channels to handle customer complaints in the context of omni-channel services and another chapter dedicated to the new synergies of technology-based business networks. It finishes with the relevance of the inputs, elements of innovation, an integrative perspective, conclusion and future research.

CHAPTER II.

Literature Review and Background – The State of the Art

The literature review is an important part of any work. This chapter contains a: 1) conference proceeding and 2) a book chapter; that mainly conceptualizes the literature review options and it synthesizes the existing body of knowledge concerning the multi-channel service research. However, it is not limited to those objectives, as it discloses the gaps in the literature and guidelines for future investigations.

CHAPTER II.1. Research Opportunities in Multi-Channel Services: A Systematic Review

This section presents the results of a systematic review on multi-channel services, to synthesize the existing body of knowledge and propose avenues for further research. We present theories that are widely corroborated, as well as suggestions presented by scholars that represent research opportunities. Towards this aim, using a comprehensive review of 118 peer-reviewed articles, the results suggest that existing studies are mainly focused on the analysis of consumer interactions with multi-channel front-office services, whereas the management of back-office processes and control aspects remain largely unaddressed. These topics represent strategic challenges and opportunities for future research.

CHAPTER II.2. Disclosing Paths for Multi-Channel Service Research: A Contemporaneous Phenomenon and Guidelines for Future Investigations

This section presents the findings of a systematic literature review on multi-channel services. In doing so, it uses an affinity diagram to show the results of a content analysis regarding the issues addressed by the existing literature in the field. This enables to understand areas of interest in the contemporary subject of research, find gaps in the literature and, lastly, to uncover guidelines for future

research. The results suggest that future investigations should focus on the integration of traditional and virtual services, on quality issues and customer behaviour towards the use of multi-channel services. Previous research also suggests that multi-channel services are largely unaddressed, regarding issues as back-office processes, within the scope of operations management. Subsequently, since multi-channel services are multidisciplinary in nature, these guidelines represent a fruitful opportunity for future research to involve other disciplines.

CHAPTER II.1.

Research Opportunities in Multi-Channel Services: A Systematic Review



Research Opportunities in Multi-Channel Services: A Systematic Review

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Keywords: Systematic review, Multi-channel services, Back-office processes

II.1.1 Introduction

Services are changing; contemporaneous service delivery is a complex process and, over the last years, the proliferation of technologies, strongly diffused by the wide use of Internet, has extraordinarily changed services. For instance, financial services have been pioneers and partial responsible for the adoption of new service delivery with the implementation of virtual services (Sousa and Amorim, 2009). The first self-service technologies in the financial sector emerged in the 1970s (Railton, 1985) when banks installed the first automated teller machines (ATMs) (Dabholkar, 1996), and remained changing during the past decade with the proliferation of mobile communications technologies (Hoehle *et al.*, 2012). These new developments, complemented with the traditional way of competing, have increased the number of ways in which consumers are able to interact with service providers (Cortiñas *et al.*, 2010; Chiou *et al.*, 2012). Taking these facts in consideration, a systematic literature review can provide a solid contribution to scholars interested in modern service management literature, but also because it represents an interesting strategic challenge for future research.

II.1.2 Background

Services provided through complex and multiple channels delivery systems enable organizations to interact with consumers via face-to-face and/or face-screen interfaces (Froehle and Roth, 2004). The multi-channel service concept still did not reach a consensus regarding its definitions, however, there is a definition that has gathered some scholar approval; i.e. service composed of components (physic and/or virtual), delivered

through two or more channels (Sousa and Voss, 2006). Moreover, channels (virtual or physical) are the interface that communicates with consumers, normally seen as the “eyes of the organization”, providing services, capturing and transmitting consumer’s feedback to improve service performance (Reis and Melão, 2012). Generally, multi-channel service delivery systems are known to be more convenient, efficient and fast (Stone *et al.*, 2002; Neslin *et. al.*, 2006). There are other reasons to implement a multi-channel strategy, in particular, they are difficult to reproduce by counterparts, require long-term commitments and significant investments (Rosenbloom, 2007). Apparently, the dominant view is that applications where pure Internet strategies (single-channel) can succeed are few and companies that succeed will be those that use the Internet and technology as a complement to their traditional way of competing (Gulati and Garino, 2000; Porter, 2001; Vishwanath and Mulvin, 2001; Sousa, 2002). The implementation of a multi-channel strategy is hardly free of risks, though. The limited understanding of service specifications appears to cause difficulties in some service organizations and creates practical problems for operations managers in controlling service to assure a reasonable perceived quality (Kabadayi *et al.*, 2007). Potential negative effects are increasing, as multi-channel services growth may intensify channel conflicts (Sharma and Mehrotra, 2006) or finish with a cannibalization of a channel towards another (Montoya-Weiss *et al.*, 2003; Steinfield, 2004; Kollmann *et al.*, 2012).

II.1.3 Methodology

According to Tranfield *et al.* (2003), a systematic review represents “rigorous scientific investigation of the literature”. The literature review process tends to be complex, requires time and suffers from partial incompleteness or involuntary omissions (Mazzi, 2011). To reduce potential bias, we adopted a research methodology with two different approaches (see table 2): first, a quantitative approach, based on a bibliometric analysis; second, a qualitative approach, centered on a content analysis of the literature (Coombes and Nicholson, 2013). Both techniques have advantages and disadvantages and, therefore, they must be seen as being “complementary” in gaining an overall understanding of a subject under investigation (Acedo and Casillas, 2005; Coombes and Nicholson, 2013). Adopting a systematic literature review is also important because multi-channel services is a

relatively new area of study (Thorpe and Holt, 2008) and, as pointed out by Fink (2005), is an “explicit and reproducible method for identifying, evaluating and synthesizing the existent body of completed and recorded work produced by researchers”. Overall, a systematic review will be a valuable tool to discover key theories, concepts, ideas and debates around multi-channel services (Hart, 1998).

Table 2. Research methodology

Phase	Approach	Description
Phase 1	Quantitative approach	Analysis in line with the research purpose and preliminary characterization of the selected publications.
Phase 2	Qualitative approach	Relevant findings for operations and value outcomes for multi-channel services are discussed in this phase.

A truly comprehensive approach to produce a systematic literature review generally requires the use of more than one database. However, given that our priority was transparency and easy reproduction of results (Buchanan and Bryman, 2009), a single database was used – Scopus, one of the largest abstracts and citation databases of peer-reviewed literature. At the beginning of March 2014, a search using the Scopus database found 22,763 documents, using the keyword “multi-channel” in the title, abstract and keywords. This keyword was chosen because it generated a higher number of hits when compared to other alternatives, such as “multi-channel” or “multiple channels” or “channel mix”; however, interestingly, there were not wide variations in results from word to word. To improve the review process, filters were applied to exclude irrelevant papers, save time and ensure the viable results (table 3).

Table 3. Methodological approach

<i>Search for articles in Scopus database</i>		
<i>Criteria</i>	<i>Filters</i>	<i>Documents</i>
Keyword	“Multi-channel”	22,763
Restriction	Title, abstract, keywords	
<i>Selection of articles</i>		
Language	English	20,315
Subject area	Management, business, finances and economics	317

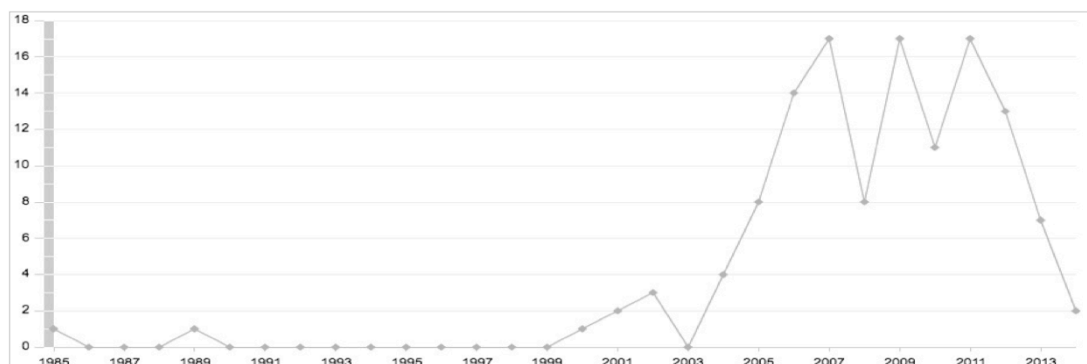
Source type	Journals	204
Document type	Articles	176
Ranking	SJR Indicator	126
Topic	Relevant articles	118

To avoid wrong interpretations, the selected documents had to be written in English language. Centered with our main subject, we considered articles in the areas of management, business, finances and economics. Furthermore, the SCImago Journal & Country Rank (scimagojr.com) revealed to be a helpful filter tool; according to SJR rank we considered Q1 and Q2 quartiles, excluding the Q3 and Q4 quartiles. To further restrict the selection process, we used, exclusively, journal articles; additionally, seven articles were rejected, since they were related with themes such as forest policy or geography, which are out of scope of our investigation. From 22,763 documents, we rejected 22,645, remaining, at the end, 118 articles that will provide us truthful research opportunities in the management services area.

II.1.4 Quantitative results and analysis

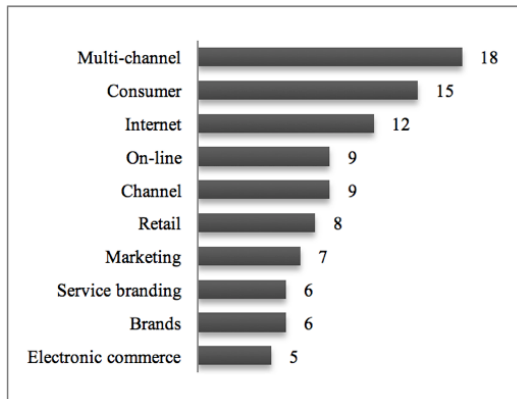
Services, delivered through multiple channels, have easily caused discussion over the past years and it has become a major force in the marketing and business disciplines. Since around the year 2000, the scientific publications on multi-channel services grew and reached a peak in the years of 2007, 2009 and 2011 (graphic 1).

Graphic 1. Journal articles timeframe (Scopus.com)

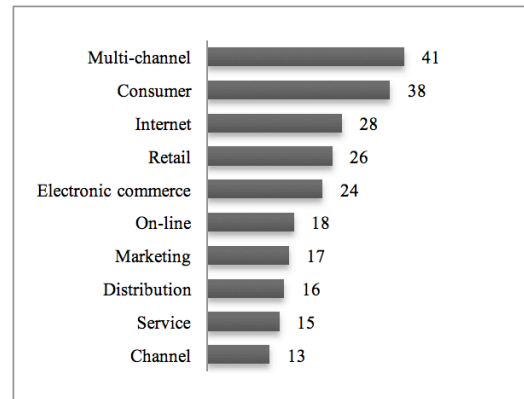


A tangible motive for this peak is associated with the emergence of studies in multi-channel retailing, Internet purchases and, especially, in consumer behavior when experimenting multi-channel services (graphic 2 and graphic 3).

Graphic 3. Top 10 cited keywords (Years 2007, 2009 and 2011)

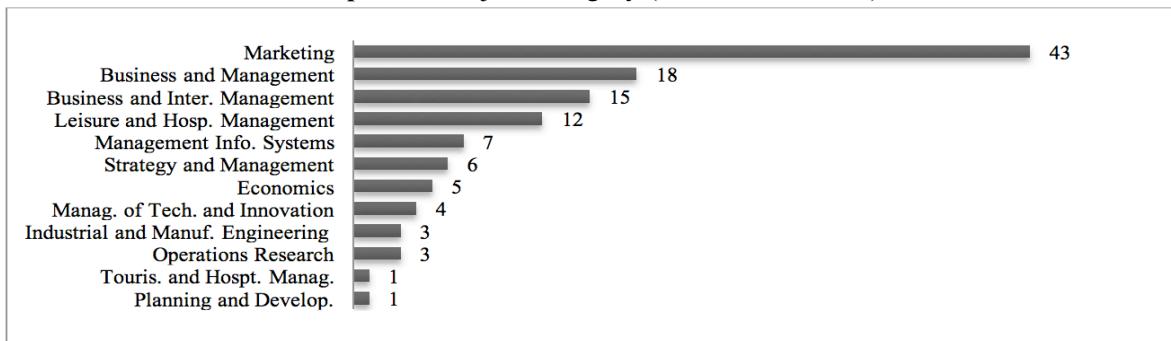


Graphic 2. Top 10 cited keywords (118 articles)



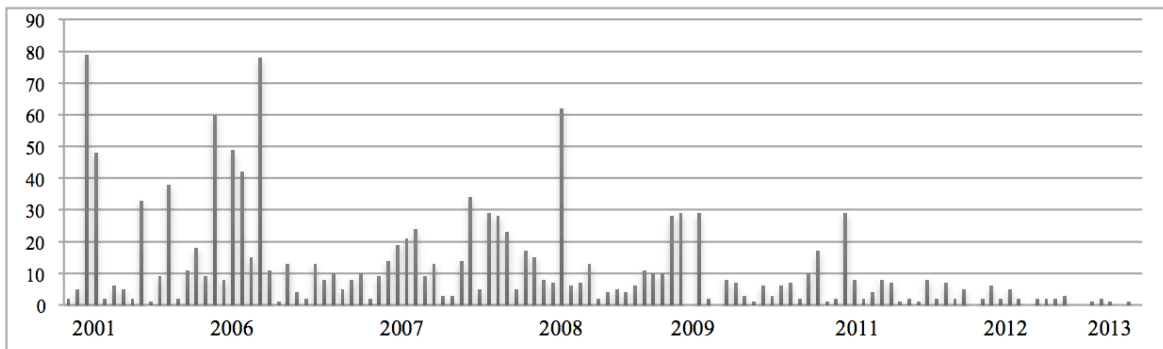
Our analysis is consubstantiated in the previous graphics: graphic 2, represents the counting of the cited keywords from the abstracts, during the years of 2007, 2009 and 2011, marking the peaks in terms of published articles in the area; second, graphic 3, represents a similar analysis but, in this case, concerning all the 118 articles, since the period 1989 until march 2014. Corroborating these statistics, some authors argued that, over the past decade, Internet has opened marketing opportunities (Rosenbloom, 2007; Yan, 2011) and that traditional channels are changing while multi-channel models have replaced the traditional channel structures (Koistinen e Jarvinen, 2009). Additionally, there have been changes in the way consumers interact with services (Berger, 2009) becoming, ultimately, multi-channel shoppers (Koistinen e Jarvinen, 2009). However, to our surprise, after 2012, the scientific studies have been losing strength, notwithstanding, we believe that it is still too early to give credible explanations for this cause. We observed, from the 118 articles, that 43 articles are dedicated to marketing, 18 are related to business and management and just 3 are about operations research (graphic 4). The journals sub-categories were taken from SCImago Journal & Country Rank website.

Graphic 4. Subject Category (number of articles)



These results are nonetheless impressive. The question is why multi-channel operations services have so few publications. Additionally, we made another exercise, by mixing citations with the timeframe (graphic 5). We considered a citation as “the acknowledgement that one article receives from another” (Coombes and Nicholson, 2013:658) and, thus, it may be considered a useful tool for a quantitative analysis.

Graphic 5. Citations during time



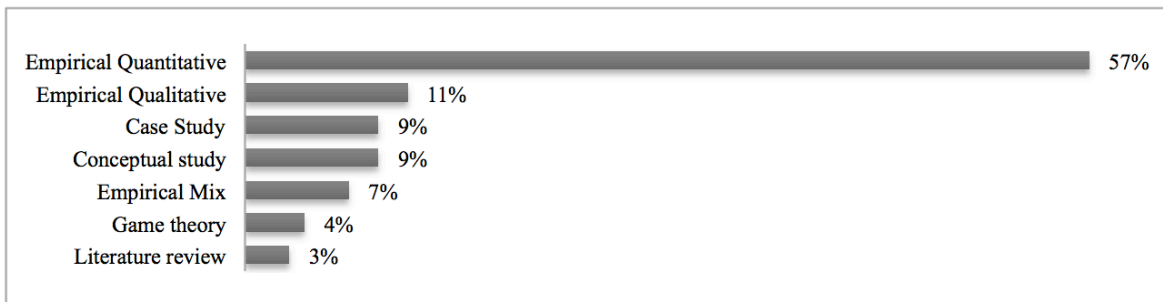
Each bar of graphic 5 represents the average number of citations per article, since the year 1989 until 2014. The results are interesting, since after 2006 the number of citations has decreased. But,

- Is the quality of published articles decreasing over time or is the multi-channel services losing interest?

It is unlikely that the quality of published articles is decreasing; the appearance of articles with high quality, that started approximately since the mid-90’s, might be explained by the widespread of the Internet (Rosenbloom, 2004; Webb and Lambe, 2007) in association with other channels, which sparked the interest of researchers, not only because of the novelty of these new channels but because of the potential in terms of research. A logical explanation for the reduction of the number of citations is due to the fact that articles are becoming specialized in certain areas of knowledge, because of their

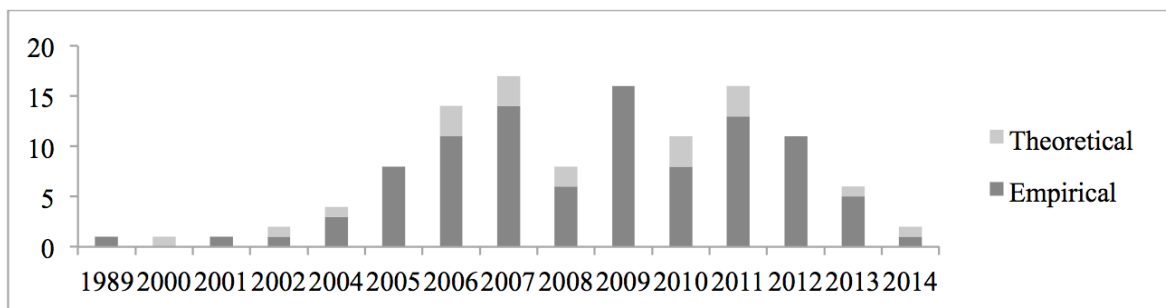
complexity, which require in-depth knowledge in multidisciplinary fields. Additionally, it is normal that recent articles have not yet had time to be known and cited by other authors. Concerning the most frequently used research approach, the articles published during the period under analysis are empirical, with 75%, while 16% of the articles are theoretical and just 9% are case studies. The bars of graphic 6 represent the percentages of the major research approaches used to study multi-channel services. The values were calculated on the basis of the 118 articles, the total represents 100%.

Graphic 6. Major research approaches used to study the multi-channel services



The most commonly used data collection technique is the survey, which is employed in 73% of the articles (empirical quantitative, empirical mix and case studies), a prevalence that is still in use today; just 11% of the articles are purely qualitative.

Graphic 7. Publication distribution (1989 – 2014)



Concomitantly, empirical studies have been predominant (graphic 7), with an overwhelming majority of 84%, against 16% of articles that focus on theoretical studies.

II.1.5 Qualitative results and analysis

To improve our discussion, we present a table that summarizes the theoretical trend. Therefore, we examine different author perspectives by analysing the most relevant

categories (table 4), which are: Marketing with 43 articles, Business and International Management, with 18 articles and 15 articles, respectively. This categorization will allow us to define the most prominent points of view (table 4).

Table 4. Qualitative analysis

<i>Categories</i>	<i>Perspectives</i>
Marketing (43 articles)	This category mainly focuses on consumers' behaviour actions (Noble <i>et al.</i> 2005) and gives emphasis to online channels (Pentina <i>et al.</i> 2009). The strategies used by investigators are aligned to understand multi-channel consumer preferences (Gensler <i>et al.</i> , 2007; Koistinen and Jarvinen, 2009) in order to improve consumer relationship with the service. Although the described perspective is the most common, some authors suggest more studies on channel structures and back-office processes (Coelho and Easingwood, 2008).
Business (18 articles)	Most of the studies contributed to website performance and are mainly dedicated to the multi-channel consumers' evaluation and satisfaction across distribution channels in online contexts (Hsieh <i>et al.</i> , 2012). While this vision is predominant, Cassab and MacLaclan (2009) remarks that processes and design of multi-cannel strategies are being forgotten and virtually unexplored. This new perspective recommends that researches should be focused on organizational processes and systems (back-office), rather than the common front-office consumers' perspective (Metters and Walton, 2007).
International Management (15 articles)	Multi-channel services in the International Management category is associated to articles that are aligned with the website components (Jang and Burns, 2004) and the integration of new technologies, when associated to Internet (Funk, 2005).

As we can observe in table 4, the vast majority of articles are categorized in the marketing area. This occurs probably due to the ease of access to information by scholars; it is often easier to study front-office rather than back-office processes. Normally, this phenomenon takes place because organizations (e.g. banks, airline companies) protect their own know-how, in order to avoid reproductions by their rivals. The qualitative approach reveals that scholars are mainly concerned with the prediction of online consumer behaviors (Noble *et al.* 2005) and enhancing the understanding of consumers' channel choices in order to improve online purchasing (Pentina *et al.* 2004; Carlson and Cass, 2011). The presented studies are commonly dedicated to consumer interactions with front-office service (web site interface), particularly on issues related with marketing activities. This means that there is abundance in the literature concerning the consumers' behavior in

an online context (Hsieh *et al.*, 2012). Thus, currently, there are few suggestions to guide further research, in particular, in the operations management area (table 5).

<i>Marketing, Business and Management</i>	<i>Operations Management</i>
Focus on consumer behavior	Study of processes and systems
Studies are engaged to channel choices and online purchasing	Understanding channel structures
Improvement of front-office interfaces	Improvement of back-office processes

Table 5. New approach to multi-channel services

Cassab (2009) suggests that the deployment of technology in modern service channels implies that consumer contact with firms is likely to be wider than the online purchase. Although the scientific articles are still very attached to consumers’ interactions (e.g. front-office interfaces), scholars do not exclude the possibility to investigate other directions, since there are areas poorly studied in the multi-channel literature. For instance, Coelho and Easingwood (2008:32) state that “it is needed more studies on channel structures” and “the design of multi-channel strategies has been virtually unexplored”. Cassab and MacLachlan (2009:25) go further, stating that “research should be focused on organizational processes and systems, besides consumer perspectives”, an argument also corroborated by Metters and Walton (2007): “focus on back-office processes, rather than the typical service typologies that focus on the front-office are needed”. Such perceptions pave ways for new studies in multi-channel services. Overall, the results are consistent and show that existing studies are mainly focused on the analysis of consumer interactions with multi-channel front-office services, whereas the management of back-office processes and control aspects remain largely unaddressed. Table 6 resumes the previous paragraph.

Table 6. Research opportunities

<i>Current research</i>	<i>New research opportunities</i>
Generically, current investigations target: <ul style="list-style-type: none"> • online shopping, according to consumers’ preferences and behavior; • the improvement of front-office interfaces. 	The opportunities for future research lie on: <ul style="list-style-type: none"> • understanding the design of multi-channel services; • the improvement of multi-channel back-office; • understanding the control processes of multi-channel services.

Ultimately, it is still important to understand the multi-channel characteristics and consumer choices. However, we reached a maturity level that makes us comfortable to argue that is time for a turning point as the understanding of the extent where multi-channel services can be optimized at a process level.

II.1.6 Conclusions

Two main findings emerge from this study. The first is that the operations management discipline has a limited engagement with the literature on multi-channel services, and, second, the focus of this literature is on the marketing area, with a considerable number of papers dedicated to the analysis of consumer interactions with front-office services. One possible conclusion is that back-office processes and control aspects remain largely unaddressed and this clearly represents a research opportunity. Despite the popularity of multi-channel services, the process and corresponding control has been surprisingly unexplored. Thus, investigating this research opportunity may provide useful knowledge for practitioners and would deepen the academic understanding.

II.1.7 Limitations

This paper is not free of limitations; the Scopus database is constantly being updated as new articles are being added. The choice of the search term “multi-channel” also dictated which publications were included, as different keywords may change the results; nevertheless, we believe that the analyzed articles provide a comprehensive overview of the theme. Documents such as conference papers were excluded, which could provide credible evidence; instead, we consider that the sample (scientific articles) is an adequate coverage of the field. Due to space limitations, this article does not list all references; they can be provided on request by the first author.

II.1.8 Future directions

In line with the main results we suggest for future research an empirical work in the background of multi-channel services delivery systems. For instance, it would be interesting to perform an investigation in the financial services. The financial services may have specific, unique characteristics and, consequently, the observed results may not transfer to other contexts, as some authors suggest (Coelho and Easingwood, 2008).

However, as previously mentioned, financial services have been pioneers in the adoption of multi-channel services because they have a long history in this area, and, therefore, may become a fertile ground for investigators (Easingwood and Storeym 1996; Pikkarainen *et al.*, 2004; Cortiñas *et al.* 2010). Narrowing the research field, we suggest for further research the study of back-office processes and their control or, in the same extent, the design of multi-channel services. These themes have been virtually unexplored (Coelho and Easingwood, 2008), while the front-office has been widely investigated (Metters and Walton, 2007), mainly because of the ease of access to information or to data collection; concomitantly, there is a scope for other research fields (e.g. operations management). However, scholars who decide to follow these suggestions should be prepared to overcome some barriers, as the difficult access to information or restrictions to data collection might occur. This happens for obvious reasons as, for example, the protection of the know-how by organizations. With this timely contribution, we expect to instigate other investigators to provide contributions to operations management and to develop knowledge in the multi-channel service area.

CHAPTER II.2.

Disclosing Paths for Multi-Channel Service Research: A Contemporaneous Phenomenon and Guidelines for Future Investigations



Disclosing Paths for Multi-channel Service Research: A Contemporaneous Phenomenon and Guidelines for Future Investigations

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Keywords: Service integration, Multi-channel services, Systematic literature review

II.2.1 Introduction

Following the first decade of the 21st century, it has become obvious that multi-channel service delivery is changing. This change was first described by Froehle and Roth (2004), arguing that customers used to interact directly with service employees (face-to-face), but, more recently, it is complemented with new technologies (face-to-screen). In face-to-screen settings, the role of technology can either be the mediation of contact with a service employee or performing automated service delivery without human intervention (Semeijn *et al.*, 2005). A second perspective, presented by Sousa and Voss (2006), distinguishes virtual and physical channels of service delivery. A virtual channel consists of a means of communication using “advanced telecommunications, information, and multimedia technologies” and physical channels consist of means of communications with the customer employing a physical (brick-and-mortar) infrastructure (Sousa and Voss, 2006; Sousa and Amorim, 2009). As Robert Yin (1982) mentioned before, a contemporaneous phenomenon, whose boundaries are unclear, makes it technically difficult to define. Concomitantly, the understanding of this phenomenon is largely connected on how the *multi-channel service* term is defined. While there is a definition that has gathered some scholar approval, i.e. service composed of components (physic and/or virtual), delivered through two or more channels (Sousa and Voss, 2006), the field of multi-channel service still did not reach a consensus regarding the meaning of its core concept (Reis *et al.*, 2014), as it can be seen from table 7. The difficulty of defining the term “multi-channel service” led us to search the literature for a more comprehensive element, known as

“multi-channel service system”, associated to distinct aspects of multi-channel system.

Table 7. Definition for multi-channel service system

Year	Author	Terms	Multi-channel services system definition
2002	Stone <i>et al.</i> (2002)	Multi-channel management	The use of more than one channel or medium to manage customers in a way that is consistent and coordinated across all the channels or media in use.
2004	Payne and Flow (2004)	Multi-channel services	These main channel categories can be represented as a continuum of forms of customer contact ranging from the physical (such as a face to face encounter with a company sales representative) to the virtual (such as an e-commerce or G3 phone transaction)
2004	Wallace <i>et al.</i> (2004)	Multiple channels	Offering multiple complementary channels provides a greater and deeper mix of customer service, thereby enhancing the seller’s overall value proposition
2006	Neslin <i>et al.</i> (2006)	Multi-channel management	The design, deployment, coordination and evaluation of channels through which firms and customers interact, with the goal of enhancing customer value through effective customer acquisition, retention, and development.
2006	Sousa and Voss (2006)	Multi-channel services	Services composed of components (physical and/or virtual), delivered through two or more channels.
2008	Agatz <i>et al.</i> (2008)	Multi-channeling	Different channels differ in their abilities to perform various service outputs.
2009	Cassab and MacLachlan (2009)	Multi-channel service	Multi-channel services are the use of alternative modes of contact by customers to interact with and obtain service from an organization.
2011	Chiu <i>et al.</i> (2011)	Multi-channel environment	Consumers can move easily among different channels. They engage in cross-channel free riding when they use one retailer’s channel to obtain information or evaluate products and then switch to another retailer’s channel to complete the purchase.

The term *multi-channel service system* was initially described as the “use of more than one channel to manage customer integration across all channels” (Stone *et al.*, 2002). From table 7, it seems clear that different authors use different terms and several settings to refer to the same thing: the “multi-channel services” term. Based on the definitions, our intention is to define the minimal set of features associated with the term, as well as the set of elements of a multi-channel service system. In an attempt to understand the phenomenon, we reduce the term to its essential elements derived from the multi-channel service definition. The challenge of defining the multi-channel service concept can be tackled after the definitions have been reduced to their basic elements. A multi-channel service i.e. “service, composed by its elementary components (physical and/or virtual),

delivered consistently to customers through the interaction of two or more organizational channels". In fact, physical distribution channels (such as a branch or retail outlet), telephone, automatic teller machines (ATMs), Internet, enable today service firms and their customers to interact with each other (Froehle and Roth, 2004; Seck and Philippe, 2013). In particular, the Internet is fast becoming a feasible alternative to the traditional face-to-face channel (Froehle and Roth, 2004) as it is integrated into multi-channel servicing system (Birgelen *et al.*, 2006; Cortiñas *et al.*, 2010). The opportunities offered by the Internet and the infatuation it aroused among customers led service firms to adopt a multi-channel distribution by combining both traditional physical channels and virtual channels such as the Internet and telephone (Seck and Philippe, 2013). A good example is the financial sector, which has a long history of developing new ways to interact with customers and has, therefore, been employing multi-channel strategies for a long time (Easingwood and Storey, 1996; Pikkarainen *et al.*, 2004).

In sum, the emergence of hybrid distribution systems such as multi-channel services rapidly changed the world and became a standard business model (Moriarty and Moran, 1990; Webb and Hogan, 2002). The proliferation of multi-channel services has created a challenge for firms insofar as how to manage these new environments effectively and created opportunities for academics to produce insights that can help address this challenge (Neslin *et al.*, 2006). Subsequently, to close this section, we present the research question, in order to understand the areas of interest in the contemporary subject of research, find gaps in the literature and to disclose guidelines for future research.

RQ: What are the research domains associated to the multi-channel services?

This research question will allow achieving the main purpose of the investigation, and disseminate the leading contemporary domains that are associated to multi-channel services.

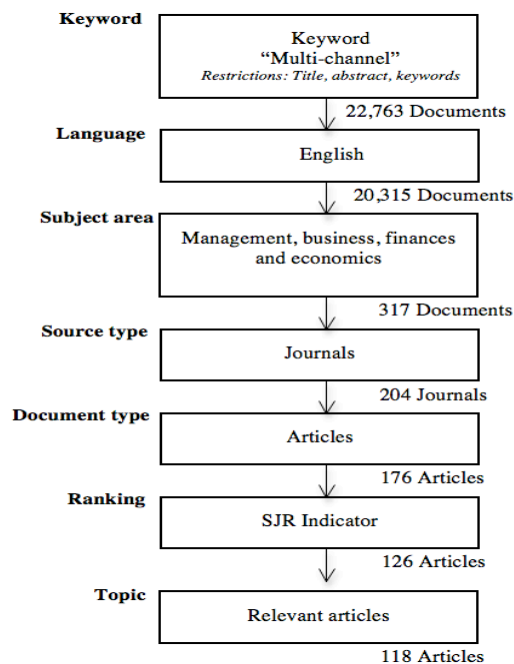
II.2.2 Methodology

To conduct research about a given subject, it is crucial to find answers, contextualized in terms of a larger research problem. This necessarily involves reviewing the literature of that subject to indicate what has been researched in the area and to demonstrate a need for future research (Given, 2008). This study discusses the findings of a systematic literature review (SLR) on multi-channel services. In doing so, it uses an affinity diagram to show

the results of a content analysis regarding the issues addressed by the existing literature in the field. This strategy will permit to find guidelines for future research.

II.2.2.1 Systematic literature review

The adoption of the SLR method is due to the fact that multi-channel services is a relatively new area of study (Thorpe and Holt, 2008), but also because it is an explicit and reproducible method for identifying, evaluating and synthesizing the existent body of completed and recorded work produced by researchers (Fink, 2005). However, this method is limited, in that it does not cover the whole body of knowledge related to a specific phenomenon, as it is restricted to a selected number of keywords (Mustak *et al.*, 2013). Thus, it is acknowledged that some relevant articles could be missing; the results are based on the application of filters, which may exclude broad cited articles or, in the individual perception of readers, articles that should be interesting to integrate the study *per se*. Furthermore, to present a literature review of almost 120 articles, in such a few pages, it is a difficult task for any author, but is also motivating and requires a good capacity for synthesis. Despite these difficulties, a SLR allows for searching through a vast pool of research (Mustak *et al.*, 2013; Wang and Chugh, 2014) – in this case, a broad range of journals over a period of 25 years. This paper precedes the results of a conference proceeding (Reis *et al.*, 2014) and a summary of the search process is presented below, shown in figure 1.

Figure 1. Methodological approach (Reis *et al.*, 2014)

This paper is based on a search made in March 2014, using the Scopus database with the keyword “multi-channel” in the title, abstract and keywords, which found a total of 22,763 documents. The review process was based on the application of successive filters to exclude irrelevant papers and ensure viable results (figure 1). In this figure, readers can see that only articles written in English language were deemed relevant. To ensure the adequacy and quality of findings, the authors only considered articles in the management area within the quartiles Q1 and Q2 of the SCImago Journal & Country Rank (scimagojr.com). In comparison with the previous one, the current paper presents new contributions, since it identifies dimensions and gaps in the literature of multi-channel services, and suggests guidelines for future research.

II.2.2.1 Affinity diagram

The affinity diagram is a useful tool to structure a large amount of information. After reducing and filtering 22,763 documents to 118 articles it was necessary to understand their similarities. An affinity diagram was used to show the results of a content analysis (Coombes and Nicholson, 2013) regarding the issues addressed by the existing literature in the field.

Figure 2. Data analysis procedures

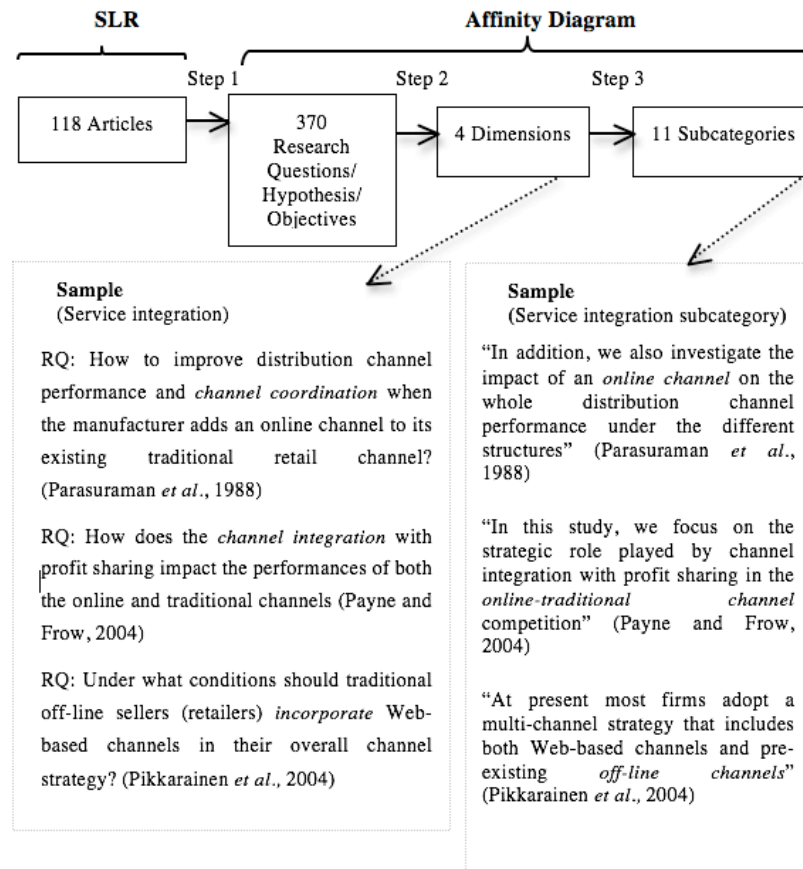
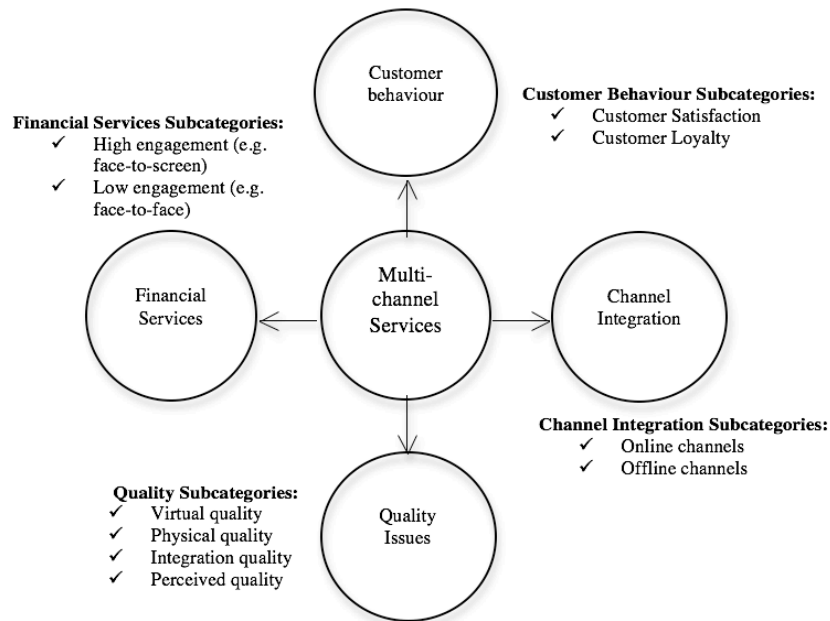


Figure 2 resumes the data analysis procedures. First, the research questions of all 118 articles were listed, including hypothesis and objectives; the result was a total of 370 questions, objectives or hypothesis to analyse. Second, to find the dimensions, those research questions were grouped by their similarities and affinities, as shown in the sample on figure 2. In this case, all research questions, concerning service integration, use words as “channel integration” or “channel coordination”. Third, a similar process was performed to retain and subcategorize the selected dimensions. In this case, we analysed the most mentioned words of each article that are interrelated with “service integration”, an example is “online channels” and “offline channels”. In sum, most of the articles are related to issues such as customer behaviour, service integration, quality issues and financial services (figure 3).

Figure 3. Affinity diagram of multi-channel service theme

The next stage was to settle each of the topics and find the existing research gaps in each group in order to identify guidelines for future research to practitioners and academics. The affinity diagram approach may help discover hidden linkages between articles from a multidisciplinary range of documents.

II.2.3 Discussion

Several dimensions have emerged, the most cited concern customer behaviour, service integration, multi-channel quality and financial services. Each one poses different research opportunities. Due to space limitations, we only present brief discussion of the literature within each dimension.

II.2.3.1 Customer behaviour

According to existent literature, consumer's perceived multi-channel service quality, channel-switching difficulties and satisfaction mediate the effect of channel characteristics on their behaviour intentions (Cassab and MacLachlan, 2009). Therefore, multi-channel characteristics will influence multi-channel quality and channel switching difficulties. Although there is an abundance of literature about the determinants of customer loyalty in either the brick-and-mortar or online contexts, there is limited research in multiple channel

contexts, especially in the service industry (Hsieh *et al.*, 2012). Furthermore, offline channel fulfilment appears to be at least as important as website performance in a front-office context (Semeijn *et al.*, 2005; Hsieh *et al.* 2012). Some authors have also suggested that further research could investigate the influence of quality of the multi-channel service interface, information consistency and the ability of consumers to use multiple modes of contact efficiently (Cassab and MacLachlan, 2009; Webb and Hogan, 2002). Indeed, the absence of consistency in providing a service across multiple channels can frustrate consumers when they have pretensions to purchase a service or a product (Hsieh *et al.*, 2012; Rangaswamy and Bruggen, 2005). Therefore, a question can be posed for future investigation: What are motivating customers to pursuit multi-channel services?

II.2.3.2 Service integration

Despite the growth of multi-channel services, little empirical research has offered insights into cross-channel issues, such as understanding how consumer's integrate the service with experiences via physical store and offline marketing communications, with website characteristics (Carlson and Cass, 2011). Moreover, the synergy between online and offline operations generated through the integration of channels has been argued to enrich customers' experiences with a service and cultivate customer loyalty in both channels (Carlson and Cass, 2011; Kwon and Lennon, 2009). To improve the level of channel integration and avoid channel overlap (Birgelen *et al.*, 2006) managers should understand these particular aspects in order to avoid channel conflicts (Kollmann *et al.*, 2012) or address a possible cannibalization of a channel towards another (Montoya-Weiss *et al.*, 2003; Steinfield, 2004; Kollmann *et al.*, 2012). In integration strategies, the channels are seen as complementary components of a multi-channel system that aim to provide a high level of convenience to customers (Muller-Lankenau *et al.*, 2006). Therefore, a question can be posed for future investigation: How is the integration of traditional and virtual services accomplished?

II.2.3.3 Quality issues

A preliminary insight of multi-channel services usually comes from the service marketing literature. Particularly, the concept of service quality has been extensively studied in the last two decades, since the publication of the seminal work of Grönroos

(1984) and the development of the SERVQUAL instrument (Cassab and MacLachlan, 2009; Parasuraman *et al.*, 1988). In a multi-channel setting, however, other investigators have studied the multi-channel service quality (Sousa and Voss, 2006). This study proposes that in a multi-channel setting, multi-channel service quality comprises three components: virtual (e.g., Web site), physical (people-delivered, including logistics), and integration quality (seamless service experience across channels). But, a question remains: what is the perceived quality of a multi-channel service? Grönroos (1984) states that the perceived quality of a service stems from the direct relationship between the expectations those customers have regarding the quality of a service, and the experience they have with the organization when the service is provided. Parasuraman *et al.* (1988) and Berry *et al.* (1990) refers, as Grönroos (1988), that perceived quality of a service is made by comparing customer expectations and the performance of an organization. Another definition is presented by Zeithaml (1988), which states that perceived service quality is the consumer's judgment about a service's overall excellence or superiority, similar to those previously reported. In a multi-channel context, customers' perceived service quality of each channel depends not merely on the service that one channel provides, but also on the service other channels provide (Montoya-Weiss *et al.*, 2003). Multi-channel users perceive the quality of every channel and then integrate them into an overall perceived service quality (Hsieh *et al.*, 2012). It would be useful to investigate why the main part of the studies on quality have focused on marketing issues. As Zeithaml (1988) points out the relationship between quality perceptions and customer attitude has long been a focus of marketing literature. Eventually, it will be interesting to drive quality studies to other areas of knowledge (e.g. operation management). Therefore, an interesting question can be also posed for future investigation: How is service quality applied to multi-channel services?

II.2.3.4 Financial services

The first self-service technologies emerged in the financial sector in the 1970s (Railton, 1985), when banks installed the first automated teller machines (ATMs) (Dabholkar, 1996), and continued changing during the past decade with the proliferation of mobile communications technologies (Pikkarainen *et al.*, 2004). Hence, the importance of these services for multi-channel context. In analysing the results of the SLR, we found that financial services is a category with wide variation in terms of product purchase and

management, customer involvement levels and perceived risk, all of which may influence consumer choice and multi-channel behaviour (Cortiñas *et al.*, 2010). Recent studies (Cortiñas *et al.*, 2010) mention that while there is little involvement in financial services (e.g. routine procedures) consumers usually use the face-to-screen service, however, for more complex services, where there is high engagement (e.g. loan requirement), consumers prefer face-to-face services. The presented information shows that financial services are a good example of the engagement in multi-channel services; this study area is fertile for fieldwork and several places can be used for that propose (e.g. banks, insurance companies). Therefore, some questions can be posed for future investigation: To what extent does the financial services have influenced the developments of multi-channel services? It should be interesting to pursue the questions listed in figure 3 with empirical work (e.g. case study research). If the questions are well adapted to the phenomenon it can lead to fruitful results and mitigate some difficulties already identified. A case study could be also a great tool to reveal some answers, as it can study the phenomenon in its natural setting and, additionally, can also lead itself to early exploratory investigations where the variables are still unknown and the phenomenon is not at all understood (Benbasat *et al.*, 1987; Meredith, 1998).

Table 8. Questions and suggestions for multi-channel service

Multi-channel services topic	Questions	Suggestions
Customer behaviour	What are motivating customers to pursuit multi-channel services?	
Service Integration	How is the integration of traditional and virtual services accomplished?	Extend these topics to a new comprehensive approach concerning the operation management area. Usually these topics are analysed from a marketing perspective
Quality issues	How is service quality applied to multi-channel services?	
Financial services	To what extent does the financial services have influenced the developments of multi-channel services?	

A previous study (Reis *et al.*, 2014) reports that these questions are dedicated to the analysis of consumer interactions with front-office services, thus, other disciplines, as operation management, have a limited engagement with the literature. The listed questions, in table 8, are not surprisingly as readers can find, however, the main suggestion goes towards moving the discussion of these issues to topics such as the back-office processes, an area still largely unaddressed in the literature.

II.2.4 Conclusions

The results of the analysis show that there are two main findings. First, there are four major areas related to the investigation of multi-channel services. Concerning the first area, customer behaviour, there is an abundance of literature about the determinants of customer loyalty, in either the brick-and-mortar or online contexts, but the multiple channel context and especially the offline processes remain unaddressed. On other hand, and despite the growth of multi-channel services, little empirical research has offered insights into cross-channel issues, such as the understanding on how consumer's integrate the service with experiences face-to-face and face-to-screen. A preliminary insight of multi-channel services usually comes from the service marketing literature. Particularly, the concept of service quality has been extensively studied in the last two decades. However, few studies have a multi-channel scope and there are other areas besides marketing that are being neglected (e.g. operations management). The lack of studies may jeopardize the quality of multi-channel services, particularly, with regard to the integration quality. Regarding these concerns, it is important to mention that there is scope for further research, especially in the area of financial services, more specifically, to perform fieldworks in banks or insurance companies. Second, this research also highlights the need for further research regarding the issues of back-office processes, which have been surprisingly overlooked by the academic community. Bridging these gaps may provide useful knowledge for practitioners and would deepen the academic understanding. Several methodological limitations can be mentioned. Due to space limitations it is not possible to list all the 118 references. References can be provided on request, by contacting the first author. The findings from this study have been limited due to the methodological constraints that resulted from the research design and the data-set (Coombes and Nicholson, 2013). The Scopus citation index is constantly being updated with new peer-reviewed international literature and our sample consists of journal articles, based on the assumption that these amount to the frontier of research (Coombes and Nicholson, 2013), although, there may be other publications that are not included in this database and, thus, in this study (Mustak *et al.*, 2013). Nevertheless, the review has undeniable value as it synthesizes scientific knowledge of the conceptualizations and outcomes of multi-channel services research (Mustak *et al.*, 2013). This paper is also a part of a work in progress since a SLR is an overview of primary studies that contains an explicit statement of objectives, materials, and

methods (Greenhalgh, 1997). The results suggest that future investigations should focus on the integration of traditional and virtual services, on quality issues and customer behaviour towards the use of multi-channel services. Thus, the main guidelines for future investigations relate the need to approach certain issues in multi-channel services from an operations management perspective. Reis *et al.* (2014) remark that it is imperative the need to direct studies into a prospective analysis of back-office processes, contrary to what has been done so far. This paper alerts scholars to the need to conduct new researches, suggesting direct attention to the issues presented in this paper, which are usually placed in the marketing area, but we believe that can also be applicable to the sphere of operations management. Since multi-channel services are multidisciplinary in nature, the benefits are clear; these guidelines represent a fertile opportunity for future research since it calls the engagement of other disciplines (e.g. operation management) besides marketing, which can lead to new contributions for management.

CHAPTER III.

Multi-method Research for Industrial Engineering Studies (Service Industry):

This chapter is valuable in the extent that a doctoral student should acquire the methodological knowledge to perform his/her investigation(s). It also allows the readers to understand two main complementary methods, regularly used in the methodological section: systematic literature reviews and/or case studies. On the other hand, this chapter explains, and proves the reasons, why multi-method researches are adequate for the service industry studies.

CHAPTER III.1. Breaking Barriers with Qualitative Multi-Method Research for Engineering Studies: Pros, Cons and Issues

This section presents an investigation on how contemporary studies about engineering are breaking down boundaries of knowledge. This study uses a systematic literature review to show how the application of qualitative multi-method approaches may offer reliable results and provide greater emphasis to the dimensions of development, triangulation and complementarity. The section offers new insights on the role of qualitative researches for the engineering domain, an area which has been largely unaddressed in the literature.

CHAPTER III.1.

Breaking Barriers with Qualitative Multi-Method Research for Engineering Studies: Pros, Cons and Issues



Breaking Barriers with Qualitative Multi-Method Research for Engineering Studies: Pros, Cons and Issues

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Keywords: Engineering, Systematic literature review, Multi-method approach, Development, Triangulation, Complementarity, Qualitative research

III.1.1 Introduction

Multi-method research is based on a methodological research strategy that includes more than one method of collecting data and or more than one method of analysing the data; such methods can be based on qualitative techniques, quantitative techniques or a mix of both (Mills *et al.*, 2010). A common misconception is that the various research strategies should be arrayed hierarchically, but the hierarchical view may be questioned, as the goal is to avoid gross misfits, when investigators plan to use one type of strategy but another is really more advantageous (Yin, 2003). The emphasis should be given to break down barriers, since there are preconceived ideas that certain areas of knowledge should necessary follow a particular research strategy. While researchers are adopting a variety of methods, the potential advantages of combining different qualitative methods remains largely unexploited (Monrad, 2013). Herein lies the relevance of this article, as it discusses the pros, cons and issues of using research methods in a complementary way. In this article we set up to describe two qualitative research methods that may help researchers to reduce potential bias when performing qualitative studies. Thus, the implementation of a multi-method research program may generate comprehensiveness and rich knowledge (Mills *et al.*, 2010),

counterbalancing the weaknesses that inherent to individual methods (Wood *et al.*, 1999). Building on these suggestions, we perceived that the vast majority of academic research carries out a literature review. On this basis, we propose the discussion of a systematic literature review as a research method. Additionally, it also seems appropriate to discuss a case study methodology, as a complementary method to a systematic literature review. Complementing research methods may take a number of forms, in this specific case, one study is used to corroborate (or not) empirical findings. Hence, the overall aim is to enhance the validity of research findings.

III.1.2 Theoretical Background

Epistemologically *hodos* is equivalent to the contemporary word of *method*. Firstly, *hodos* was defined as a journey or path. Combined with the prefix *meta-*, we get *methodos*, a “following after, pursuit, especially pursuit of knowledge, a plan or system of pursuing an inquiry” (Liddell *et al.*, 1940). Our modern-day understanding of method, especially the scientific method, strongly resonates with *methodos*, which emphasizes the methodical system of generating and legitimizing knowledge (Thorpe & Holt, 2008). Methodology has a particular meaning, as an “ology” is the study of a whole academic field, it is a stepping-back from a subject and a consideration of it at a broader level (Fisher, 2007). Fisher (2007) goes further stating that methodology is the study of methods and it raises all sorts of philosophical questions about what it is possible for researchers to know and how valid their claims to knowledge might be. Additionally, *research* in common parlance refers to a search of knowledge, and can be defined as a scientific and systematic search for pertinent information on a specific topic (Kothari *et al.*, 2004). At this point we are in condition to comment on the difference between research methods and research methodology. Research methods may be understood as all methods or techniques, thus, they refer to the methods that researchers use in conducting research operations, in other words, are all methods that are employed by the researcher during the course of addressing his/her research problem (Kothari *et al.*, 2004). The same authors also distinguish research technique as the behaviour and instruments we use in conducting research operations (e.g. recording data) and research method to the behaviour and instruments used in selecting and constructing a research technique. In practice, the two terms are taken as interchangeable. Research methodology is associated with a broader approach, i.e. including the

assumptions, postulates, rules, and methods – the blueprint or roadmap – that researchers employ to render their work open to analysis, critique, replication, repetition, and/or adaptation and to choose research methods (Given, 2008), in other words, is the way to resolve our research problem. Methodological triangulation leads to more accurate, complete, and analytically satisfying representation of the social world (Elliott, 2005). Triangulation is a term that generally describes the use of multiple approaches to the study of a phenomenon (Denzin & Lincoln, 2000). Denzin (1978) include: (a) data triangulation, where data are collected at different times or from different sources; (b) investigator triangulation, where different researchers or evaluators independently collect data on the same phenomenon and compare the results; (c) methodological triangulation, where multiple methods of data collection are used; and (d) theory triangulation, where different theories are used to interpret a set of data. Within each type of triangulation there are various sub-types, for example, methodological triangulation can include various combinations of qualitative and quantitative research designs (Thorpe & Holt, 2008). Particularly, methodological triangulation is defined as more than one method which is used to gather data (e.g. interviewing, participant observation) (Mills *et al.*, 2010). Denzin (1978) also distinguished *within-methods* triangulation, which refers to the use of either multiple quantitative or multiple qualitative approaches, from *between-methods* triangulation, which involves the use of both quantitative and qualitative approaches (Johnson *et al.*, 2007). Quantitative approaches involve the generation of data of quantitative nature which can be subject to rigorous quantitative analysis in a formal and rigid fashion, while qualitative approaches to research are concerned with subjective assessment of attitudes, opinions and behaviours (Berg, 2004; Kothari *et al.*, 2004). Since the last decade of the 20th century, there has been a growing interest in the use of qualitative techniques in the social sciences (Benbasat *et al.*, 1987). This interest has been sparked by a general dissatisfaction and the limitation associated with the type of research information that is provided by quantitative techniques (Maanen, 1982). The dissatisfaction stems from several sources: the complexity of multivariate research methods, the distribution restrictions inherent in the use of these methods (e.g., multivariate normality), the large sample sizes these methods dictate, and the difficulty of understanding and interpreting the results of studies in which complex quantitative methods are used (Benbasat *et al.*, 1987). Finally, methodological triangulation has received the most

attention and it has become almost obligatory for qualitative researchers, in planning their studies, to demonstrate their commitment to methodological rigor by multi-method research designs, allegedly capable of validation through triangulation (Bloor & Wood, 2006).

III.1.3 Methodology

This article follows a systematic literature review as a research method. This choice is appropriate because qualitative multi-method researches are still in an early stage of development (Monrad, 2013). A truly comprehensive approach to produce a systematic literature review generally requires the use of more than one database (Reis *et al.*, 2014). However, we just used one database since our priority was transparency and easy reproduction of results (Buchanan and Bryman, 2009). On the 21st of October 2016 we conducted a research with the Scopus database, which is one of the largest abstract and citation databases of peer-reviewed literature, and we searched keywords related with our subject, as displayed in the table 9.

Table 9. Methodological approach

Scopus Search		“Multi-Method Research” or “Multimethod Research”	“Systematic Literature Review”	“Case Study Research”
Keyword	Title-abs-key	407	8,710	2,831
Language	English	398	8,105	2,776
Source type	Journals	322	7,169	2,118
Document type	Article	281	3,082	1,922
Subject Areas	Social Sciences and Engineering	151	401	1,040
Keyword	The terms used on the search	35	123	150

The search returned 35 documents using the keyword “Multi-Method Research” or “Multimethod Research”, 123 documents using “Systematic Literature Review” and 150 documents using “Case Study Research”. Besides the Multi-Method Research Methodology that is the core investigation of this article, additionally we selected two

other different approaches, firstly a qualitative methodology centred on a content analysis of the literature (Combes and Nicholson, 2013) and then, in order to empirically corroborate the findings in the literature a case study methodology. Both techniques present advantages and disadvantages and, therefore, they must be seen as being “complementary” in gaining the overall understanding of a subject under investigation. The review process was based on the application of successive filters to exclude irrelevant papers and ensure viable results (Reis *et al.*, 2015). According to table 9, we can observe that only articles written in English were deemed relevant in order to avoid wrong interpretations. To ensure the quality of the findings, the authors only considered articles from indexed scientific journals and, to guarantee the adequacy of the results, we selected subjects from social sciences and engineering areas. From a 11,948 documents, we excluded 11,640, remaining, at the end, 308 articles that will be the focus of further analysis in the next sections of this paper.

III.1.4 Multi-method Research

Multi-method research is an increasingly prominent technique (Ahram, 2013) as some scholars have become progressively aware of its benefits, through which the strengths of one method can offset the limits of another (Bennett, 2015). The justification for the relevance in choosing a multi-method research is briefly explained by the frequent recommendations in the literature:

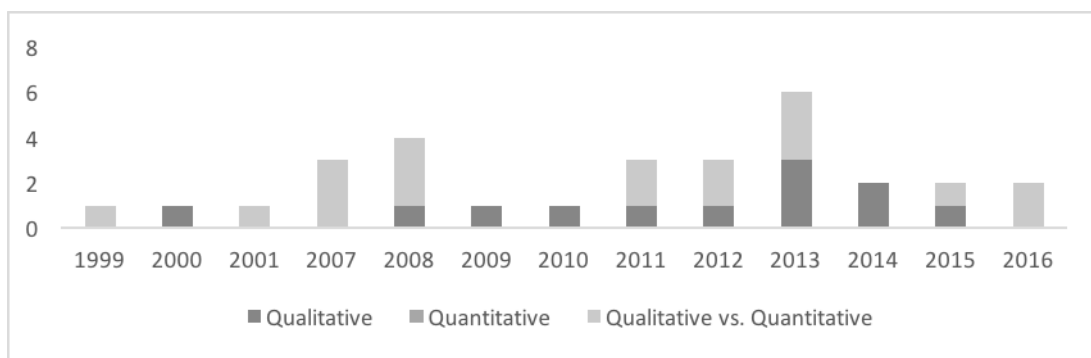
e.g., “Further work may employ a multimethod approach, using both empirical and simulated Closed Loop Supply Chain data to validate and deep our contribution.” (Cannella *et al.*, 2016).

After careful analysis of the 35 articles, we realised that, frequently, the term *mixed-* and *multi-* method research is used indistinctively. Although, since the mid-1970s there has been a prominent discussion centred on the use of mixed methods, we believe that the future lies in dropping the terms “qualitative” or “quantitative” research, so that it is referred to simply as research (Given, 2008). This argument is being strengthened, when the multi-method approach is put in place. Nevertheless, Darlington and Scott (2002) admit that there are four common approaches to mixing/multi-methods: (1) qualitative then quantitative approach - this design occurs when the findings of the qualitative research are used to develop the quantitative phase of the research; (2) quantitative then qualitative approach - when the findings of the quantitative research are needed to develop and make

sense of the quantitative phase; (3) qualitative and quantitative concurrently, is when a mixed qualitative and quantitative designs do not always have to be interdependent, the purposes of a mixed-method study of this type would generally be triangulation, complementarity or expansion, or some combination of these; lastly, (4) mixing qualitative data collection approaches, just as it is possible to combine quantitative and qualitative methods in order to more thoroughly investigate a research problem.

Much of the methods used in the literature analysed in this study are mixed, with 49% of applications. The analysis showed that 34% of multi-method research is purely qualitative research. Additionally, we noticed that there are no purely quantitative investigations, and 17% of the articles do not refer to any explicit method (graphic 8).

Graphic 8. Multi-method research



Legend: x-axis – date of publication; y-axis – number of articles published

Thus, it is possible to conclude that multi-method research is mainly focused on mixed-researches (qualitative vs. quantitative), neglecting, partly, pure-methods. Hence, we recommend further investigations to use qualitative or quantitative research methods. Furthermore, Brones *et al.*'s (2014) article is an example of a pure multi-method research. These authors presented a study that explored the points of intersection of a specific research area, via a combination of multi-methods: a literature review and a field research. In their study, several data collection methods were combined and both research approaches, i.e., systematic literature review and case study were performed in an integrated manner. The systematic literature review was performed to better explain the general constructs and their relationships by merging bibliometrics and content analysis. The purpose of the case study was to understand how different constructs were related. Next, we explore what we call pure multi-method. Since the combination of pure qualitative methods seems to be an adequate contribution to contemporary studies, and also

suitable in the extent that fits with the dimensions of Darlington and Scott (2002), as a mixing of qualitative data collection approaches – this method searches for theoretical and empirical balance in the same investigation, as shown in some of the 35 selected articles (cf. Niehaves, 2011; Waitzkin *et al.*, 2008).

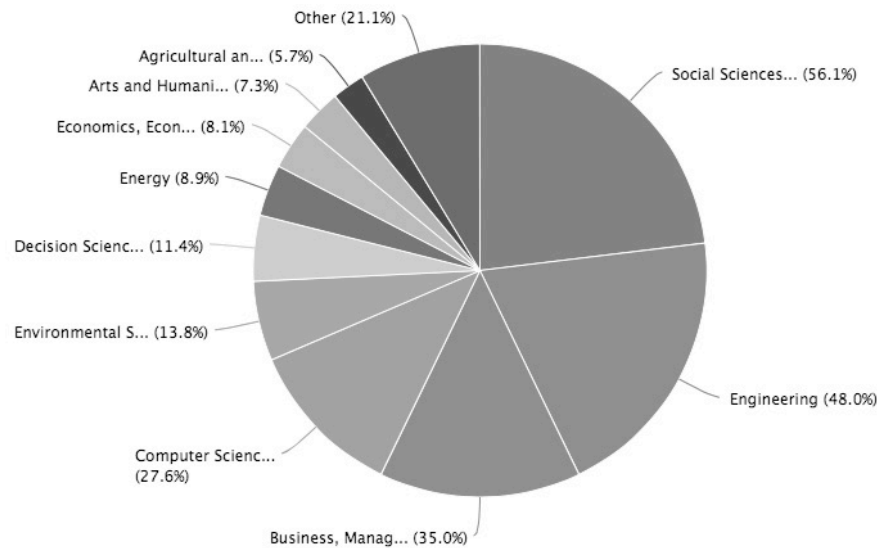
III.1.5 Systematic Literature Review

An example of qualitative research is the systematic literature review method, which in turn can be part of a multi-method research approach. According to Fink (2005), a systematic literature review is an “explicit and reproducible method for identifying, evaluating and synthesizing the existent body of completed and recorded work produced by researchers”. Overall, a systematic review is a valuable tool to discover key theories, concepts, ideas and debates around multidisciplinary studies (Hart, 1998). A brief analysis showed us that, when we use the keyword “systematic literature review” (123 articles), just 6 of these articles mentions multi-method research. But, surprisingly, we also discovered that about half of the articles (55 to be more precise) made reference to case studies. This means that, although the multi-method approach is not explicitly recognized as a methodology in the articles, it is clearly put in practice. The reason for this is possibly associated to the fact that researchers use systematic literature reviews to help building conceptual models or developing protocols to conduct exploratory interviews when performing case study research (cf. Brones *et al.*, 2014). Therefore, it is legitimate to sustain that qualitative multi-method research naturally searches for a methodological balance. This means that a method assists to develop other methods, to triangulate data or to mutually complement it. Furthermore, several articles also mentioned that the conceptual models that emerge from systematic literature reviews may be empirically validated through case study research (Esposito & Evangelista, 2014; Naim & Gosling, 2011; Qu *et al.*, 2016).

Like we previously mentioned, the initial search was restricted to the subject areas of social sciences and engineering, but Scopus can automatically refine this restriction and assign minor subject areas for a more detailed analysis. Thus, titles may belong to more than one (minor) subject area. Graphic 9 shows that 55,7% of the articles are related to the social sciences and 48,4% are related to engineering. In a multidisciplinary perspective,

these minor subject areas are likely indication that exact sciences are increasingly interested in using qualitative methods, in particular in the areas of engineering.

Graphic 9. Documents by subject area – systematic literature review (source: Scopus)



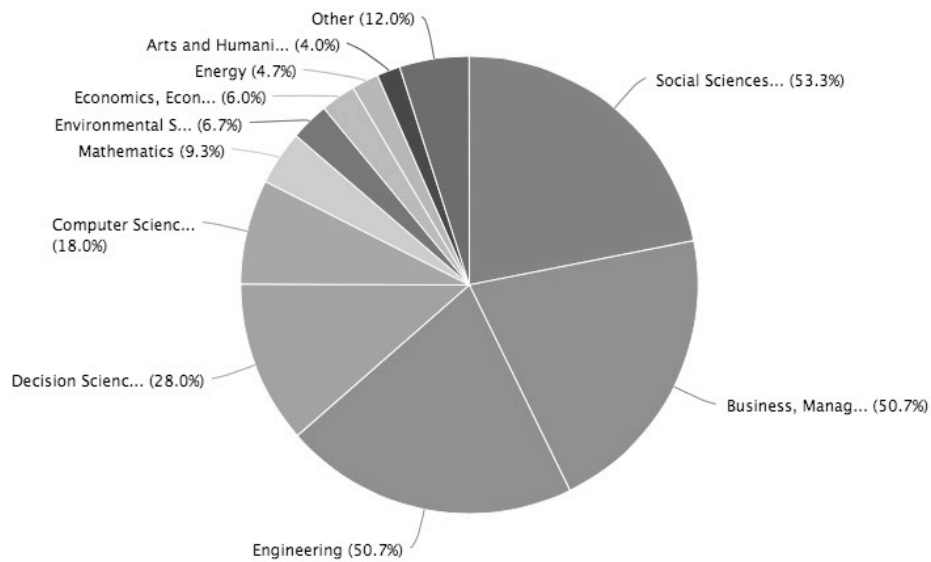
The interesting aspect here is that most part of the minor subject areas also belong to the social sciences and engineering scope, confirming the perspective that qualitative methods are becoming more widely accepted.

III.1.6 Case Study

Another example of qualitative research is the case study research, which can also be part of a multi-method research approach. Case study research offers the opportunity to explore and explain a phenomenon for which little or no empirical data exists (Yin, 2003). Additionally, the case study method enables the research to acquire an in-depth and holistic understanding of multiple aspects of a phenomenon as well as the interrelationships between the different aspects (Gummesson, 1991). A common criticism directed at qualitative research is that it fails to adhere to canons of validity (Given, 2008). Case study research may use multiple sources of data collection for triangulation purposes. Sources of data collection may consist on e.g., interviews, direct observation or document analysis (Yin, 2003). A case study research that uses multiple sources of data collection as a form of triangulation prevents an exclusive reliance on a single data collection method and, thus, aids to neutralize any bias inherent to a particular data source (Given, 2008). A brief analysis showed that from a total of 150 case study research articles, just 3 articles employ

multi-method research. As in the previous section, we also discovered that 35 articles made reference to systematic literature reviews, corroborating the view that the multi-method approach is not explicitly recognized as a methodology in those articles. The reason for this is that the literature reviews were being used to build conceptual models (Grimm *et al.*, 2016; Kickert, 2014) and triangulate data (Hilletoft, 2011). Similarly, most case study articles pertain to the social sciences and engineering fields. Graphic 10 shows that 53,0% of the minor subject areas are related to the social sciences and 51,0% are related to engineering.

Graphic 10. Documents by subject area – case study strategy (source: Scopus)



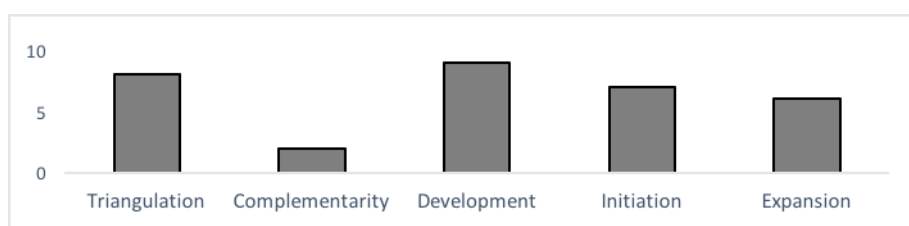
This analysis is in line with the previous section, it suggests that exact sciences are increasingly interested to use qualitative methods, in particular in the areas of engineering.

III.1.7 Pros, Cons and Issues

Yauch and Steudel (2003) that used both quantitative and qualitative methods, in two exploratory case studies, have contributed to the definitional debates to distinguish *triangulation*, which is aimed at corroborating data and reducing bias, from *complementarity*, which is aimed at deepening understanding. Similarly, Green *et al.* (1989) identified comparably dimensions that emerged from 57 evaluation studies that used mixed methods and identified five main purposes for combining methods: (1) *triangulation*, seeks convergence, corroborating and correspondence of results from the different methods; (2) *complementarity*, seeks elaboration, enhancement, illustration and clarification of the

results from one method with the results from the other method; (3) *development*, seeks to use the results from one method to help develop or inform the other method, where development is broadly construed to include sampling and implementation, as well as measurement decisions; (4) *initiation*, seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting of questions or results from one method with questions from the other method; (5) *expansion*, seeks to extend the breadth and range of inquiry by using different methods for different inquiry components. We used Green *et al.*'s (1989) dimensions in our study, and concluded that most part of the articles seek to apply results from one method to help develop the other (development), and pursue corroborating purposes from different methods (triangulation) (graphic 11) – this information is fully corroborated by Darlington and Scott (2002, p.124).

Graphic 11. Combining methods (adaptation: Green et al., 1989)



In addition, we performed the same exercise to pure-qualitative multi-method researches and we did not find significant differences. Evidence shows that the qualitative multi-method researches are undoubtedly *development*, e.g., the validity and reliability of a case study is strengthened by a literature review (theory triangulation) to develop interview protocols and data analysis coding systems (Denzin, 1989, Banerjee, 2014). Moreover, these qualitative articles also corroborate the seek for *triangulation*, e.g., as qualitative empirical research may validate and corroborate the findings on the literature review. A small difference is that, unlike the mixed multi-method studies (qualitative vs. quantitative), the pure-qualitative studies mentioned the dimension of *complementarity* in 50% of the pure-qualitative articles. This dimension has a greater weight for purely qualitative studies, unlike what is shown in graphic 11. Qualitative multi-method research differs from the mixed method studies (qualitative vs. quantitative) in the extent that it gives greater emphasis to the dimensions of development, triangulation and complementarity. Thus, qualitative multi-method research has been shown to be a multidisciplinary research tool for development, triangulation and complementary

purposes, with applicability to social sciences but also to exact sciences (cf. Gimpel *et al.*, 2012). Furthermore, contemporary investigations have shown that the bridge from social sciences and engineering methods is being diluted, although the number of studies are still incipient (3 studies in 35). The next section explains how social sciences techniques are being applied to contemporaneous engineering studies. However, the use of this type of methodology is not free of limitations. As with qualitative research methods, qualitative approaches are difficult to generalize. This phenomenon occurs because generalization is difficult to obtain without the use of repeatable, quantitative metrics (Neufeld *et al.*, 2003). Moreover, some issues may rise when an investigator uses different methods in the same study: it may carry the risk to obtain contradictory findings, but this should not in itself be considered as a problem; it is, however, a clear indication that further work may be required to understand better what is happening (Darlington & Scott, 2002).

III.1.8 Qualitative Multi-method Research in Engineering Studies

There are several plausible explanations for why engineering researchers appear to strongly prefer quantitative methods. One reason is because the majority of engineering education researchers are engineering faculty members, who were trained within the post-positivism perspective (Borrego *et al.*, 2009). Conversely, with recent calls for expanding the scope and rigor of engineering research, the use of qualitative methods to answer research questions that cannot be answered through quantitative methods is taking an increasing significance (Koro-Ljungberg & Douglas, 2008). Ljungberg and Douglas (2008) also remark that it is this growing diversity of approaches and perspectives that marks the field of engineering as vibrant and strong and that qualitative methods provide important insights that would not have been possible through quantitative approaches. The articles identified in the literature review that concern the engineering field use multi-method research (qualitative vs. quantitative), as we did not identify any pure qualitative multi-method article. Clearly, this is a gap in the literature. Qualitative multi-method studies are essential for the engineering sector. Koro-Ljungberg and Douglas (2008) express the same concern and noticed that an incipient quantity of qualitative articles was published. Still, we believe that engineering research will follow the contemporary trend, with respect to an increase of purely qualitative multi-method studies (cf. graphic 8). Researchers obstinately stay away from qualitative studies because it may appear easy and

less rigorous than quantitative research, while quantitative research requires the use of statistical methods that can provide a sense of reliability (Yin, 2003). For that reason, Borrego *et al.* (2009) suggested that all research (quantitative and qualitative) should be evaluated with regard to four aspects of trustworthiness (table 10).

Table 10. Quantitative and qualitative research criteria (adapted: Lincoln & Guba, 1985; Tashakkori & Teddlie, 1998; and Chism et al., 2008)

Quantitative Research Criteria	Qualitative Research Criteria
Validity: project and instruments measure what is intended to be measured	Credibility: establishing that the results are credible or believable
Generalizability: results are applicable to other settings, achieved through representative sampling	Transferability: applicability of research findings to other settings, achieved through thick description
Reliability: findings are replicable or repeatable	Dependability: researchers account for the ever-changing context within which the research occurs
Objectivity: researcher limits bias and interaction with participants	Reflexivity: researchers examine their own biases and make them known.

Table 10 illustrates an intellectual exercise that may put in place the credibility of qualitative researches, along with quantitative studies. In fact, qualitative research can be just as difficult to conceptualize, and be as methodologically and theoretical challenging, if not more challenging, than quantitative research (Koro-Ljungberg & Douglas, 2008). To strengthen our arguments a qualitative multi-method research is not free of data analysis, as many of contemporaneous researches use qualitative data analysis software (e.g., NVivo) allowing investigators for handling large volumes of data, as an integrative process of coding and categorizing.

III.1.9 Conclusions

Characterizing a study as multi-method research is not a straightforward task (Small, 2011) as it is essential further investigation to find a consensual and multidisciplinary definition among academia. The results suggest that: (1) multi-method approaches offer the possibility of leading to reliable results in engineering studies; (2) qualitative multi-method

research is generally balanced, usually integrating theoretical and empirical studies; (3) qualitative multi-method research differs from other mixed methods in the extent that gives greater emphasis to the dimensions of development, triangulation and complementarity; (4) new developments show that engineering studies will probably follow the contemporary trend, with respect to an increase of purely qualitative multi-method researches. One limitation of this study is associated with the incipient amount of multi-method research articles in the field of engineering, hence, the reason why most articles are qualitative is because they are mixed with social sciences articles. The search on Scopus did not make any distinction during the application of filters, the social sciences were selected in the same extent of engineering (cf. table 9). This limitation may be mitigated with the cross-contributions of similar academic articles, which obtained identical results (Borrego *et al.*, 2009). Due to space limitations it is not possible to list all the references. References can be provided on request, by contacting the first author. Further investigation is needed. In line with this article, we suggest that future research should focus on new trends of qualitative multi-method research. For instance, it would be interesting to find a consensual multidisciplinary concept/definition concerning the qualitative multi-method research. With our timely contribution, we expect to instigate other researchers to promote the engineering education and the use of contemporaneous trends to investigate.

CHAPTER IV.

New Trends and Synergies on the Technology-Based Business Networks: A Multi-Brand Experience – Omni-channel Context

CHAPTER IV.1. New Ways to Deal with Omni-Channel Services: Opening the Door to Synergies, or Problems in the Horizon?

This section presents an investigation about organizational synergies in the omni-channel service context. In doing so, it discloses new omni-channel trends and discusses its implications for managers and academics. It uses a qualitative multi-method approach, which includes more than one method of collecting data to generate comprehensiveness and rich knowledge, namely: a systematic literature review and a case study. The transition to an omni-channel service requires companies to overcome many organizational challenges and is compelling academics and practitioners to focus on its operations management. The results indicate that organizational synergies are changing the omni-channel landscape and may provide several opportunities for gaining competitive advantages by implementing new technologies (e.g. m-payments), and anticipating customer needs (e.g. multi-brand experience). It is possible that these organizational synergies are transcending the omni-channel concept, creating new trends, but to confirm this hypothesis further investigation is needed.

CHAPTER IV.2. Omni-channel Service Operations: Building Technology-Based Business Networks

This section investigates how omni-channel services operations are building technology-based business networks. It uses a case study research, which includes multiple sources of data collection for triangulation purposes, to study a real-life phenomenon. The results suggest that omni-channel companies are changing their landscape to business networks, looking for competitive advantages over their rivals. But this move incorporates new challenges, as it requires a transition based on operations management to allow these firms to adapt their processes and channels, in order to be able to collaborate in a

heterogeneous network of firms. Another possible solution is the integration of innovation technologies that are enabling the combination of firm capabilities to underpin collaborative relationships. Previous research also suggests that service operations management in an omni-channel services context is largely unaddressed, as this discipline is essential for the edification of technology-based business networks. Thereby, this section provides real-life statements and examples of firms that are moving their service operations into a business network paradigm. Subsequently, since omni-channel services are multidisciplinary in nature, these exploratory results represent a fruitful opportunity for future research to involve other disciplines than service operations.

CHAPTER IV.3. Omni-channel Service Architectures in a Technology-based Business Network: An Empirical Insight

This section investigates the existing omni-channel service architectures in the front-office of technology-based business networks. It discusses the implications from the existing alignment between the network-preferred channel with other channels and clients. The methodological approach is qualitative, exploratory in nature, and employs case study research in a large private retail bank in Portugal. It includes multiple sources of data collection for corroboration purposes, including semi-structured interviews, direct observation and official documents. Although we have identified four types of omni-channel architectures in a business network context, the case analysis revealed that only two of them meet all the requirements, namely: the mixed services and pure virtual services. For academics this is the first attempt to discuss a growing topic in the operations management literature. Thus, this study may also help practitioners to understand the challenges they may have to deal with an omni-channel strategy in a business network context.

CHAPTER IV.1.

New Ways to Deal with Omni-Channel Services: Opening the Door to Synergies, or Problems in the Horizon?



New Ways to Deal with Omni-Channel Services: Opening the Door to Synergies, or Problems in the Horizon?

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IV.1.1 Introduction

Recent times have seen an increasing interest in omni-channel services. Whereas traditional retail players are ramping up their Internet presence, online-first retailers are complementing their service delivery systems by opening stores and showrooms (Bell *et al.*, 2015). Customers are becoming more self-assured in employing electronic devices (e.g. laptops, tablets, mobile phones...) both for product search and order placement (Bernon *et al.*, 2016). Moreover, the service delivery arena is now evolving from the adoption of multi-channel approaches, where customers are offered alternative channels, towards the pursuit of omni-channel strategies that aim at leveraging on integration, and the potential synergies from combining various interfaces for customer interaction. Moving from multi- to omni-channel service systems is an important opportunity, but also a major challenge for companies (Verhoef *et al.*, 2015). It allows customers to undertake the buying process on their terms and convenience across all channels (Cook, 2014) and as a brand experience (Picot-Coupey *et al.*, 2016). Key challenges are related to the management of service operations so as to allow a seamless integration of decentralized structures (Zhang *et al.*, 2010), as it happens when orders are placed online and have to be collected in store (Beck and Rygl, 2015). What underlies is that we have witnessed a continued evolution from single-, to multi-, cross-, and

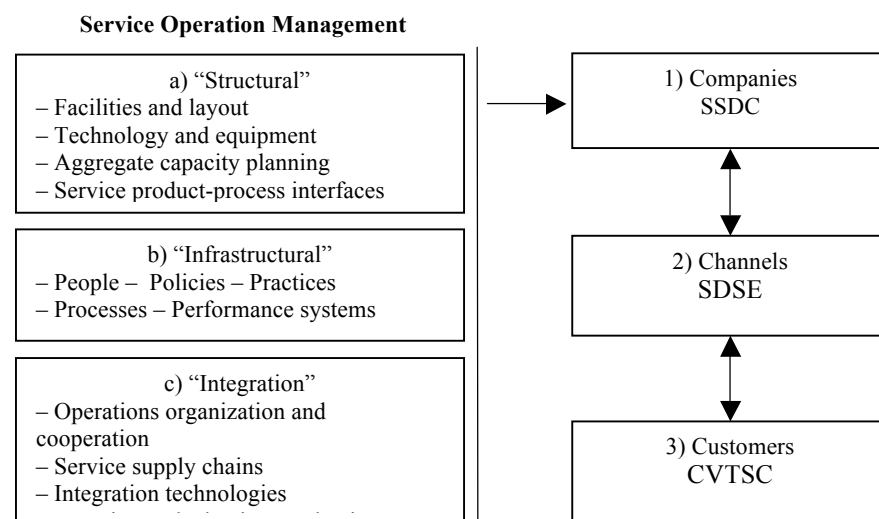
recently to omni-channel services in a relatively short period of time. So far, we asked ourselves, what is the next step? Are we consolidating or opening the doors to new strategies? The next sections aim to provide some answers to these questions.

IV.1.2 Literature review

The first step is to delimit the omni-channel concept. The multi-, cross-, and omni-channel concepts are commonly used indistinctively in the academic literature. Rigby's (2011) first mentioned the word, defining omni-channel retailing as an integrated sales experience that melds the advantages of physical stores with the information-rich experience of online shopping, but is difficult to find a consensual definition. Beck and Rygl (2015, p. 175) defined omni-channel retailing as the "set of activities entailed in selling merchandise or services through all widespread channels, whereby the customer can trigger full channel interaction and/or the retailer controls full channel integration". Picot-Coupey *et al.* (2016) performed a systematic literature review to describe omni-channel services as a seamless and integrated shopping experience across all channels that blurs the distinctions between physical and online stores, and culminates in an integrated brand experience. The emergence of Internet and new technologies have changed significantly the foundations of customer-company interactions; self-service technology is a classic example, where no interpersonal contact is required between buyer and seller (Meuter *et al.*, 2000). The availability of these new channels has drastically changed the way companies interact with customers by introducing substantial degrees of freedom in the way customers can employ different channels for each service activity (Patrício *et al.*, 2008). Moreover, it extends the possibilities for providers to facilitate customers' direct engagement with specialized intermediaries for specific service delivery activities (e.g. payment, logistics). Choi and Wu (2009) predicted, to a certain extent, the emergence of new dynamics in service delivery involving triadic relationships, i.e. buyer-supplier-supplier. More recently, Wynstra *et al.* (2015) extended the supply networks relations to service management, while they suggested a service triad as a business model (buyer-supplier-customer). For instance, if a software company outsources its helpdesk services to a third-party call-center, the primary service interaction is between the customer and the call-center, not between the customer and the software company, even though the customer has a contractual relationship with the software company (Wynstra *et al.*, 2015). What is

relevant here is the integration of more than one company to provide a service experience, and for that reason engaging in direct interactions with the final customer. Triadic relationships take place when a company contracts with a supplier to deliver services directly to its final customer. Adding a technological interaction layer to these triadic service delivery approaches leads to the need to update the components involved in the operations of omni-channel services, i.e. evolving the service channel systems that support the traditional dyadic service exchanges between providers and customers towards a network of companies-channels-customers (figure 4). To adequately conceptualize these changes, we need to resort to three major interrelated and dynamic components of service delivery systems (Roth and Menor, 2003): 1) Strategic service design choices (SSDC) (companies), 2) Service delivery systems execution (SDSE) (the channels), and 3) Customer-perceived value for the total service concept (CVTSC) (customers).

Figure 4. Triad of service management in an omni-channel context (adapted from Bernon *et al.*, 2016; Wynstra *et al.*, 2015; Roth and Menor, 2003)



According to Roth and Menor (2003) the setup of a service delivery system requires a set of company’s decisions related to a) Structural choices, concerning key decisions about physical elements of the delivery system, namely facilities, technology, equipment, and capacity; b) Infrastructural choices, concerning programs, policies, and behavioural aspects that command service operations strategy; and c) Integration choices, that refer to the issues of external integration, internal integration and adaptive mechanisms. The interface between customers and companies’ service system is performed by means of service channels that

result from the aforementioned decisions. The developments in information and communication technologies has increased the number of means by which customers are able to interact with service providers (Cassab and MacLachlan, 2009; Cortiñas *et al.*, 2010; Froehle and Roth, 2004). Sousa and Voss (2006) distinguish among two types of channels: a) Virtual channels, consisting of means of interaction using advanced telecommunications, information, and multimedia technologies (e.g. ATMs); and b) Physical channels, consisting of a means of communication with the customer employing a physical (bricks-and-mortar) infrastructure (e.g. warehouses) and resorting to customer-employee personal interactions. Froehle and Roth (2004) offered a classification for banking channels according to the type of customer interface: “face-to-face” or “face-to-screen”. In financial services companies, face-to-face contact, for example, occurs at the physical branches (Cortiñas *et al.*, 2010). This taxonomy has led to a profusion of definitions for service delivery models; namely Sousa and Voss (2006, p. 357) defined virtual service (face-to-screen) as “the pure information component of a customer’s service experience provided in an automated fashion through a given virtual channel” and physical service (face-to-face) “as the portion of a customer’s service experience provided in a non-automated fashion, requiring some degree of human intervention, either through a virtual or physical channel”. Virtual services have grown in number and sophistication with the recent emergence of mobile payment technologies (m-payment). These are solutions that have been anticipated since the early 2000s, but it was only in recent years that their roll out has gathered strength, particularly in the USA, Europe and some parts of Asia (Mallat and Tuunainen, 2008). As the availability and reliability of these systems increases, and customers get more acquainted and qualified, they increasingly employ electronic devices for diverse service operations, ranging from information search to order placement and payments. M-payment possibilities came into the retail sector and dramatically altered the process by which products pass from retailer to consumer, but it has received surprisingly little scholarly attention (Groß, 2015; Taylor, 2016). After all, mobile payment will become an uncontested mode for paying for goods in the near future (Raina, 2014, p. 188). Such technological innovations lay the ground for service systems where the co-creation of value will be become increasingly common (Cabiddu *et al.*, 2013). In this sense, co-creation, is a new paradigm in the management literature that allows companies and customers to create value through interaction (Galvagno and Dalli, 2014). The growing

technological developments give academics enough confidence to argue that omni-channel services will continue to evolve and at the same time will create new trends.

IV.1.3 Methodology

This article follows a qualitative multi-method approach. Consistent with prior definitions, we define multi-method research as one that includes more than one method of collecting data and or more than one method of analyzing the data (Mills *et al.*, 2010). Such methods can be supported by qualitative techniques, quantitative techniques, or a mix of both, in what is called mixed-methods approach (Mills *et al.*, 2010; Davis *et al.*, 2011). Dividing this study into two independent articles could make the methodological approach more suitable to the reader, however, recent work advocates that combining two or more methods of collecting data generates comprehensiveness and rich knowledge (Mills *et al.*, 2010), counterbalancing the weaknesses that are inherent to individual methods (Wood *et al.*, 1999). The first method consisted in conducting a systematic literature review, justified by the fact that omni-channel services are a relatively new area of study (Thorpe and Holt, 2008). Its purpose was to identify recent trends in the utilization of channels for service delivery. Building on the literature review, a case study was then conducted to empirically validate the theoretical insights. The literature search was performed on Scopus.com, one of the largest abstract and citation peer-reviewed literature databases, using the word *omni-channels* for article title, abstract and keywords, on December 14, 2016.

Table 11. Systematic literature review.

Criteria	Scopus Search	
	Filters	Documents
Keyword	Omni-channels	67 documents
	Restrictions	
Document type	Article, book chapter and conference paper	57 documents
Source type	Journals, books, conference proceedings	45 documents
Language	English	44 documents

The systematic literature review offers a qualitative overview on the trends of omni-channel services in the management literature. The results support the view that the literature is still incipient (see table 11), with only 67 documents emerging on the Scopus database. The

subsequent case study-based research aimed at further understanding and corroborating the findings from the literature review. It used multiple data collection methods, including 5 semi-structured interviews, direct observations and analysis of official documents from a large private retail bank. The number of participants selected for the interviews is justified by theoretical saturation. Saunders and Townsend (2016) consider saturation as a plausible justification for the number of participants, and comment that saturation is being considered the gold standard by some (Guest *et al.*, 2006). Participants were chosen according to the employees' different functional areas and different levels of responsibility at a bank's physical branch. Employees tend to follow very similar rules and procedures across branches, for which the research team had reason to believe that data collection from one branch would probably not be substantially different on a different branch. Observation, as a data collection method, involves systematically seeing and listening (Taylor-Powell and Steele, 1996) in order to enable learning and analytical interpretation (Saunders and Lewis, 2007). During the direct observation field notes were taken. These field notes came from the analysis of the real life phenomenon, and from informal conversations with the interviewees. At the end, the data from direct observation was confronted with the interviews for triangulation purposes. The choice to carry out the case study in the context of banking was driven by the available academic and empirical evidence about the pioneering role that financial services have been taking in the adoption of new channels in service delivery (Sousa and Amorim, 2009), contributing to pave the way for new trends (e.g. multi-channel services).

IV.1.4 Findings

This section provides a theoretical overview and its empirical validation derived from the case study. The focus of this study is on new trends in omni-channel services, notably its synergies and possible (dis)advantages. Data analysis and discussion integrates statements collected from employees, direct observations and documental analysis.

IV.1.4.1. Moving from a marketing to an operations management perspective

During the latter part of the 20th century, the service sector grew significantly in virtually every developed country, leading service operations management to recall for a legitimate field of its own (Heineke and Davis, 2007). This rapid growth was determined by several factors, including the application of information technology/information

systems (IT/IS), which have significantly altered the landscape of operations management (Gunasekaran and Ngai, 2012). The IT/IS enables the combination of competences, capabilities, and knowledge (Srivastava and Gnyawali, 2011) that underpin value co-creation in collaborative relationships (Payne *et al.*, 2008). Cabiddu *et al.* (2013) exemplifies with the airline sector, where information technology has influenced operations (e.g. from paper-based ticketing to e-ticket) as well as service delivery (Basole and Rouse, 2008). Contemporaneous evidence suggests that omni-channel services literature has contributed to reinforce earlier arguments. However, Reis *et al.* (2015) noted that preliminary insights from the multi-channel services came from the marketing literature. They alerted scholars for the apparently need to carry out studies in the operations management sphere. *De facto*, the introduction of new technologies and the “shifting towards omni-channel strategies were so complex and engaging that it is impossible to evolve directly from a multi-channel, siloed strategy to an omni-channel strategy without any transition” (Picot-Coupey *et al.*, 2016, p. 347). This transition has clearly compelled academics to increase their focus on operations management, as shown by the significant increase of academic articles published in scientific journals. If we analyze the systematic review, we verify that 47% of the current literature is based on operations management, being a higher percentage when compared with a similar study by Reis *et al.* (2014) on multi-channel services (only 2.5%). The roots of this phenomenon are probably linked with the calls for organizational adaptation. Companies have found that they have advantages in serving their customers using an integrated network of channels, but these changes normally require process change. Hübner *et al.* (2016) corroborates this, stating that the transition from multi-channel to omni-channel requires the redesign of logistic structures and, concomitantly, the optimization of processes (Roth and Menor, 2003). In this context customer participation has an important role. Process optimization needs to align the transition to omni-channel services with customer requirements, as the company and the customers’ roles converge (Prahalad and Ramaswamy, 2004). Customers generate value through interaction (Vargo and Lusch, 2008), as their participation is an important element in the value co-creation process (Vega-Vazquez *et al.*, 2013). When customer involvement into the company’s operations takes place, joint value creation occurs, which means that the customer is engaged in, for example, the design or in front-office operations (Grönroos, 2011). However, relatively little is known about how

customers engage in the co-creation of value (Payne *et al.*, 2008), especially in an omni-channel context. The future of omni-channel services and its implications to operations management are still uncertain, but will certainly be promising.

IV.1.4.2. Synergies between companies: systematic literature review

The results of the systematic review showed a plethora of articles referring to companies' integration and adaptation to the omni-channel strategy (Bernon *et al.*, 2016; Hübner *et al.*, 2004), but few referred to synergies. An exception is Picot-Coupey *et al.* (2016) who investigated internal synergies between clicks and bricks, and how successful the transformative process to become omni-channel can be. Other authors pointed out the need to focus less in products or services, and more in consumer-centric approaches (Melero *et al.*, 2016). Melero *et al.* (2016) exemplified how Decathlon and Zara companies introduced new communication channels to interact with their customers: Decathlon with a mobile application (App) to facilitate contact between customers who practice the same sport and Zara achieved a leading position on social networks, where customers can interact with the company. Also in the omni-channel context, Notomi *et al.* (2015, p. 38) stated that "retailers have found themselves forced to compete for customer attention like never before". The underlying question is: do organizations have to do this on their own? Maybe not. Notomi *et al.* (2015, p. 38) remarked that "at the same time, online retailers are expanding their reach by partnering with companies that already have stores and service establishments", because today's consumers no longer go to stores merely to shop; they pursue the optimal purchasing experiences, e.g. best prices, best information. This seems a sensible thing to do because, theoretically, we already have companies that collaborate with each other to best serve their customers. In this regard, Verhoef *et al.* (2015) gives the examples of Booking.com and Tripadvisor.com, which shook-out traditional travel intermediaries. These are just a few examples that emerged from the systematic literature review. Companies can also interact with each other to optimize their services. For example, Rumbo.com and Edreams.com have understood the advantages of adding several airline agents to their search engines so as to provide the cheapest available prices and the lowest waiting time to their customers. Indeed, working in partnership can open up new opportunities. Other companies are also adopting this strategy internally. Starbucks Canada is implementing mobile payments through an app (Pastoll *et al.*, 2014), enabling customers

to make virtual payments of their purchases in any store of its network. These synergies between companies, either within or between groups of companies, can provide a number of opportunities still to investigate. In this sense, it is necessary to address the possible interactions that may arise from the synergies between organizations not only to respond to customer's needs and expectations, but also to promote their retention. From the literature review, we conclude that there is a need to: i) address operations management issues related with integrated service experience; and ii) evolve from synergies between channels (bricks and clicks) to synergies between companies and thereby introducing new degrees of freedom in how customers can interact with different companies for each service activity.

IV.1.4.3. Basic and complex synergies: case study analysis

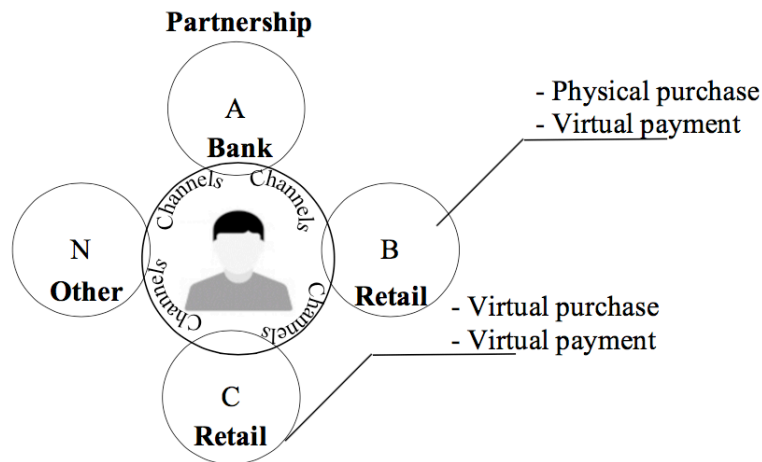
Data analysis from the case study highlighted, in the strategic plan (2016-2018), the importance of channel management, notably by referring to the implementation of more digital and technological tools for customers and workers (explicitly mentioned in the bank's official documents). Similarly, a contact sales employee emphasized that the bank was pursuing a transition from multiple channels to an omni-channel strategy, e.g. is investing and making available to its contact sales employees tablets to facilitate interactions with customers. The same contact sales employee reinforces that the required organizational effort is high, because the bank has to invest on: (1) technology and, concomitantly, on restructuring existing processes as new channels are introduced (i.e. revisiting its structural decisions); (2) training its employees (i.e. revisiting infrastructural decisions) and; (3) disseminating the information regarding the availability of new channels to the customers (i.e. acting on the integration of the components of the service system). Cook (2014) discusses the nature of the omni-channel customer and the associated changes required from the physical retail spaces, referring to the case of Argos, a brick-and-click store that started to use iPad-based kiosks. These kiosks and the empowered staff were helping their customers in selecting the best suited products and purchasing. In the case study, the concept behind this approach is to simplify and speed up the sales process, removing the traditional queuing approach in service provision (Cook, 2014). When companies do not have capacity to add new technology to their portfolio (structural limitation), or do not intend to invest in additional physical stores or web

environment, a viable strategy is establishing partnerships. Examples of basic synergies can also be found in the literature. Ebay.com proposed pickup points at Argos stores in the United Kingdom (Beck and Rygl, 2015), giving support to Notomi *et al.*'s (2015) arguments mentioned before. Amazon, originally a pure online player, already opened brick-and-mortar bookstores and is planning to venture its retail operations to 100 pop-up stores in the United States. These examples show that an omni-channel strategy can be achieved in several ways. On this subject, the contact sales employees argued that the bank was already preparing complex channel synergies, building on the establishment of synergies with other companies from different specialties. Companies that complement each other create value networks (Vargo and Lusch, 2008) in which resources of the partners are orchestrated into a novel value proposition that, in turn, is offered to customers. This co-created value exists when several firms interact with one another, e.g. by means of technological innovation to create a value proposition that can generate greater value for customers compared to a value proposition offered by any single company (Cabiddu *et al.*, 2013). For example, the bank already participated in the MB Way service, a functionality that allows customers to connect the bank to several retail companies. This solution allows customers to combine an act of physical purchase and virtual payment, by making a mobile payment for a service or product purchase in a retail store. This kind of synergy is complex because customers can use the payment function across a network of companies, and also combines several types of services (physical and virtual). In return, customers provide value to the network of companies in the form of profits (Gupta and Lehman, 2005), although they also may compete for the extraction of economic value (Prahalad and Ramaswamy, 2004). The roles of producer and consumer are becoming indistinct, as joint interactions lead to the development of new business opportunities (Galvagno and Dalli, 2014) and reciprocally co-creating value through the integration of resources (e.g., channels) and customer skills (Vargo and Lusch, 2008). We believe that this typology of service delivery is beyond the omni-channel capabilities, but to determine the implications of these synergies and the co-creation of value further investigation is needed.

IV.1.4.4. Opening the door to synergies or problems in the horizon?

Mobile devices have a number of characteristics, such as ultra-portability and location sensitivity, assisting consumers in a number of shopping activities: search, comparison, purchase and post-purchase (Shankar and Balasubramanian, 2009; Voropanova, 2015). Interviews from the case study revealed that m-payment technology created new prospects in omni-channel services, notably by “increasing the possibility of choosing simultaneously other channels to perform a purchase” (sales employee statement). This is consistent with the literature in that m-payments may facilitate the showrooming practice, which consists of “using mobile technology while in-store to compare products for potential purchase via any number of channels” (Rapp *et al.*, 2015, p. 360). For instance, a customer can access information and opinions from a variety of sources, including friends, competitors, consumer-to-consumer reviews, and even other channels at the focal retailer (virtual channels and/or physical channels). Additionally, the interviews revealed that m-payments are actually opening the door to synergies, as these technologies are bringing together companies that are using or intending to use the same means of payment. A sales person added that in the case of partnerships, the free-riding phenomenon (when a consumer uses a retailer’s channel to prepare a purchase and then switches to another retailer’s channel to purchase (Heitz-Spahn, 2013) may be mitigated, although this not yet been corroborated in the literature. Nevertheless, we know from the literature that consumers can visit a retail website via a mobile device, even in a competing retail store, and even purchase at a competitor’s on-line shop without leaving the brick-and-mortar store (Voropanova, 2015). Allegedly, when it comes to partnerships, the free-riding phenomenon is not applicable. Direct observation confirms that a customer may choose the Supermarket B that has a partnership with Bank A, which allows the customer to pay for a product with her mobile device. This process comprises simultaneously a physical purchase and virtual payment, involving two different companies. On the other hand, if the customer wishes to add another purchase to the shopping cart, but does not like the wine offers of the Supermarket B, she can alternatively buy that product online from Supermarket C, using her mobile device to pay the purchase (figure 5).

Figure 5. Omni-channel service synergies



This process connects three different companies; it encompasses, simultaneously, a physical and a virtual purchase with a virtual payment (m-payment) to deliver a service to a customer. What is new here is that we believe this strategy goes beyond the omni-channel experience that originally reflects the articulation of different channels in the context of a single service provider. Picot-Coupey *et al* (2016, p. 339) refers to omni-channel as an integrated “brand experience”, but the empirical insights reflect more a multi-brand experience, since it entails several companies. There are, however, limitations. The network of channels of a partnership transcends the channels of a single organization. Thus, customers may have to choose over a portfolio of channels of different organizations, which will certainly bring new operations management challenges. But these challenges can also bring problems on the horizon, the transition from multi- to omni-channel services requires process change, but in this new development stage a paradigm shift is also needed - from a single company to a network of companies, and an overall portfolio of channels.

IV.1.5. Conclusions

The omni-channel service transition typically requires reengineering of processes and, thus, has led academics to focus more in operations management issues. When companies do not have the capacity to add new technologies to their portfolio or, for some other reason, do not have such interest, they may seek synergies (partnerships). These synergies provide a number of opportunities to customers and organizations: e.g. a multi-brand

experience, and the end of the free-riding phenomenon. In the current service delivery contexts, where companies can rely on multiple channels to support different interactions with customers, these organizational synergies (i.e. different companies coordinating to provide distinct activities in service delivery) call for a conceptualization that is beyond the omni-channel concept, as they bring together a mix of channels and providers that need to be articulated in a seamless interaction with the customer. Since this is a recent layer in the service channels landscape, the full understanding of its implications requires further investigation. This article is important for practitioners because it attempts to identify new trends that may be relevant to organizations so as to gain competitive advantages - especially with regard to value co-creation, as synergies between firms lead to the emergence of value networks, making them more competitive. In return, customers collaborate in co-creating value but also compete for the extraction of economic value. Academically, this article shows that the omni-channel concept may need to be adapted to be in line with developments in real-world practice. This paper is not free of limitations. Some relevant articles may be missing since the search is restricted to a selected keyword. This work is also limited because of its exploratory nature, but we hope that it can encourage future investigations at the level of the omni-channel services. On the other hand, by integrating a conceptual and empirical study, the qualitative multi-method approach provided a balanced design, paying due attention to the dimensions of development, triangulation and complementarity, as well as contributing to an overall understanding of the subject under investigation. Due to confidentiality reasons we have not provided any information about key informants and the respective organization. According to Mills *et al.* (2010) the removal of identifying information and suppression of confidential information can lead to the removal of the contextual information that is of greatest interest and value to the researcher. To maintain the scientific rigor, the list of all documents of the systematic literature review can be provided on request by the first author. In line with the main results, it may be interesting to conduct a mixed-method investigation in other geographical areas. It seems also relevant to explore some issues (e.g. new trends and synergies) that still remain unclear and require further investigation. With this timely contribution we expect to instigate other investigators to contribute to the operations management discipline, and to advance knowledge in the omni-channel service arena.

CHAPTER IV.2.

Omni-Channel Service Operations: Building Technology-Based Business Networks

Omni-channel Service Operations: Building Technology-based Business Networks

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Keywords: Omni-channel services, Business networks, Case study, Service operations, Innovation technologies.

IV.2.1 Introduction

The service sector is an important part of the global economy and is growing steadily, stimulated by diverse factors such as automation, electronics and information technology (Maglio and Spohrer, 2008; Gummesson, 1994). Today, firms are also adopting new channels (Geyskens *et al.*, 2002) as these networking technologies are leading to unprecedented levels of customer connection and empowerment (Chou *et al.*, 2016). For instance, financial services have been pioneers and partially responsible for the adoption of new service delivery models through the implementation of virtual service (Sousa and Amorim, 2009). The progressive adoption of technology interfaces to support customer interactions introduced profound changes in the operations of service delivery systems, that led to the establishment of an early tradition of multi-channel service delivery (McKechnie *et al.*, 2006; Reis *et al.*, 2015), where customers are allowed to combine interactions with service employees with face-to-screen service (Froehle and Roth, 2004). Furthermore, customers prefer a variety of channels options when they undertake the process of purchasing good and services (Chiou *et al.*, 2012; Chiu *et al.*, 2011; Verhoef *et al.*, 2007). Whereas multi-channel was in vogue in the last decade, we now observe a move to the so-called omni-channel movement (Verhoef *et al.*, 2015). But the omni-channel strategy is not the only competitive instrument. Recent work on competitiveness has also emphasized the

importance of business networking, the evidence illustrates that those firms which do not cooperate reduce their ability to enter into exchange relationships (Pittaway *et al.*, 2004) and lose the ability to share markets (Holm *et al.*, 1999). This paper seeks to contribute to the research on how omni-channel service operations are helping companies to build business networks based on technology. In the next section we review the literature and discuss the different concepts. Then, we describe the methodological approach, the study sample and the analysis approach. The following section discusses the empirical findings, by providing real-life statements and business network examples. Finally, we present the academic and managerial insights, limitations and future research.

IV.2.2 Omni-channel Service Operations

The move from multi- to omni-channel (Verhoef *et al.*, 2015) renews the need to define each term, by its complexity and span, as customers can move from a single contact point to a brand experience. The current literature provides very limited insights over these definitions, as further investigations are needed. Even so, we will try to provide a definition to each concept. Usually, a single channel is defined as a customer contact point (virtual or physical), where customers can gather information or purchase a service or goods (Aradhana, 2016; Chiu *et al.*, 2011; Hsieh *et al.*, 2012). Multi-channel is a widespread of channels that simultaneously offer information, products, services or support to customers through two or more synchronized channels (physical and/or virtual) (Beck and Rygl, 2015; Fornari *et al.*, 2016; Huang *et al.*, 2016). Cross-channel is defined as a set of integrated activities that involves a widespread of channels to offer accessible services or products in-store and/or on the Internet, whereby the customer can trigger partial channel interaction and/or the retailer/service provider controls partial channel integration (Beck and Rygl, 2015; Jeanpert and Paché, 2016). The terms multi- and cross-channel do not share a common meaning, as their boundaries are often blurred in the literature (Beck and Rygl, 2015). Although it is difficult to determine an obvious demarcation the multi-channel term is considered by some authors as an umbrella term. As cross-channel term is specifically addressed to channels that can be partially triggered by customers and continuing freely riding through another compatible channel(s) (Beck and Rygl, 2015) to purchase a service or product, but not for all channels widespread, which is defined as omni-channel. Providing omni-channel services is sometimes categorized in gray

literature, as no formal categorization in academic articles exists (Beck and Rygl, 2015). However, Picot-Coupey *et al.* (2016) performed a systematic literature review to describe omni-channel services as a seamless and integrated shopping experience across all channels that blurs the distinctions between physical and online stores, and culminates in an integrated brand experience. The introduction of new technologies and the “shifting towards omni-channel strategies were so complex and engaging that it is impossible to evolve directly from a multi-channel, siloed strategy to an omni-channel strategy without any transition” (Picot-Coupey *et al.*, 2016). This transition will probably induce academics to increase their focus on operations management, as it will require the redesign of logistic structures and the optimization of processes (Roth and Menor, 2003). The underlying challenge is to align the transition to omni-channel strategy (Picot-Coupey *et al.*, 2016) with the ability of operations management to produce and deliver a service package which matches the expectations of customers (Armistead, 1990).

IV.2.3 Technology-based Business Networks

Today’s customers have access to a wider range of technologies than previous generations, when they want to undertake a purchasing process at a time and place that suits their own needs, using technology that they have in their hand or in front of them (Cook, 2014). On their side, companies need innovative ways to cooperate and share resources and competencies, leverage information and communication platforms, in order to create value together with customers (Bouwman and Fielt, 2008). Moreover, companies need to develop capabilities to develop new businesses that take ideas and technologies to market (Chesbrough, 2010). An essential element in the field of technological development is the networked nature of the development and production of services, making companies with limited competence to ally with others, even competitors, whenever possible (Helander, 2004; Ritala and Hurmelinna-Laukkanen, 2009; Palo and Tahtinen, 2011). Still, such networks remain under-studied (Moller and Rajala, 2007) while research is still focused on the supply chain and logistics flows (Moller and Svahn, 2009). Aligning the customer needs and the business networking opportunities can be one of the keys to success as partnering becomes an effective skill needed by companies to survive in a turbulent business environment (Rikkiev and Makinen, 2009). This may need significant technology investment, procuring or integrating technology platforms. It can also lead to

re-thinking the role of the physical stores in the overall omni-channel experience (Cook, 2014). Despite studies suggesting that most senior executives expect their organizations' future growth and profits to come largely from new-technology-based products (Hamilton, 1981), technology strategy and its relation to operations management have not yet been studied enough. Technology-based services are services often composed of different technologies (Palo and Tahtinen, 2011) and this carries risks, as markets shift rapidly, technologies proliferate unceasingly, and thus innovation cycles become shorter (Ahn and Skudlark, 2002). Measuring the pros and cons, manufacturing firms as well as service firms have actively entered into new service areas based on technology (Kim *et al.*, 2015). In addition, various definitions of "business networks" have been discussed, however the most common definition of "network" is a set of entities and the relations between all elements of the set (Kilkenny and Fuller-Love, 2014). Jackson and Matsumoto (2016) corroborate this argument, and define a "business network" as traceable patterns of formalized relationships and other business-specific linkages that are negotiated and sustained between individual organizations. The terms "partnership", "alliance", "collaboration" and "cooperation" are used equally as synonymous in a sense of "partnerships among firms that work together to attain some strategic objectives" (Harrigan, 1988).

IV.2.4 Methodology

Empirical research is becoming increasingly important in both manufacturing and service operations (Roth, 2007; Roth *et al.*, 2008), and in particular, the percentage of research in service operations that is empirically based has increased (Gupta *et al.*, 2006; Roth and Menor, 2003; Voss *et al.*, 2008). This exploratory case study research offers the opportunity to explore and explain a phenomenon for which little or no empirical evidence has been explored (Yin, 2003). This case study uses multiple sources of data collection for triangulation purposes. These sources consisted in interviews, direct observations and documental analysis. A case study that uses multiple sources as a form of triangulation prevents an exclusive reliance on a single data collection method and aids to neutralize any bias inherent to a particular data source (Given, 2008). The study builds on 10 semi-structured interviews conducted with representatives in a Portuguese large private retail bank. The number of participants selected for the interviews is justified by theoretical

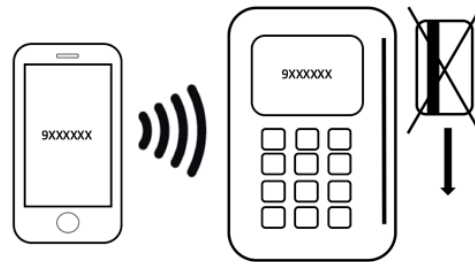
saturation. Saunders and Townsend (2016) consider saturation as a plausible justification for the number of participants, and comment that saturation is being considered the gold standard by some (Guest *et al.*, 2006). The number of participants was chosen according their different levels of responsibilities at the bank's physical branch. Direct observation involved systematically seeing and listening to enable empirical knowledge about the phenomenon (Taylor-Powell and Steele, 1996), these observations were recorded in a research diary (Fisher, 2007) that had notes of informal conversations, observation of meetings, and processes (Voss *et al.*, 2002). The analysis of internal documents was employed with corroboration purposes, resorting the official website, quality inquiries, bank internal reports, as recommended by Tharenou *et al.* (2007). The study addresses a Portuguese private bank, given the fact that the banking industry offers a rich setting of increasing employment of omni-channel services. Thus, over the past three decades' banks have been pioneers in adopting new information communication technologies (Cortiñas *et al.*, 2010) and in adopting new channels in service delivery (Sousa and Amorim, 2009). Moreover, as technology continues to evolve, banks are restructuring their business to provide services to customers anywhere and anytime (Wong and Kim, 2016). The data was analyzed according to the technique of content analysis (Mills *et al.*, 2010). We categorized textual data into codes or categories, in order to identify consistent patterns and relationships between variables in a way of reducing data and making sense of them (Given, 2008). To this end, this study resorted to the use of data analysis software (NVivo), allowing to code qualitative data, in order to build and hierarchize categories and subcategories to identify emerging patterns and ideas. Whereas case study research is a well suited method for operations studies (Bloor and Wood, 2006; Voss *et al.*, 2002), in particular for exploratory research, it holds inherent limitations related to the generalizability of a single case study research, which can be filled with complementary studies of peer researchers.

IV.2.5 Findings

The case study allowed for the observation of alliances between heterogeneous firms, e.g. banks and retail shops, which resulted in a business network to generate competitive advantages against their rivals. For instance, SIBS group, a company that operates mainly in the payments sector had recently launched the MB Way Application. The MB Way

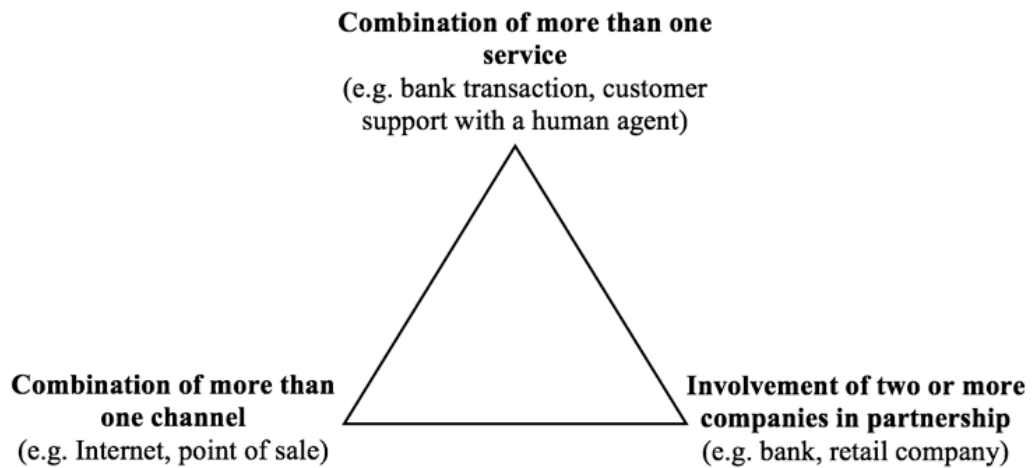
service allows customers to connect a bank to several retail companies that have joined the MB Way service. This contactless service enables customers to conduct mobile payments (m-payments) when they purchase a service in a retail company (figure 6).

Figure 6. MB Way service, contactless technology for m-payments



The m-payments allow for immediate transfers at the retail store, therefore combining an act of physical purchase and virtual payment, without the need of a debit/credit card. This means that a customer may simultaneously connect his bank to a retail company in order to pay a physical service with his mobile device. This example illustrates that customers are not just debit/credit card holders, they make part of the process as self-service buyers and the purchase is encompassed on a virtual service. Sousa and Voss (2006), differentiate virtual from physical service concept as: virtual services are pure information component of a customer's service experience provided in an automated fashion through a given virtual channel; and physical services as the portion of a customer's service experience provided in a non-automated fashion, requiring some degree of human intervention, either through a virtual or physical channel. Empirically, we found that there is an involvement of two or more companies in a partnership (e.g. bank, retail store), the combination of more than one channel (e.g. Internet, point of sale) and more than one service (e.g. bank transaction, customer support by a human agent), which is customer perceived as an integrated network of brand experiences or multi-brand experience (figure 7).

Figure 7. Integrated network of brand experiences (multi-brand experience)



These partnerships most probably occur because firms which do not cooperate and which do not formally or informally exchange knowledge limit their knowledge base long term and ultimately reduce their ability to enter into exchange relationships (Pittaway *et al.*, 2004). In this sense, practitioners are also trying to implement this strategy around the world, e.g. Apple Pay, as this strategy allows customers that use iPhone and/or Apple Watches to pay in stores that accept contactless payments at point-of-sales (POS) terminals and online (Margraf *et al.*, 2016). To further substantiate the previous argument Fiedler (2015) analyzed the factors that influenced the acceptance of contactless payment devices by customers in Germany, setting the example of Apple Pay. Nevertheless, there is a lack of studies in the literature and, to the best of our knowledge, this article is the first attempt to investigate how omni-channel service operations are building technology-based business networks. Cabiddu *et al.* (2013) exemplifies that on the airline sector the information technology has influenced operations (e.g. from paper-based ticketing to e-ticket) the same happened in our case study. Cook *et al.* (2014) also discusses similar issues, the nature of the omni-channel customer and the associated changes required from the physical retail spaces referring to the case of Argos, a brick-and-click store that started to use iPad-based kiosks. These kiosks and the empowered staff were helping their customers in selecting the best suited products and purchasing. According to the bank interviews, we realized that the same changes were performed at the bank, mainly concerning the service operations, with the intention of bringing the bank closer to the omni-channel standards and their customers

(e.g. introduction of iPads). Another example of a typical omni-channel service of this bank is the online account opening. Real-life statements confirm that, contrary to what was advocated in multi- and cross-channel services, customers can now start an account opening process through the Internet on their mobile phone, tablet or laptop, while waiting for their time to be attended at the branch office. At the end, the customer only has to close the process presently with a digital signature on the bank employee's iPad. Besides these changes, when the bank integrated the MB Way concept it was underpinned the interest to collaborate in a heterogeneous network of companies, in order to get access to a wider customer market. The respondents stated that the underlying objective is to gain the customer loyalty within the network, i.e. customers who get used to this type of payments will have the propensity to use it again, over the traditional payments (e.g. debit/credit cards). There are no relevant differences between the MB Way and Apple Pay features. According to an internal consumer survey we found that SIBS is questioning the MB Way customers, in order to check out their propensity to join the Apple Pay as soon as it arrives to Portugal. Apple's iPhone with its current market penetration has the potential to provide a widespread and well known brand concept as basis for contactless payment technology (Fiedler, 2015), conflicting with the existing MB Way technology. In fact, SIBS intends to avoid the penetration of the Apple Pay in Portugal; according to interviews, this event can probably be prevented using innovation and with service operations, making MB Way a differentiating element. This argument corroborates the existent literature, as the technology-based services carries risks, as markets shift rapidly, technologies proliferate unceasingly, and innovation cycles become shorter. Meanwhile, Groß (2015, p.226) highlighted that consumers are "highly sensitive to issues of cost, risk, privacy, network security, transaction protection, and trust", elements that are outlined in recent studies (Oliveira *et al.*, 2016; Kerviler *et al.*, 2016) involving risks of m-payments, as frauds and skepticism. Wong and Kim (2016) argue that when mobile devices communicate with merchant point-of-sale systems, there is a risk of data leakage because third party applications in point-of-sale systems might access private data stored on the device without the user's knowledge or permission, and that is what frightens the customers. Moreover, a recent study evaluated the security of Apple Pay for transactions at POS terminals and proved that relay attacks cannot be avoided, in general, however, particular security features of Apple Pay prevent that relay attacks can be practically exploited (Margraf *et al.*,

2016). Margraf *et al.* (2016) demonstrates that the security level of Apple Pay is comparable with the security level of payments with traditional credit cards, in contrast to the mobile payment service Google Wallet, no serious security vulnerabilities exists. To best of our knowledge there are no scientific studies, to date, that have involved the security level of the MB Way application. Even so, contactless payment and m-payments are believed to be the new non-cash payments process for the upcoming decade (Turban *et al.*, 2015; Koether, 2014; Schmiedel *et al.*, 2012) as retailers have the motivation to reduce their ratio of cash versus non-cash, as handling of coins and banknotes is the most expensive payment instrument (Xiao *et al.*, 2015; Gupta, 2013; Salmony, 2011). These costs include expenses for transfer costs, four eye principle in handling and counting, security measures during and after office hours (Fiedler, 2015). As far as banks are concerned, they also benefit from the implementation of contactless systems (e.g. MB Way). According to internal bank documents, fees are charged on retail shops when the customers use these systems. In sum, the adoption of a technology-based business network is beneficial to all parties involved until further studies prove otherwise. Concerning the omni-channel service operations, the contactless technology and the m-payments will better integrate virtual and physical services. For instance, we know that customers use virtual services to avoid queue lines (Cook, 2014), the contactless technology reduce queuing time as people do not have to stand in queue for long time to get their transactions done (Garg and Jain, 2015). Another example is the improving service delivery; the contactless technology improves delivery time for e.g. if we have this technology installed in metro stations people would miss their trains less frequently as they used to (Garg and Jain, 2015). What is new is that technology-based business networks are the next evolutionary step of the omni-channel services, which can only be achieved with an adaptation of the service operations. In some cases, omni-channel strategy is now more than a company brand experience, it is becoming an integrated network of brand experiences, a new way of doing business. Table 12 summarizes this section.

Table 12. Technology-based business networks

Opportunities	Challenges
Is a multi-brand experience – a new way of doing business enabling the combination of more than one company, its channels and services to meet customer needs.	Carries risks as markets shift rapidly, technology proliferates unceasingly, and innovation cycles become shorter.
Generates competitive advantages against their rivals and introduces new dynamics built on service operations.	Customers are highly sensitive to issues of risk, privacy, network security, transaction protection and trust (Gob, 2015).
Enables customers to make part of the process as a self-service buyers.	Involves risks of frauds and skepticism (Oliveira <i>et al.</i> , 2016; Kerviler <i>et al.</i> , 2016).
Are the next evolutionary step of omni-channel services, which can only be achieved with an adaptation of the service operations.	The transition to omni-channel services requires companies to overcome many organizational challenges.

IV.2.6 Conclusions

This article is different from others because it advocates that technology-based business networks are introducing new dynamics built on service operations. Whereas omni-channel is redefining the way customers interact with firms, technology-based business networks are connecting heterogeneous companies through technological devices that, at the same time, enables the combination of more than one channel and services that meets customer needs. In doing so, the business networks gather a unique competitive advantage over their rivals. The transition to omni-channel services technology-based requires companies to overcome many organizational challenges, as the redesign of structures and processes are needed, in order to be fully-integrated these companies into the business networks. If service operations are aligned between the different companies, this will result in an increase of the omni-channel connectivity in the business network. Additionally, we attempt to stimulate the discussion among the academics in what concerns this growing importance. This study has also important implications for managers; practitioners have to be aware when deciding to adopt this strategy, they should not neglect customers' concerns regarding the potential lack of privacy, security and fraud. Due to confidentiality reasons

we have not provide any key informants and the respective organization. Further investigation is clearly needed, and with this timely contribution we expect to prompt other researchers to provide their contribution to service operations.

CHAPTER IV.3.

Omni-channel Service Architectures in a Technology-based Business Network: An Empirical Insight



Omni-channel Service Architectures in a Technology-based Business Network: An Empirical Insight

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Keywords: Technology-based business networks, Empirical research, Service operations, Service Architecture, Case study, Omni-channel services, Front-office

IV.3.1 Introduction

Services have become an integral part of modern society (Cook *et al.*, 1999; Vargo *et al.*, 2008; Lusch and Nambisan, 2015), in a continuously evolving context stimulated by diverse factors such as new technologies and online channels. The integration of online service delivery channels, employing self-service technologies and interfaces (e.g. self-service checkout systems) are enabling firms to change and optimize the design of service encounters in order to meet customer requirements and convenience at an unprecedented pace (Meuter *et al.*, 2000; Morimura and Nishioka, 2016). This happens along with an unprecedented level of customer connection and empowerment (Chou *et al.*, 2016) that is enabling customers to exhibit preferences towards the existing channel options when conducting processes for purchasing goods and services (Chiou *et al.*, 2012; Chiu *et al.*, 2011; Verhoef *et al.*, 2007). In this context of technically equipped, empowered and knowledgeable customers' organizations are compelled to continuously adapt their service approach, and evolving from a multi- to omni-channel strategies (Verhoef *et al.*, 2015) with profound implications for the management of service systems and operations. The adoption and operation of new channels is a challenging task that requires for huge efforts of channel coordination and integrating with the other existing resources from the firm (Sousa *et al.* 2016).

One viable option, that organizations can consider when they have different priorities or limited capacity to quickly add new channels and technologies to their portfolio, is to look for synergies with other providers with already established specific capabilities or resources that offer opportunities to customers and organizations (Reis *et al.*, 2017a). Recent work on competitiveness has also emphasized the importance of business networking, the evidence illustrating that those firms which do not co-operate reduce their ability to enter into exchange relationships (Pittaway *et al.*, 2004) and lose the capacity to share markets (Holm *et al.*, 1999). The underlying argument here is that we are witnessing the evolution of some companies that previously operated solely in a business-to-consumer (B2C) context and are now moving to a technology-based business network, with other providers, a move that allows them to be more competitive and flexible for providing quick and agile answers to customers' evolving demand for rich and technology infused service encounters. However, it is timely to ask about how familiarized are the companies that are joining these business networks with the front-office service architectures that result from the combination of channels and providers, to address customer interactions? Are companies prepared for the challenge of working in a omni-channel network environment involving the alignment of the service experience along multiple providers? This is of particular concern since firms can only be properly managed if practitioners understand the omni-channel service architectures and how they function on a business network context. The next sections aim to provide some answers to these questions.

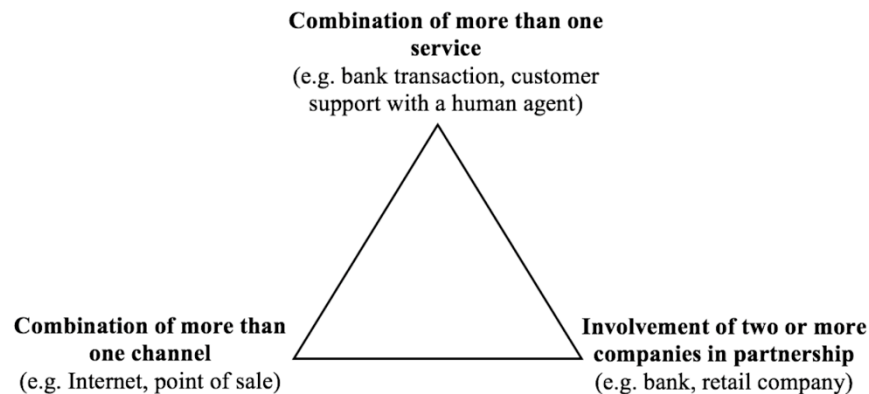
IV.3.2 Literature Review

Service business aiming for an effective adoption of multiple delivery channels, need to invest in the deployment of adequate operational capabilities. This process involves different stages of maturity in what concerns the level of interconnection and process integration for the different channels (Hübner *et al.*, 2016). Many companies expand their business from one single channel to a service configuration employing multiple channels (Brynjolfsson *et al.*, 2013; Verhoef *et al.*, 2015). Several concepts have been advanced to label these different channel strategies, (multi-, cross-, omni-channels), and whereas they are often used indistinctively in the academic literature, researchers continuously try to determine boundaries to avoid overlaps. For this reason, it is important to put forward some defining elements to frame each concept, and support our study. Channels are often

defined as a customer contact point through which a firm interacts with their customers (Neslin *et al.*, 2006, p. 96). Sousa and Voss (2006, p. 357) distinguish virtual from physical channels: where “virtual channels consist of a means of communication using advanced telecommunications, information, and multimedia technologies (e.g. self-service checkout)” and “physical channels consist of a means of communications with customer employing a physical (“bricks-and-mortar”) infrastructure”. From a service process standpoint, channels can be addressed as the sum of routes or paths for customer-provider interaction employed by a company to deliver its products, services, or exchange information with recipients (Mehta *et al.*, 2002). As customers are increasingly offered different channel alternatives and modes of communication with service providers (Kotarba, 2016), multi-channel strategies raise major technological and organizational concerns (Jeanpert and Paché, 2016). Jeanpert and Paché (2016) stress that, in the literature dedicated to this theme, the emphasis is being placed on a global and combined management of all channels offered to consumers in terms of their coordination or even their integration. Sousa and Voss (2006) define multi-channel service as a service involving components (physical and/or virtual) that are delivered through two or more channels and it may comprise a combination of virtual and physical services. A virtual service is defined as the “pure information component of a customer’s service experience provided in an automated fashion (without human intervention) through a given virtual channel” (Sousa and Voss, 2006, p. 357), whereas a physical service is defined as the “portion of a customer’s service experience provided in a non-automated fashion, requiring some degree of human intervention, either through a virtual or a physical channel” (Sousa and Voss, 2006, p. 358). Cross-channel service emerges as a set of integrated activities that involve the use of a widespread set of channels to offer accessible services or products in-store and/or on the Internet, whereby the customer can trigger partial channel interaction and/or the retailer/service provider controls partial channel integration (Beck and Rygl, 2015; Jeanpert and Paché, 2016). In a cross-channel context, the complementarity and compatible nature of channels is a significant consideration for managers (De Faultrier *et al.*, 2014) as this is considered a crucial characteristic of this strategy (Mirsch *et al.*, 2016). Lastly, omni-channel services have been defined as a seamless and integrated shopping experience across all channels that blurs the distinction between physical and online stores, and culminates in an integrated brand experience (Aradhana, 2016; Picot-Coupey *et al.*,

2016). Although researchers have witnessed a continued evolution of channel strategies, there is already academic evidence of organizational synergies that are beyond the omni-channel concept, as they bring together a mix of channels and providers that need to be articulated in a seamless interaction with the customers (Reis *et al.*, 2017a). These synergies may be interpreted as technology-based business networks, which are formalized as business-specific linkages negotiated between individual organizations (Jackson and Matsumoto, 2016) providing services delivered through a set of advanced technologies (Palo and Tahtinen, 2011). Each participating partner is mutually dependent upon resources controlled by the other, so that certain goals only become attained when their divided resources are combined (Willms *et al.*, 1994). Empirically, Reis *et al.* (2017b) found that these technology-based business networks (Tb2N) involve two or more companies in partnership, combine more than one channel and more than one service, which the customer perceives as an integrated network of brand experiences or multi-brand experiences (fig. 8).

Figure 8. Integrated network of brand experiences (Reis et al., 2017a)



Technology-based business networks are introducing new dynamics; this strategy can be considered the next evolutionary step of omni-channel services, supporting the argument that this channel strategy arrived to stay.

IV.3.3 Methodology

This article employs a qualitative case study approach as the omni-channel service phenomenon should be studied in its natural setting; also because the case study methodology lends itself to early, exploratory investigations, where the variables are still unknown and the phenomenon not at all understood (Meredith, 1998; Bebensat *et al.*, 1987; Voss *et al.*, 2002). This methodology consisted on the analysis of multiple sources of data collection, including 7 semi-structured interviews, direct observations and analysis of institutional documents from a large private retail bank in Portugal. This study was conducted in Portugal because the banking industry offers a rich setting of increasing employment of omni-channel services. Over the past three decades' banks have been pioneers in adopting new information communication technologies (Cortiñas *et al.*, 2010) and in adopting new technology-enabled services (Sousa and Amorim, 2009), with the goal of improving customer relationships by empowering customers (Elgahwash and Freeman, 2015). The prime source of data in this case study are semi-structured interviews, which is perhaps the most common type of interview used in qualitative social research (Dawson, 2002). Convenient and snowball sampling were used to select interviewees. The researchers made use of their personal network of contact inside the bank to identify the respondents who were in a best position to provide replies to the interview protocol.

Subsequently, they were asked to nominate other employees, from different functional areas and different levels of responsibility, at the bank's physical branch. This process continued until theoretical saturation was achieved (Saunders and Townsend, 2016). Direct observation as a source of evidence, contributes to the development of robust case studies, since it is an appropriate way to measure reality and generate truth about the world (Given, 2008). This technique allowed for the collection of aspects of everyday activities that may go unreported by participants, and gave the researchers direct experience of the phenomena being studied, while providing the opportunity to see and listen what was happening in the social setting as opposed to the focus on solely narrative descriptions of participants (Patton, 2002; Mills *et al.*, 2010). For a reliable and accurate observation, field notes were taken (Berg *et al.*, 2004). These field notes served to document real life phenomenon events, serendipitous moments (Fisher, 2007) and informal conversations with the interviewees (Hancock and Algozzine, 2015). The institutional documents are generally produced by organizations for communications or record-keeping purposes (Mills *et al.*, 2010) and are a source of exceptional data collection because they were accessible and record the organizations' day-to-day activities. Official documents included organizational newsletters (Berg *et al.*, 2004), internal records and reports available from the official bank website. The data was analyzed according to the technique of content analysis (Marvasti, 2003). The textual data was categorized into codes or categories to identify consistent patterns and relationships between variables to reduce data and making sense of them (Given, 2008). NVivo 11 software was used to implement the data analysis procedure described, thus contributing to the robustness of the chain of evidence (Bazeley and Jackson, 2013). The reliability and validity of the case research data was enhanced by a well-designed research protocol (Yin, 2003), it was improved by using the multiple sources of evidence and by double-checking the transcripts and interview analyzes by participants.

IV.3.4 Findings

This section provides an empirical summary that includes real-life statements, collected from the bank employees, direct observations and documental analysis.

IV.3.4.1. Case Study General Overview

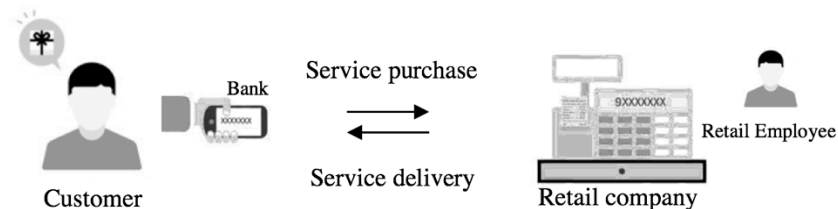
SIBS Group has been providing payment services worldwide over the last three decades. In Portugal, it performs a central role as a technology operator in the payments sector. In particular, with respect to the banking services, it manages the ATM network and the latest MB WAY brand (SIBS, 2015). The MB WAY has a vast number of adherents, including banks and retail stores, that have merged into a business network. With this solution it is possible to purchase services employing mobile payments (m-payments) in retail stores or online. SIBS, as a well established technology-based business firm, is managing the network, recruiting other companies and linking these companies by using a network-preferred channel (MB WAY). In this research we conducted a case study within a bank that joined the network and uses the network's preferred channel to do business. Our case is a well established private retail bank operating in Portugal, it uses a vast array of its own physical and virtual channels that are available to customers for service provision purposes. The bank mainly interacts with their customers using direct channels: 1) *bank mail*; 2) *bank website*, which includes two communication icons (click to call/chat) – *click to call*, a virtual icon that allows customers to receive contacts from the bank, and the *click to chat*, a virtual icon that allows customers to interact with the bank using a chat box; 3) *call center*; 4) *brick-and-mortar*; 5) *social networks*. As the bank has already joined the business network, this poses an immense challenge to operations management, since the bank will have to interact with the channels of other companies. Although there are no systematic metrics that allows us to accurately measure the degree of omni-channel intensity of an organization, we observed that the bank services have omni-channel characteristics. For instance, the bank employees have presented a mortgage loan as an omni-channel service, showing that the service purchase can go through all of the bank's direct channels, from the initial consultation to the provision of the loan. The purpose of this case study was to analyze if the omni-channel concept can be extended beyond the portfolio of channels owned and managed directly by an individual organization, i.e. integrate an entire business network, and the mix of proprietary channels and those of partner companies and providers, as the case of MB WAY. With this assumption, we are going to investigate the existing omni-channel service architectures in the technology-based business network (Tb2N).

IV.3.4.2. Omni-channel Architectures in a Technology-based Business

Network

The MB WAY concept, developed by the SIBS group, works as the network-preferred channel. This solution allows the bank addressed in the case study to connect with several retail companies that have joined the network. The network-preferred channel is a solution for mobile payments that enables immediate transfers and payments for purchase in several channels via mobile device and can thus combine an act of physical purchase with a virtual payment. The continuous evolution of wireless technologies, in combination with the widespread use of mobile devices, has paved the way for fast evolution of mobile commerce settings (Kousaridas *et al.*, 2008). Several employees reported that there is an involvement of mixed services in a technology-based business network. From the interview data, it was possible to ascertain that mixed service encounters occur when two different and heterogeneous companies are involved, encompassing, simultaneously, a physical and a virtual purchase with a virtual payment to deliver a service to a customer. The direct observations corroborated the aforementioned arguments, with the witnessing of settings where a customer may choose a retail store from the business network to purchase a physical service, the purchase can be paid by e.g. mobile devices (m-payment), which connects the bank with the retail store. These mobile devices have advantages known as queue avoidance, immediacy, ease of use and low cost (Kousaridas *et al.*, 2008). This experience can be considered as an omni-channel mixed service architecture in a technology-based business network; it comprehends a virtual payment to acquire a physical purchase. The figure 9 illustrates this real-life situation.

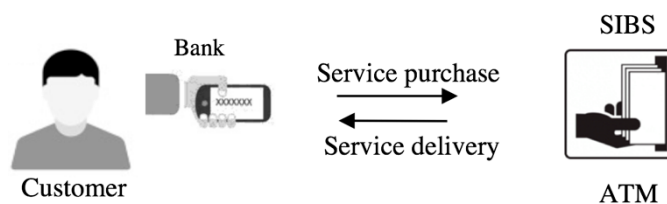
Figure 9. Omni-channel mixed service architecture in a tb2N context



Recent studies are in line with this concept in the sense that the Tb2N presuppose a trilogy crossing heterogeneous companies-channels-services; Reis *et al.* (2017b) argue that

in a Tb2N context there is the involvement of two or more companies in a partnership (e.g. bank, retail store), the combination of more than one channel (e.g. smartphone, point of sale) and more than one service (e.g. bank transaction, customer support – human agent), which is perceived by the customer as an integrated network of brand experiences or multi-brand experience. For those reasons, this omni-channel service architecture is a full Tb2N experience. Notwithstanding, the interview data also distinguished the abovementioned concept from other traditional mixed services. Traditional mixed services are offered when a single provider employs more than one channel, to offer different services, i.e. not involving more than one organization. The bank employees stated that, for instance, many of those customers that opt to open an account online, first search for additional information through the call center, and then upload all the necessary documents to open the account through the virtual channel, using their mobile device (e.g. table, smartphone). To finish the account opening process, they must perform a monetary transfer e.g. through the network-preferred channel, to officially start using the new account and complete the process. This situation involves the combination of more than one service (account opening and bank transfer), more than one channel (virtual channel and physical channel), but is missing the involvement of another company in the process, which is a pillar of the multi-brand experience triangle (Reis *et al.*, 2017b). For that reason, we consider this as an incomplete architecture with regard to the Tb2N, although we recognize that traditional omni-channel architectures, working within organizations, may eventually be generalized in the future to the entire network.

Data analysis also reported the existence of pure virtual services in a technology-based business network. From the interview data it was possible to determine that pure virtual services comprise two different companies (e.g. bank and SIBS), it also comprehends different channels (e.g. mobile devices and ATM), and services (e.g. withdraw and balance inquiry). Official documents corroborated this information, and mention that customers may establish electronic bridges from their bank and automatic teller machines that are managed by SIBS. This connection is performed by mobile device, using the network-preferred channel (e.g. MB WAY), in order to withdraw money without any human intervention. We consider this experience as an omni-channel pure virtual service architecture in a technology-based business network; it comprehends a virtual purchase to collect a physical service delivery. The figure 10 illustrates this real-life situation.

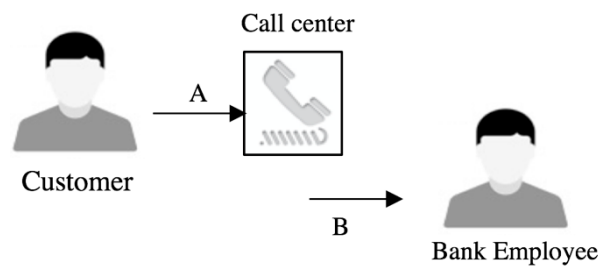
Figure 10. Omni-channel pure virtual service architecture in a Tb2N context

Traditionally, these services do not involve two companies, e.g. transactions using debit/credit cards, which reinforces the idea that Tb2N is different because it includes more than one company in the process. In the figure 10 it is involved the user's bank (e.g. an adherent bank) and the company that manages the ATM network (i.e. SIBS). What underlies is that customers are not just debit/credit card holders, they make part of the process as self-service buyers and the purchase is encompassed by virtual services, and is virtually involving two companies. As self-service buyers, these customers also have other features that further distinguish this service from the traditional one. Customers are increasingly involved in the service, being able to interact with other customers, e.g. by sending a code, so that a member of the MB WAY can withdraw money from an ATM in real-time and geographically elsewhere.

Other example can be offered concerning the virtual pure services when customers go to a retail store and pay their purchases at the self-checkout (employing what is known as self-service technologies), scanning their acquisitions and making the payment without any or low human intervention. In this example, we may include the use of a self-checkout, owned by the retail store (e.g. hypermarket), and the MB WAY application, that represents the customer's bank (network adherent bank). By using these self-service technologies, customers perform the service, or part of the service, traditionally performed by the service provider (Demoulin and Djelassi, 2016). Recent research is in line with this concept: as self-service checkout systems intend to improve the efficiency of checkout operations and minimize the negative effects of traditional checkout service (e.g. minimize waiting experiences) (Morimura and Nishioka, 2016), as this promotes the expansion of virtual services through a business network. For these reasons, this omni-channel service architecture is a full Tb2N experience, which unlike the previous examples, fulfills the full requirements of the multi-brand experience triangle.

Lastly, the front-line employees also reported that there can be also an involvement of pure physical services in a technology-based business network. From the interview data we learned that the pure physical is a traditional service that comprises only one company (e.g. bank), it includes more than one channel (e.g. call center, bank employee) and services (monetary transfers, account opening). The bank employees mentioned a situation similar to one previously identified, where customers that open an account, first they search additional information through the call center (cf. fig. 3, A), just then they start the process at the branch (cf. fig. 3, B). Similarly, to the traditional mixed services, we consider this experience as an omni-channel pure physical service architecture. The figure 11 illustrates this real-life situation.

Figure 11. Omni-channel pure physical service architecture



Extant theory is in line with the aforementioned concept of physical service (vide Sousa and Voss, 2006). Human intervention can take place in the front office, the back office, or both (Sousa and Voss, 2006), in this case we just considered the front-office. For the above reasons, we consider this experience as an incomplete architecture with regard to the Tb2N, since it does not fulfill the requirements of the multi-brand experience triangle. Table 13 summarizes this section.

Table 13. Omni-channel service architectures in a Tb2N

Omni-channel service architecture		Triangle of Tb2N multi-brand experience (full experience)			
		Combination of more than one service	Combination of more than one channel	Involvement more than one company in partnership	Is this architecture a full Tb2N experience?
Mixed service encounter	Tb2N	X	X	X	Yes
	Traditional	X	X		No
Pure virtual service		X	X	X	Yes
Pure physical service		X	X		No

IV.3.4.3. Bringing Operations Management to a Successful Channel

Integration

A few years ago we observed a move from the adoption of multi- towards omni-channel strategies (Verhoef *et al.*, 2015). Launching an omni-channel strategy rises the challenge of managing and integrating the operations between several business partners. Previously, during the transition from brick-and-mortar to bricks-and-clicks, we noticed that channels were developed and managed separately by companies with limited integration (Verhoef, 2012; Verhoef, 2015). The multi-channel shopping revolutionized retail operations. For traditional retailers the growing importance of online sales meant creation of new business models, which required a solid understanding of the operational processes (Hübner *et al.*, 2015). Companies had to redesign their processes within their premises. But, with the need to integrate operations within business networks, there is a need to redesign processes among several companies and, therefore, retailers’ success often depended on the alignment between operations and the brand image (Brun and Castelli, 2008). The expanding range of online offerings and mobile devices are significantly changing firms’ structures; for many firms, this implies completely new operational processes (Hübner *et al.*, 2015). Thus, the implementation of an omni-channel strategy requires different companies to stop attempting to improve their own processes independently, in order to achieve a global benefit (Bagchi and Skjoett-Larsen, 2005). A parallelism can be made

when retailers recognized the difficulty inherent in “going it alone” in the transition to an online environment (Kennedy and Coughlan, 2006). One way of overcoming these difficulties was through joining an established partnership and integrate different interests among the business networks. The use of a common language among several companies has been fundamental for understanding each other. Nowadays, the challenge of technological integration and the consequent implementation of an omni-channel strategy poses challenges as well. For instance, Hansen and Sia (2015) described how Hummel, a European sports fashion company, overcame the challenges and successfully transitioned toward omni-channel retailing. These authors noted that companies must focus on changes in technology infrastructures and organizational practices to successfully transform towards an omni-channel strategy (Mirsch *et al.*, 2016). Hansen and Sia (2015) identified four lessons: 1) *embrace your channel partners in the omni-channel strategy*, which requires a continuous clarification of its omni-channel focus, specially in a business network; 2) *Recognize that a successful omni-channel strategy requires deep change*, it is not just about adding channels, it requires integration; 3) *leverage the strategic role of chief digital officer*, to establish a common mind-set across the organization; 4) *evolve the role of chief information officer (CIO) in enabling an omni-channel strategy*, to continue to be relevant in a digital transformation and in updating technical competencies in managing more front-end, customer facing IT systems. As depicted in table 13, not all architectures are integrated as a full Tb2N experience. In other words, there are traditional architectures that use the network-preferred channel, but are not yet operating all their services within the network. Although the evolution from multi- to an omni-channel strategy within a company is far from being straightforward, and it might require a transition, inherent to the complexity that a move from a strategy to another implies (Picot-Coupey *et al.*, 2016); we believe the same process takes place within the business network. Through direct observation we verified that not all the network organizations have the same omni-channel maturity and are not integrated into the business network to the same extent. The move to a Tb2N involves new challenges as it requires a transition based on operations management to allow these firms to adapt their processes and channels, in order to be able to collaborate in a heterogeneous network of firms (Reis *et al.*, 2017b). Data analysis has shown that not all companies are fully prepared for the challenges of working in a omni-channel network environment, since they are not aware of the service architectures potential enabled by the

entire technology-based business network. One possible solution is to invest in operations management, in a way that would be possible to integrate all the channels of a certain organization that join the network. The bank's employees were peremptory, companies should not manage the omni-channel services alone, this concept must be extended to the entire network, which means that the omni-channel strategy should go beyond individual organizations and should integrate the entire business network. Only in this way managers can move to the next level and integrate all the architectures of the omni-channel service as a full Tb2N experience, which is currently incomplete (cf. table 13).

IV.3.5 Conclusions

The case study analysis revealed two types of omni-channel services architectures in the front-office of technology-based business networks, namely: mixed services and pure virtual services. Although we found four types of omni-channel architectures not all of them fulfilled the requirements of the multi-brand experience triangle and for that reason they were excluded. It is likely that this study will help practitioners to understand the challenges they will have to overcome within a Tb2N. However, it is possible that this article does not provide a complete classification of the omni-channel service architectures, since the ones that have been presented are limited to one case, and the theme is taking the first steps. Despite the exploratory nature of the article, we intend to fill a gap in the literature, for which this study may be a relevant contribution. Due to confidentiality reasons we do not provide any information about key informants and the respective organization, as the researcher is responsible not only for maintaining the confidentiality of all information but also for information that might affect the privacy of the research participants (Marczyk *et al.*, 2005). A number of avenues for future research arise from our study: first, empirical work is needed to enrich the Tb2N, as it may be interesting to conduct a study within the Tb2N that would focus not only on collecting data from one company but from the entire network; second, there is a need of measurement instruments to determine the maturity level for omni-channel banking services, so as to measure the degree of omni-channel intensity of those organizations.

CHAPTER V

How Service Providers Employ their Channels to Support the Handling of Customer Complaints – Context of Omni-channel Services and Technology-based Business Networks

CHAPTER V.1. Omni-Channel Services Failure and Recovery: A Case Study Research

This section presents the way service providers are employing their channels to support the handling of customer complaints, using a qualitative case study research approach in a Portuguese private bank. It characterizes the omni-channel recovery practices and discusses its implications for customer satisfaction. The results suggest that the degree of customers' (dis)satisfaction is not directly linked to the nature nor the severity of the existing failure, but rather with the service recovery process. This area represents a key research opportunity regarding the customer complaint in the contemporary service industry.

CHAPTER V.2. Service Failure and Recovery Through Multiple Channels and Networks: Exploratory Research in the Banking Service Industry

This section investigates how service providers are employing their channels to support the handling customer complaints in a technology-based business network (Tb2N) environment. It discusses the implications from existing misalignments between the service delivery debilities and the complexity of the Tb2N recovery process. It employs an exploratory case study research conducted with a Portuguese private bank. Data collection involved multiple sources for corroboration purposes, including reports from customer complaints, semi-structured interviews, direct observation and official documents. Data was analyzed to identify paths and relationships between variables, to reduce data, to enable interpretation, and to achieve valid and reliable results. The case analysis revealed four types of technology-based business network debilities. We found weaknesses in what

concerns the channel migration to new technologies; automated physical and virtual barriers in accessing the firms' common channel; non-automated barriers concerning the employees cross-training and, lastly, barriers concerning the service operations management. This section is original because, to the best of our knowledge, this is the first attempt to characterize the service failure and recovery in a Tb2N context. The complaint management is an essential tool for managers as failures in service delivery are inevitable and the recovery of such encounters encompasses significant challenges. For academics this is the first attempt to discuss a growing topic in the operations management literature. Further investigation is needed, and with this contribution we expect to stimulate other researchers to provide their contribution.

CHAPTER V.1.

Omni-Channel Services Failure and Recovery: A Case Study Research

Omni-channel Services Failure and Recovery: Study Research

A Case

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Keywords: Omni-channel services, Service failure and recovery, Case study research

V.1.1 Introduction

Complaint management has been considered an important tool for managers to deal with failures, especially in the service sector (Matos *et al.*, 2009). Yet, to the best of our knowledge, it has not been addressed in the specific context of omni-channel service delivery. Although there is no consensual definition for omni-channel service, Picot-Coupey *et al.* (2016), in a systematic literature review, defined it as a seamless and integrated shopping experience across all channels that blurs the distinction between physical and online stores, and culminates in an integrated brand experience. This concept represents, thus, an evolution of strategies such as single, multi- and cross-channel services. Where single channel is usually defined as a customer contact point (virtual or physical) and customers can gather information or purchase a service or goods (Aradhana, 2016; Chiu *et al.*, 2011; Hsieh *et al.*, 2012). Multi-channel, a widespread of channels that simultaneously offer information, products, services or support to customers through two or more synchronized channels (Physical and/or virtual) (Beck and Rygl, 2015; Fornari *et al.*, 2016; Huang *et al.*, 2016). Cross-channel, defined as a set of integrated activities that involves a widespread of channels to offer accessible services or products in-store and/or on the Internet, whereby the customer can trigger partial channel interaction and/or the retailer/service provider controls partial channel integration (Beck and Rygl, 2015; Jeanpert and Paché, 2016). The multiple channels phenomenon gathered special attention

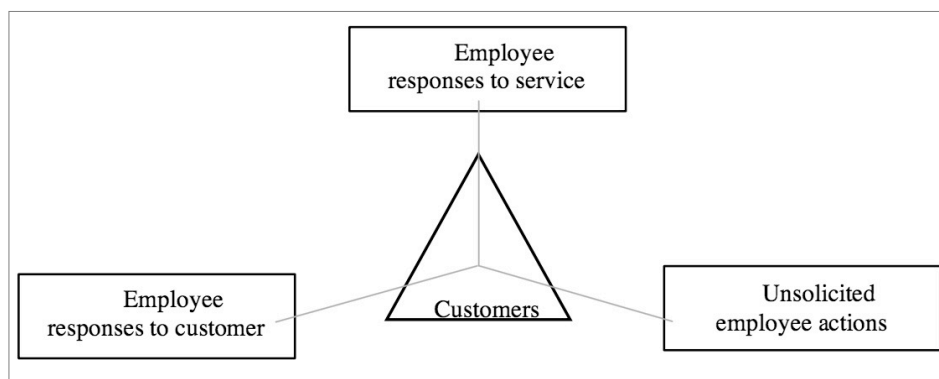
in academia for many years (Bartels, 1965), notably since the introduction of new information technologies and information systems (IT/IS). However, the evolution of these strategies is far from being straightforward. The academic research into omni-channel and its structure is only starting to emerge, aside from the basic introductions and general characteristics of omni-channel, mainly provided by retail business reports and magazines, there is a scarcity of omni-channel research work in the academic literature (Saghiri *et al.*, 2017). Thus, the shift towards an omni-channel strategy is so complex and engaging that it is impossible to evolve directly from a multi-channel to an omni-channel strategy without a transition (Picot-Coupey *et al.*, 2016). While this transition and the inherent increased complexity of service delivery systems has been studied (e.g. Verhoef *et al.*, 2015), we are not aware of any literature concerning the management of operations associated with service failure and recovery in an omni-channel context. The limited understanding of omni-channel complaint management poses new challenges to operations management and appears to provide a research opportunity worth pursuing.

V.1.2 Background

To the best of our knowledge the first time the omni-channel term was coined by business practitioners was when Parker & Hand (2009) and Ortis & Casoli (2009) suggested that the “omnichannel” shopper is an evolution of the multi-channel consumer who instead of using channels in parallel, she uses them all simultaneously (Lazaris and Vrechopoulos, 2014). The topic also gathered the attention in academia when Rigby’s (2011) mentioned the term omni-channel retailing as “an integrated sales experience that melds the advantages of physical stores with the information-rich experience of online shopping”. Multi-channel services hold an inherent view of split between physical and online channels (Piotrowicz and Cuthbertson, 2014), meaning that channels tend to complement and sometimes to compete with each other (Sousa and Voss, 2006; Coelho and Easingwood, 2008). On the other hand, in omni-channel services, channels are put forward as means that act for a common purpose (Lazaris and Vrechopoulos, 2014), holding characteristics of interchangeability (Dennis, 2016) aiming at a unified customer experience (Piotrowicz and Cuthbertson, 2014). Omni-channel services, therefore, allow for new business models, such as e-commerce and m-commerce that promote the

synergistic use of channels and touch-points (McCormick *et al.*, 2014; Picot-Coupey *et al.*, 2015), empowering customers with unprecedented access to real-time information, and creating challenges to service loyalty (Voropanova, 2015). Whereas the transition from multi- to omni-channel (Verhoef *et al.*, 2015) offers new insights on the increased sophistication, i.e. complexity of service delivery systems, so far, we are not aware of any literature concerning the management of operations associated with the management of service failure and recovery in omni-channel. According to Maxham (2001, p.11), service failures refer to “any service-related mishaps or problems (real and/or perceived) that occur during a consumer’s experience with the firm”. Bitner *et al.* (1990) advanced a model for the classification of organizational responses to service failures that has been widely adopted by other researchers (Hoffman *et al.*, 1995; Reynolds and Harris, 2005; Cassab and MacLachlan, 2009; Zhu *et al.*, 2013). Bitner *et al.* (1990) distinguished (figure 12): (1) *employee responses to service delivery system failures*, i.e. reactive responses from the provider following a customer complaint; (2) *employee responses to implicit/explicit customer requests*, i.e. providers’ service adjustments following a request to meet customers’ unique needs; 3) *unprompted and unsolicited employee actions*, i.e. events and employee behaviors that are truly unexpected from the customer’s point of view.

Figure 12. Service failure categorization (Bitner *et al.*, 1990)

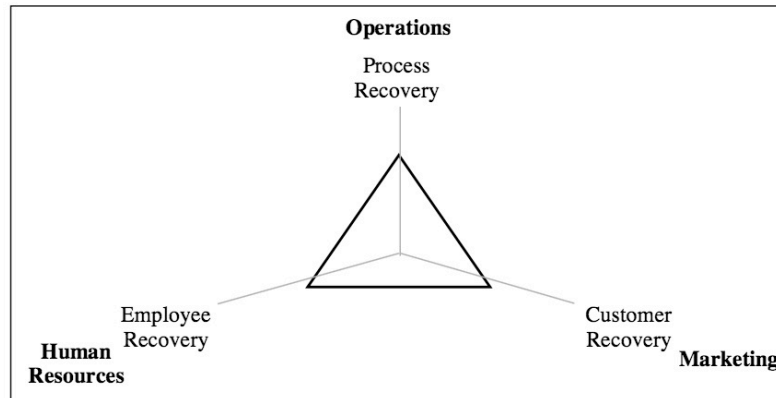


Bitner *et al.* (1990) triad is focused on employee actions, leaving out self-service technologies (SSTs). Later, Meuter *et al.* (2000) provided a vision on the alternative modes of contact used by customers to obtain service from the organization, identifying: (1) *technology failures*, those failures that effectively prevent the customer from getting a service (e.g. ATM not working); (2) *process failures*, failures that occur at some point after an initiated interaction (e.g. customer not receiving an item requested at the ATM); (3)

poor design, difficulties arising from technology design problems or service design problems; (4) *customer-driven failures*, those that occur as a result of a customer mistakes. Tih and Ennis (2006) also focused their research on internet retailers' and proposed that recovery issues can arise from transaction errors, service delivery failures, mistakes in online charges and service accessibility problems. Whereas service failure and recovery encounters are considered moments of truth in the relationship between service provider and customers (Grönroos, 1988), there is a lack of conceptual and empirical research about the actual responsiveness of service providers (Kasabov and Warlow, 2010; Naylor, 2003). Complaint management has been considered an important tool for managers to deal with failures, especially in the services sector (Matos *et al.*, 2009) as recovery holds a significant impact on customers (Kau and Loh, 2006). The outcome of a recovery process can include offering tangible (e.g. refund) and/or intangible compensation (e.g. apologizing), with the potential of creating a positive customer attitude (Bambauer-Sachse and Rabeson, 2015). Roschk and Gelbrich (2014) proposed three categories for compensation: delayed or immediate monetary compensation (tangible), exchanged goods or re-performed service (tangible) and apologizing (intangible). Overall, recovery refers to the corrective actions aimed at rectifying failed or inferior service performance (Bell and Zemke, 1987). Grönroos (1988) puts forward the following definition: "the service provider's action when something goes wrong". The service literature identifies three types of service recovery (Zhu *et al.*, 2013): (1) *recovery by the firm*, (2) *recovery by the customer*, and (3) *joint recovery by the firm and the customer*. Michel and Meuter (2008) state that (1) *complaint management* and (2) *service recovery* are based on service encounter failures. Complaint management is the firm's reaction to a customer complaint, whereas service recovery also addresses the firm's ability to react immediately to a failed service encounter, pleasing the customer before he or she finds it necessary to complain (see also Miller *et al.*, 2000). Michel *et al.* (2009) summed up service recovery in three different discipline-grounded perspectives. Marketing literature focuses on customer experience and satisfying the customer after a service failure (cf. Zhu *et al.*, 2013); operations literature addresses the processes and how to learn from failures to prevent them in the future (cf. Meuter *et al.*, 2000) and management literature focuses on employees and how to prepare them to recover from service failures (cf. Bitner *et al.*, 1990). These discipline-based perspectives are displayed in figure 13. This study builds on the

operations perspective, as suggested by Reis *et al.* (2014).

Figure 13. Discipline perspectives on service recovery management (Michel *et al.*, 2009)



When customer satisfaction is hurt by a service failure, subsequent service recovery reactions may include negative word-of-mouth behavior (Hocutt *et al.*, 2006), whereas the positive recommendations will occur when recovery is understood as satisfactory (Matos *et al.*, 2009). Satisfaction with service recovery is defined by Webster and Sundaram (1998) as positive customer evaluations of the service recovery experience (Spreng *et al.*, 1995; Bambauer-Sachse and Rabeson, 2015).

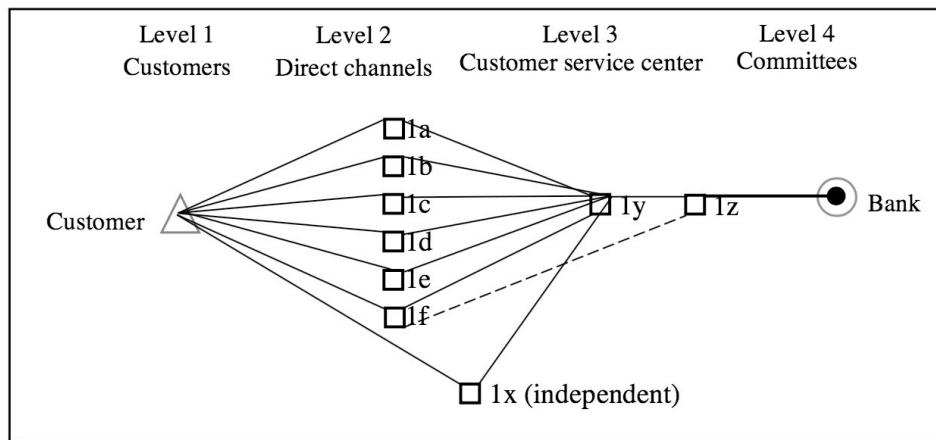
V.1.3 Methodology

This study employed a qualitative case study research approach in a Portuguese private bank. It reports on a documental examination of 50 records of customers' interactions with the client ombudsman (e.g. appendix B) and 10 semi-structured interviews with bank employees in order to seek corroboration and clarification. These records were obtained from the customer ombudsman, who is an independent entity acting as an intermediary agent in the context of conflicts emerging between customers and the bank. Complaints, sent to customer ombudsman, usually derive from customers' perception of a lack of responsiveness from the bank channels. Thus, the customer ombudsman mission is to provide proper follow-up to complaints, requests for information or suggestions. The number of participants selected for the interviews is justified by theoretical saturation (Saunders and Townsend, 2016). We interviewed highly knowledgeable informants, who were able to view the phenomenon from different perspectives, as they were chosen according to different functional areas and different levels of responsibility within the bank's physical branch. The main purpose of these interviews was to complement the

complaint records obtained from the customer ombudsman, as bank employees were often hesitant when they were asked about private customer complaints. Once the respondents realized the researchers had full access to the complaint records they were more receptive to explain parts of the complaining processes. For triangulation purposes, the case study relies on other data collection methods as well, including, documental analysis and direct observations. During the visits and tours of the facilities it was possible to take field notes and observe operations in first-hand. It was also possible to establish informal conversations that contributed to clarify data from the interviews. The analysis of internal documents had corroboration purposes and they mainly came from the official website and financial reports; those documents allowed to establish relations between several channels that were not previously taken into consideration. The data analysis software NVivo 10 allowed the researcher to handle a large volume of data. First, a hierarchy of categories and subcategories was built based on a theoretical model. Then, excerpts from interviews were allocated to existing categories and subcategories, and new ones were created when needed. Finally, the categorization system was revised, making adjustments until all redundancies and contradictions were eliminated. The case study research offered an opportunity to explore and explain the phenomenon for which little or no empirical data exists (Yin, 2003).

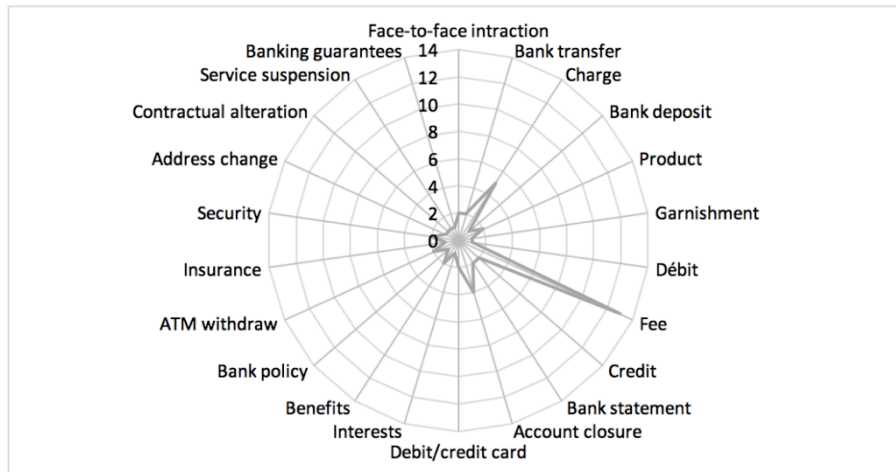
V.1.4 Findings

The study data revealed that the bank employed different channels for interacting with customers for queries and requests for the different services provided. Likewise, several channels are available to customers for addressing the bank in case of an omni-channel service failure. The key channels used by employees for interactions concerning service failure and recovery involved (figure 14): (1a) *Bank mail*, the possibility of contact with the bank by electronic mail; (1b) *Social Networks*, the possibility of posting questions and interacting with the bank via social networks; (1c) *Click to call*, is a virtual place that allow customers to receive a contact from a bank, free of charge; (1d) *Call center*, a physical facility offering customer interaction, by request (click to call) or by a customer call; (1e) *Click to chat*, is a virtual service that allow customers to interact with the bank using a chat box; (1f) *Brick and mortar bank* (branch office) the possibility of face-to-face interaction in the physical facilities of the bank.

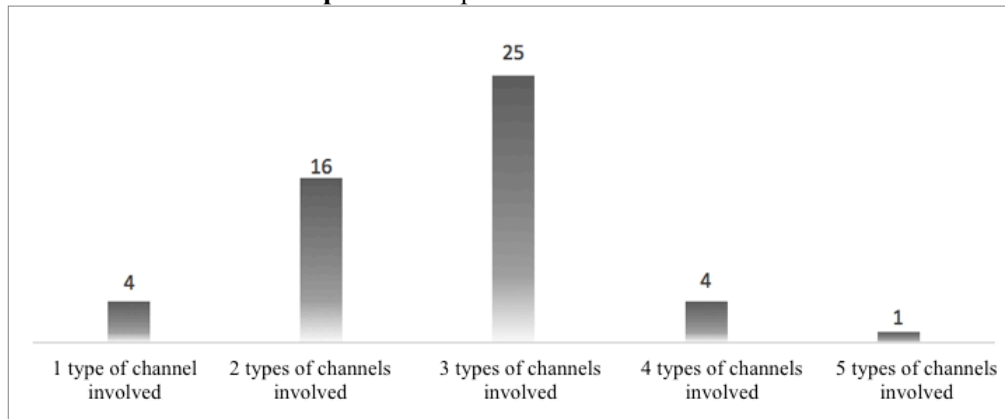
Figure 14. Empirical illustration for Omni-channel service failure and recovery

In addition, the (1x) *Customer ombudsman*, is an independent entity which acts as intermediary agent in the context of conflict between customers and the bank. (1y) *Customer service center*, was a service dedicated to recover the level of relationship, mainly dealing with areas related to online banking and the call center. (1z) *Committees*, were composed of business areas (e.g. retail bank, private banking) and support units (e.g. bank steering operations) representatives intended to facilitate the articulation of current management decisions involving top management. The call center (1d) was considered a direct channel because it is in direct contact with the customers. Another feature was the fact that the branch office (1f) could provide direct inputs to the committees (1z). The analysis records from customer complaints revealed that the most relevant service failures were connected to issues regarding bank fees (13 failures), bank charges (5 failures) and account closures (4 failures), about 1/3 of the sample (graphic 12). The register of the customers' complaints revealed that 82% of the claims were related to automatic services, brick and mortar services and ATM services. The most frequently reported service failure was derived from the automated services that charged fees disregarding the customer profile. Thus, the most frequent contact point for customer complaints was the branch office and the call center.

Graphic 12. Reported service failures (Customer ombudsman)



Notwithstanding, the effective number of contacts that customers had with the various channels when dealing with a failure may well be underestimated, because not all of them are registered by the bank (and the study relied on what was reported by customers, which may leave some pieces of information out). Furthermore, whereas there are legal obligations for the bank to register the interactions with the customers, there is no enforcement in recording contacts between employees. For this reason, it was difficult to account for all the interactions inside the bank, especially the informal interactions between employees (e.g. employees allocated to the management of different interaction channels) in order to solve the omni-channel service failures presented by customers. To mitigate this limitation, researchers often considered data provided from the descriptions of the customers, during their contacts with the bank, which provided some clues about the interactions inside the bank. In addition, we sought, through interviews with bank employees, to have knowledge of the formal path to the resolution of certain service failures. The data suggested that the number of service recovery interactions could span from one to five channels, but a great extent of service recovery involved at least three different types of channel interaction.

Graphic 13. Reported service interactions

For instance, as illustrated in graphic 13, from the 50 failures reported, 25 types of failures were involved with 3 different type of channels. These numbers are consistent with Cortiñas *et al.* (2010), when they argued that customers used an average of 2.5 channels in their relationship with a multi-channel banking institution, in order to justify that the number of channels customers use is one of the indicators that describes multi-/omni-channel behavior (Kumar and Venkatesan, 2005; Sousa and Voss, 2006). However, the higher number of channels used for filling a complaint, the greater the number of interactions and cross channel flows. The case analysis revealed that the degree of customers' (dis)satisfaction is not directly linked to the nature nor the severity of an existing failure, but rather with the service recovery process. Evidence suggested that customers were often forced to use physical channels when the bank virtual response is not appropriate, ending up losing the freedom that supposedly the omni-channel services offer. This phenomenon occurred whenever the direct channels were not prepared to provide other than standard answers, in complaint cases where high level decision-making needs to be called to act. Customers are not willing to interact with a large number of channels, leading to a high number of interactions; instead, they are willing to wait when a service failure requires a high level of decision-making. To improve the recovery and customer acceptance, banks should reduce the number of interactions during the failure recovery process. Non-permanent recovery solutions, such as apologizing and monetary compensations (Roschk and Gelbrich, 2014) are two of the most used methods to generate a positive customer attitude (Bambauer-Sachse and Rabeson, 2015). However, this argument is not enough, as non-permanent solutions are inefficient in the long term,

because most part of these compensations implies financial losses. Despite the investment that is required, this investigation advocates for permanent recovery solutions, involving the improvement of complaint handling processes as the way to definitely recover customer satisfaction. This approach would translate into monetary gains and customer-switching resistance (N'Goala, 2007). As Michel *et al.* (2009) argue, what seems to annoy customers after a failed service recovery is not that they were not satisfied but rather their belief that the system remains unchanged. To avoid service failures and complex recovery processes it is possible that companies may also be looking for new strategies and/or seeking new organizational synergies that allows services to encompass simultaneously physical and virtual purchases (Reis *et al.*, 2017c). However, these new strategies may also pose new challenges when service failures occur, as there are no scientific studies focused on the recovery of failures when channels of several integrated companies are entailed (multi-brand experience). To the best of our knowledge, to date there are only records about service failures that have occurred in one type of service delivery interaction, either through physical or virtual channels, but never when provided by simultaneous channels.

V.1.5 Conclusions

To the best of our knowledge, this study is the first to characterize customer expectations for complaint management in omni-channel service contexts. The evidence suggested that customers are not generally aware of the channel recovery attributes and are often forced to search for help from front-line employees when the bank's virtual response is not in accordance to their expectations. This way, they end up losing the freedom that supposedly omni-channel services offer. Additionally, customers are also not willing to interact with a large number of channels, leading to a high number of interactions; instead, they are willing to wait for a customized recovery, when they perceive that a specific failure may require a high level of decision-making. This tolerance occurs when customers realize that a company is realizing all the necessary efforts over the service recovery, in order to ensure that the failure will not be repeated again. As a final contribution, this study also discusses the implications from existing misalignments between the failure and the omni-channel recovery processes. The results highlighted the importance of recovery permanent solutions and operations management to enable effective recovery processes in the omni-channel service context. To improve the recovery and customer acceptance,

banks should reduce the number of interactions during the failure recovery process, which is likely to be converted into monetary gains and customer-switching resistance.

V.1.6 Limitations

Research on complaint management is not an easy task, as it involves dealing with confidential data, which usually brings some constraints to the research. These constraints are largely due to the data collection, related to the omni-channel service recovery mapping, since, not all interactions between bank employees are officially registered. Due to confidential reasons, we have also not provided any information about key informants and the respective organization in this paper. However, this paper intends to fill a gap in the literature, concerning the limited understanding of the omni-channel complaint management and, for that purpose, this paper may be a relevant contribution.

V.1.7 Future directions

We instigate academics and practitioners to provide new contributions to this emergent topic as it represents a fertile opportunity for future research. Further investigation may focus on the omni-channel service failure and recovery in an online-to-offline (O2O) context. The migration from O2O has gained popularity in recent years, as customers search for offline support to recover from service failures that apparently they cannot resolve online by themselves. Another research opportunity is to focus on the recovery of simultaneous purchases service failures as depicted above. A study of this nature might bring positive outcomes to organizations and alert scholars for these new dynamics and possible trends.

CHAPTER V.2.

Service Failure and Recovery Through Multiple Channels and Networks: Exploratory Research in the Banking Service Industry

Service Failure and Recovery Through Multiple Channels and Networks: Exploratory Research in the Banking Service Industry

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V.2.1 Introduction

Complaint management has been considered an essential tool for managers (Matos *et al.*, 2009) as failures in service delivery are inevitable (Komunda and Osarenkhoe, 2012) and the recovery of such encounters encompasses significant challenges, especially in the service sector (Sengupta *et al.*, 2015). Moreover, experience shows that performance expectations for services are increasing (Sorescu *et al.*, 2011) and customers have become less tolerant towards service failures (Bambauer-Sachse and Rabeson, 2015). In this regard, complaint management is especially important, but it has never been studied in a technology-based business network context (Tb2N). The technology-based business networks concept has evolved from single channels to a multi-brand experience across all channels and companies, where the distinction between physical and online stores are blurred (Reis *et al.*, 2017a). Multiple channels gather special attention in academia since the introduction of new technologies and information systems, though the evolution of these strategies is far from being straightforward (Reis *et al.*, 2017b). To fill a gap in the literature, this study is the first attempt to cover the debilities of new technology-based business networks. In doing so, this study discloses how service providers are employing their channels to support the handling customer complaints. To this end, we first review the service failure and recovery literature, the multiple channel strategies and the Tb2N

concept. We then focus on the research methodology and the case results. We end with a general discussion and brief conclusions.

V.2.2 Literature Review

V.2.2.1 Service Failure and Recovery

Service organizations usually pursue flawless service as an ideal goal (Ha and Jan, 2009). However, service failures are inevitable, according to Hart *et al.* (1990), because services are characterized by simultaneous production and consumption as well as involvement by customers in the service production (Duffy *et al.*, 2006). Bell and Zemke (1987) define service failure as situations where customers perceive a service delivery worse than they expected. McColl-Kennedy *et al.* (2003) argue that service failures are common in the service industry and customers may experience dissatisfaction following those failures. Thus, service research has reported several negative consequences of service failures (Kim and Jang, 2014), such as negative word-of-mouth (Kim *et al.*, 2009), customer dissatisfaction (Kelley *et al.*, 1993), technology abandonment (Zhu *et al.*, 2013), and unwillingness to return (Brady *et al.*, 2002). But, customer satisfaction is crucial to the survival of any business organization, although service failures may be often unavoidable due to human and non-human errors, leading to customer dissatisfaction (Kau and Wan-Yiun Loh, 2006). It is recognized that once a service failure occurs, service recovery becomes essential. This is defined as the action taken by the service provider to seek out dissatisfaction (Johnston, 1995). Duffy *et al.* (2006) analysed the degree of customer satisfaction on the banking industry and found that it is strongly influenced by the type of recovery strategy used by the banks. The results indicated that the recovery efforts are best directed towards empathic listening and fixing the problem rather than apologizing or making atonement. These results are consistent with Reis *et al.* (2017b) that states that the degree of customers (dis)satisfaction is not directly linked to the nature nor the severity of the failure, but rather with the service recovery process. These arguments are in line with the literature, Michel *et al.* (2009) argues that what seems to annoy customers after a failed service recovery is not that they were not satisfied, but rather their belief that the system remains unchanged. To avoid service failures and complex recovery processes it is possible that companies may also be looking for new strategies and/or seeking new organizational synergies that allows for services to encompass simultaneously physical and

virtual purchases (Reis *et al.*, 2017c). The topic of service failure and recovery has recently been receiving considerable attention (Sparks and McColl-Kennedy, 2001) but, as Weber and Sparks (2004) argue, it has been limited to investigate the effects of service failure and recovery on customer's evaluation in which an organization is the sole service provider. These last authors reinforce that the impacts of service failure and recovery in situations in which two or more service providers are closely linked in the provision of services to the customer by means of an alliance has been ignored. Weber and Sparks' (2004) article about airline alliances suggests that a service failure may affect negatively customer evaluations of the alliance image, leading to customer dissatisfaction, negative word-of-mouth and reduce loyalty.

V.2.2.2 Multiple Channel Strategies

The move from multi- to omni-channel renews the need to define each term (Reis *et al.*, 2017a). The literature offers limited insights about channel strategy definitions. However, as did Neslin *et al.* (2006), we define *channel* as a customer contact point or a medium through which a company and customers interact. In addition, Sousa and Voss (2006) distinguish virtual and physical channels. *Virtual channel* "consists of a means of communications using advanced telecommunications, information, and multimedia technologies" and, *physical channels* "consists of a means of communication with the customer employing a physical infrastructure" (Sousa and Voss, 2006, p. 357). These channels may also encompass *virtual services* that are "defined as pure information components of a customer's service experience provided in an automated fashion" and *physical services* that are "defined as the portion of a customer's service experience provided in a non-automated fashion, requiring some degree of human intervention, either through a virtual or physical channel" (Sousa and Voss, 2006, p. 357-./358). In this sense, Sousa and Voss (2006, p. 358) define a *multi-channel service* "as a service composed of components (physical and/or virtual) that are delivered through two or more channels", and Beck and Rygl (2015, p. 174) describe *multi-channel retailing* "as the set of activities involving in selling merchandise or services through more than one channel or all widespread of channels, whereby the customer cannot trigger channel interaction and/or the retailer does not control channel integration". The terms of multi- and *cross-channel* are often blurred in the literature, but this last strategy may be defined as "the set of

activities involved in selling merchandise or services through more than one channel or all widespread channels, whereby the customer can trigger partial channel interaction and/or the retailer controls partial channel integration” (Beck and Ryg, 2015, p. 175). Lastly, *omni-channel* is a channel strategy where an organization offers similar experiences across all channels in a synchronized way to allow uninterrupted flow of processes of service and/or product delivery (Aradhana, 2016; Kotarba, 2016).

V.2.2.3 Technology-based Business Networks

In a service delivery context, companies can now rely on technologies and multiple channels to support different interactions with customers. However, when companies do not have the capacity to add new technologies to their portfolio or, for some other reason, do not have such interest to do so by their own means, they may form synergies or partnerships (Reis *et al.*, 2017c). These authors also advocate that organizational synergies call for a conceptualization that is beyond the omni-channel concept, as they bring together a mix of channels and providers that need to be articulated in a seamless interaction with the customer, also known as a multi-brand experience. As a consequence, omni-channel companies are changing their landscape to business networks, looking for competitive advantages over their rivals, by integrating innovative technologies, that are enabling the combination of firm capabilities to underpin collaborative relationships (Reis *et al.*, 2017a). A good example of these synergies is the Apple Pay, as this strategy allows customers to use their iPhone and/or Apple Watches to pay in-stores that accept contactless payments at point-of-sales terminals and online (Margraf *et al.*, 2016). In Portugal, SIBS group is a company that operates in the payment sector (SIBS, 2015) and has recently launched the MB Way application (MB Way, 2015). Similar to Apple Pay, where most merchants and banks supported this service shortly after its initial launch, bringing a new set of capabilities and installed base of consumers (Liu *et al.*, 2015), the MB Way has reached the same achievements. At this moment, in Portugal, the MB Way has 14 adherent banks and vast number of retail stores that have merged in a business network. This application allows customers to connect their bank to several retail companies that have joined the MB Way service. This application enables customers to purchase services by mobile payment (m-payment) in retail stores or online, with their smartphones (Kerviler *et al.*, 2016). This is a kind of technology-based business network, as it enables to connect

heterogeneous companies through technological devices (e.g. MB Way) that, at the same time, combine more than one channel and services that meets customer needs (Reis *et al.*, 2017a). Nevertheless, business networks are becoming increasingly complex, a reality that is leading many firms to seek a deeper understanding of how to effectively select and manage relationship partners (Chung *et al.*, 2006; Davis and Mentzer, 2008; Ganesan *et al.*, 2009). Although business networks gather unique competitive advantages over their rivals, there are possible limitations as service failures may occur. Thus, our contribution fills this gap in the literature as the rapid growth of the business network left unexplored some of the debilities inherent to the adoption of new technologies. The integration of these new technologies are changing the landscape of the business networks, as it requires a transition based on operations management to allow these firms to adapt their processes and channels, in order to be able to collaborate in a heterogeneous network of firms. By providing real-life statements we intend to help practitioners through examples to optimize their business networks.

V.2.3 Methodology

This paper uses a qualitative and exploratory case study research. It was conducted in a Portuguese private bank and gathers multiple sources of data collection for triangulation and corroboration purposes. The banking industry was chosen for several reasons. First, the Portuguese banking industry has been a pioneer in the adoption of new channels in service delivery (Sousa and Amorim, 2009). Second, this industry, as other other authors point out (cf. Sousa and Voss, 2009), has collected enough experience to be a mature ground. Third, the banking sector utilizes technology-enabled services through the Internet and mobile devices (Elgahwash and Freeman, 2015) and provides access to a wide number of customers and channels enabling the study of service failures and recoveries (SFR). This study reports on the analysis of 25 customers' complaints records; it also includes the insights of 10 semi-structured interviews with bank employees; it gathers evidence from direct observations, collected during the site visits, as well as official documents mainly collected from the official bank website. With this paper we aim to illustrate two different perspectives: 1) the traditional services that have been studied before in SFR research, providing some comparability with our study's findings (Sousa and Voss, 2009); 2) the new SFR reality, sourced by the proliferation of new technologies and the establishment of

synergies between business networks, that is beyond the omni-channel concept and shows the originality of this paper. Data was analysed according to the technique of content analysis (Blaxter, 2010). Similar to other studies in the area, this study resorted to the use of data analysis software (NVivo), allowing to code qualitative data, and to build and hierarchize categories and subcategories so as to identify emerging patterns and ideas (Skálén, 2011). Finally, this paper is an exploratory research because, to the best of our knowledge, this is the first attempt to characterize the SFR in the technology-based business network context.

V.2.4 Findings

The focus of this study is on SFR through multiple channels in the context of Tb2N. Tb2N is a moving target as technologies are proliferating unceasingly, and the innovations cycles are short. Practitioners have some difficulties in following the demands of the external environment, and academics are dependent on corporate developments. Therefore, the empirical research has shown that there is a shortage of research in the area and it is early to classify the Tb2N debilities as service failures. To this end, we found four main debilities related to technology-based business networks. The interpersonal service encounter with Tb2N emphasises debilities concerning the migration strategy, customers that interact with technology based self-service delivery options (pure virtual service) and/or they may encompass on a non-automated fashion, which requires some degree of human intervention (physical service), either through a virtual or physical channel and, lastly, barriers on service operations management.

V.2.4.1 Tb2N debilities: barriers to channel migration strategies

Many firms encourage customers to use E-channels for services which triggers various consumer responses to such limits on their freedom of choice (Trampe *et al.*, 2014). Trampe *et al.* (2014) argue that rewarding the use of the firm-preferred E-channel is more effective than punishing the retention of the incumbent channel, and that a punishment-based E-channel mitigation strategy causes similar reactance levels as forced migration does. When channel migration strategies are voluntary, customers can choose among multiple channels (Van Bruggen *et al.*, 2010). On the other hand, if customers channel preference does not match channel management policies, companies face increased costs

and redundant or ineffective channels (Myers *et al.*, 2004). In the Tb2N context addressed in this study several customer records reported complaints about the bank forcing customers to use the network-preferred E-channel. From the interview data it is also possible to ascertain that the bank is, in fact, migrating some services to this specific channel. An example, collected from the interview data, shows that the MB Net service, which allows customers to create virtual cards to safely pay their online purchase, were migrated to the network-preferred E-channel. As a result of this migration, customers are forced to use different technologies and channels with their smartphones, losing the freedom that was previously available through the Web. The literature also advocates that, a forced migration strategy, which generally eliminates an existing channel, may lead to channel switching, or moving to another service provider (Trampe *et al.*, 2014). Although forced channel migration may produce the desired behaviour in customers, it may be accompanied by frustration and emotional discomfort among customers (Mazis *et al.*, 1973; Venkatesan, 1966). From the official documents we acknowledged that the bank is using their channels to inform clients that the discontinuation of the service and migration is due to new security requirements for Internet payments. They now use more sophisticated security protocols and algorithms to ensure customer confidentiality, integrity and authentication of the client, as well as the process and stored data, requirements set by the latest European security rules. The bank's report states that, currently all communications and transactions are permanently monitored by a fraud prevention and detection team. These arguments are in line with one of the major factors that concerns customers when using new technologies, that is the network security (Groß, 2015). Nevertheless, the report complaints indicate that customers are still not satisfied, offering resistance to the change. To understand this resistance, we inquired the bank employees about this concern. They revealed that, in addition to the European requirements, the bank is trying to reduce costs by combining services, and that is what is probably upsetting the customers as they lose the freedom that alternative channel options were offered to them, and now they have ceased to exist. To recover the service, Trampe *et al.* (2014) advocates that the Tb2N should offer rewards for the use of the network-preferred E-channel. Effectively, some of the companies that have recently joined the network are trying to use the preferred-network channel to reward their customers. For example, the Portuguese airline company (TAP), together with SIBS, refunded the full amount of the first ten

people who make their reservation and payment through this network-preferred E-channel. At our case study, we did not identify any direct relationship with the compensation of the clients that migrated to the network-preferred E-channel, which means that not all organizations participate in this practice. In short, the compensation is not being implemented by all the companies in the network, and is not reaching all the customers, only those who participate in certain campaigns, as previously in the case of TAP. What is new here is that the Tb2N can eventually benefit on reducing the network service costs, by combining the available channel dispersion; however, the service merging and the customer migration may add risks, if customers feel that they are not rewarded enough to adapt, or feel they do not reap enough benefits from the introduction of new technology channels, which may impair the entire business network.

V.2.4.2 Tb2N debilities: barriers to automated service delivery

The case study led to the identification of a set of debilities associated to automated services in the Tb2N context, related to the weaknesses in the integration of physical and virtual channels for the provision of fully automated services. The lack of channel integration offered good example of a physical debility. As self-service technologies (SSTs) are making easier for customers to complete banking transactions, and other related banking services, these technologies increase the availability of services, with customers being less dependent upon the opening hours and location of their banks (Storbacka *et al.*, 1994; Elgahwash and Freeman, 2015). Automated teller machines (ATMs) are a good example of this. In Portugal, some ATMs are located inside the branch facilities. The access to those ATMs, requires customers to use their physical debit or credit card to pass through a security door. In this context, complaint records showed that customers that wished to withdraw some money, by using their smartphone and the network-preferred E-channel, were requested to firstly use their debit/credit card to get into the branch office. This debility is severe as it limits the customer access to a pure virtual service and restricts the use of a network virtual channel. According to Roth and Menor (2003), the setup of a service delivery system requires a set of company's decisions related to (a) structural choices, concerning key decisions about physical elements of the delivery system, namely facilities, technology, equipment, and capacity; (b) infrastructural choices, concerning programs, policies, and behavioural aspects that command service operations strategy; and

(c) integration choices, that refer to the issues of external integration, internal integration and adaptive mechanisms. Building upon prior the structural choices is essential to integrate the technology advances and the facilities adequacy. To this end, the bank and SIBS are working to use their channels to solve this debility, however, until this moment no solution is known to solve this limitation. The smartphones can also be perceived to be a ubiquitous information and communication technology devices (Haverila, 2011), however they may present technical limitations, as the batteries of smartphones have limited capacity. The complaint records also shown limited knowledge to perform certain banking operations. These limitations may prevent clients from carrying out their self-service operations. To mitigate this last aspect, the bank is using their channels to educate their customers in order to increase the awareness of the various aspects of the mobile banking. Interviews and documental analysis have greatly contributed to understand that the bank is not working alone in the network. The network and, in particular, the system manager (SIBS), is largely contributing to disseminating all the needed information to understand the technology, in order to simplify the customers integration. This method is also recommended in the literature, in the extent that several authors are suggesting a collective investment in marketing and advertising for widespread promotion of mobile banking (Sobiya and Thangavel, 2015). Lastly, we also found the in Tb2N Internet connectivity becomes an essential function to service delivery. When the Internet connectivity is limited there is virtually a barrier to self-service delivery/purchasing.

V.2.4.3 Tb2N debilities: barriers to employee-technology service integration

Many service organizations spend a substantial amount of time and effort training managers and front-line service employees in the art of service recovery (Smith an Bolton, 1998). Customer defections caused by unsatisfactory employee-customer interactions might be reduced by teaching employees to listen to customers, return telephone calls promptly, keep customers informed, and explain procedures and by training employees in technical, state-of-the-art knowledge (Keaveney, 1995). The case observations supported that Tb2N is no different from traditional service organizations in this area. We have repeatedly verified that in order to purchase a product at a retail store, front-line employees are often confronted with the difficulty to provide services where new technology channels are associated. An example is the virtual payment with the MB Way technology: the

employees of a retail store were unaware of the possibility of a physical acquisition and virtual payment. This indicates that the organization has joined the network of technology-based services but has not prepared its employees. That is, some organizations are not properly following the demands of the external environment. When implementing new technologies and channels, it is crucial that managers ensure adequate staff training (Sobiya and Thangavel, 2015), because the failures of a company may affect the image of the entire network. Menshikova *et al.* (2017) argues that the banking industry is recently facing significant changes relating to the competitive environment and technological innovation, as well as institutional changes that have driven companies to a high rate of strategic and organizational transformation. The same authors stress that the new competitive scenario requires highly educated professionals within the banking institutions, and they suggest digital tools and platforms for training programs developed by the organisations of the banking sector. Consistent with the literature, the bank front-line employees corroborate the bank efforts to use the available channels (e.g. internal platform; Intranet) to provide the technical skills and the state-of-the-art knowledge concerning the network-preferred E-channels.

V.2.4.4 Tb2N debilities: barriers to operations standardization in network context

The move to Tb2N involves new challenges as it requires a transition based on operations management to allow these firms to adapt their processes and channels, in order to be able to collaborate in a heterogeneous network of firms (Reis *et al.*, 2017a). In the Tb2N context, customer complaints suggest that existing weakness are related with communication debilities between banks and retail companies. From the interview data it was possible to ascertain that only when the payment of a product and/or service is processed by the bank, the purchase is authorized through the firms-preferred E-channel, similar to the use of any debit card. However, this limitation is often attributed to the network-preferred E-channel rather to the bank rules. Once more, the bank front-line employees have a key role for clarifying customer complains. The literature also reports that many customers do not acknowledge failure or are reluctant to report a significant problem, therefore, firms should develop ways for customers to voice their service dilemmas and request help easily; for example, noticeable help buttons can be inserted throughout the self-service technology interface (Zhu *et al.*, 2013). To this end, the

interviews revealed that this solution already exists in some channels of the bank (e.g. online banking), but not in Tb2N context, since this adaptation requires management at the operations level throughout the network.

V.2.5. Conclusions

This paper shows how service providers are employing their channels to support the handling customer complaints in a Tb2N context. We generally found four main types of debilities related to the technology-based business networks: a) barriers to channel migration strategies; b); barriers to automated service delivery; c) barriers based to employee-technology service integration; d) barriers to operations standardization in network contexts. Although the volunteer migration strategy is incentive-based and will likely have a different impact on customers than forced migrations, both of these strategies result in the weakening of the omni-channel service concept, as there is a loss of the available channels focusing on the network-preferred E-channel. In this case study, the Tb2N manager (SIBIS) is handling customers complains by justifying the discontinuation of some services for safety reasons. However, theory is peremptory in so far as firms should reward their customers when forwarded to the preferred E-channels. While the network management entity (SIBS), in collaboration with some of the network companies, is trying to reward its customers, it has not yet been able to fully realize it. We also distinguished automated and non-automated debilities, and we sub-divided the automated debility in physical and virtual. The integration is a good example of physical debility and we recommended to mitigate this aspect by following the Roth and Menor (2003) structural choices. Lastly, we found the connectivity to technology and firms an essential function to the service purchasing, as the Tb2N are dependent to mobile data access. With regard to non-automated barriers, we identified the employees training across all organizations involved in the network as a critical factor; it may be handled by the service providers with the use of digital tools and platforms for training programs to develop highly educated professionals. Lastly, in an operations management perspective, firms should develop ways for customers to voice their service dilemmas and request help easily, despite the coordination that this assignment requires through the network. This paper is important for practitioners as they should be aware about the debilities of the Tb2N

because their (in)activity may affect positively or negatively the network brand image. In addition, the identification of the Tb2N debilities allows organizations to be more synchronized and competitive. Academically, this article tries to stimulate the discussion among researchers in what concerns the service failure and recovery in a Tb2N context. This paper is not free of limitations. Being exploratory in nature, we hope that this study can encourage future research and to enhance a broader perspective in the service science arena. In SFR context, it would be interesting to conduct a study within Tb2N that would focus not only on collecting data from one company but from the entire network.

CHAPTER VI

VI.1. Relevance of the inputs and elements of innovation

VI.1.1 Relevance of this thesis

In the contemporary service industry field, new trends and technology-based business networks are important subjects in an omni-channel context. Although there is few empirical evidence in the literature that can sustain the previous argument, the exploratory nature of this thesis helps to fill this gap in the literature. This work is thus relevant, since it suggests guidelines for practitioners, which desire to build or join a technology-based business network and the risks this decision may entail. Firstly, our systematic literature review revealed that preliminary insights from multiple channel services scope (multi- to omni-channel) came from the marketing literature, while operations management were being surprisingly neglected (conf. chapter II.2). In this regard, we alerted scholars for the need to carry out studies in the operations management domain. Three years later, we re-performed the systematic review and we verified that 47% of the current literature is now based on operations management (conf. chapter IV.1), being a higher percentage when compared with a first review. The roots of this phenomenon is probably linked with the calls for organizational adaptation, where companies have found that they have advantages in serving their customers using an integrated network of channels, but operational changes normally require process adjustments (Roth and Menor, 2003; Hübner *et al.*, 2016). Process optimization needs to align the transition to omni-channel services with customer requirements, as companies and customer's roles converge (Prahalad and Ramaswamy, 2004). When customer involvement into company operations takes place, joint value creation occurs, which means that customers are engaged in, for example, the design or in front-/back-office operations (Grönroos, 2011), hence the importance of investigating this framework. In this operation management context, services are expected to be provided through a mix of front- and back-office activities, being respectively the high-/low-visibility of an operation (Slack *et al.*, 2010) and customers high-/low-contact (Angelis and Lima, 2011). Despite the latest review has shown that studies on operations management

are growing, we intend to continue to contribute to fill the gap in the literature, thus we studied

the omni-channel services in the banking industry in the lens of operations management in two phases: a) from a front-office perspective, by understanding how omni-channel service operations are building technology-based business networks and, by identifying their service architectures; b) at the back-office level, by understanding service failure and recovery through multiple channels and networks. To that end, the following sections highlight the front-office operations as the innovative element of this thesis, and the back-office operations as a contribution to academics and practitioners, given that it has already been traditionally explored in academia (cf. Metters *et al.*, 2007), while the omni-channel strategy has been virtually unexplored, especially in the context of service failure and recovery.

VI.1.2 Articles alignment

It is common for a research endeavour to start with a literature review, this thesis is not different. We have started with a systematic literature review to find the initial guidelines and research paths (chapter II1 and II2). Therefore, we have found operations management discipline with a limited engagement to multi-channel services area. That finding called our attention, the literature had a strong focus on the marketing area; with a considerable number of papers centred on customer interactions with the organizational front-office services. Since the literature have been neglecting the operations management perspective, and the back-office operations aspects remained largely unexplored, we identified the gap in the literature as a research opportunity. The first research question we posed is a preliminary question, which aimed to understand the multiple channel context and to pose avenues for future research. Although both chapters (II1 and II2) have contributed to the first research question, in some extent all the articles of the thesis have allowed to systematize the knowledge about the multiple channel services and unveil specific management problems in the context of service delivery. To corroborate the findings of the first systematic literature review (II1) and to deepen our knowledge, we pursuit the research with an affinity diagram (II2). Consequently, the results suggested future paths for investigation on the integration of traditional and virtual services, quality issues and customer behaviour towards the use of multi-channel services. The literature recommended

a search focused on the synergies between online and offline operations (Carlson and Cass, 2011; Kwon and Lennon, 2009), generated through the integration of channels (Rosenbloom, 2007; Verhoef *et al.*, 2015). To pursue this path, we studied several channel strategies, namely, the omni-channel channels, due to its channel integration (traditional and virtual).

During the empirical research, and while we were investigating those synergies between online and offline operations, we found more synergies than we have expected (IV1). First, we noticed the transition to omni-channel services require companies to overcome many organizational challenges, which is compelling academics and practitioners to focus on its operation management. Therefore, we believe this overturn is now being observed by the higher rate of published articles within the scope of operations management (cf. “47% of the literature is now based on operations management”). The results also indicated that, besides the internal synergies, many companies were overcoming their barriers and establishing organizational synergies with other partner companies (cf. IV1 basic and complex synergies). After acknowledging the prior prepositions, the chapter IV2 was the natural step to identify and understand the aforementioned synergies. Therefore, we empirically verified that operations management evolving multiple channels are building technology-based business networks. Besides companies’ internal process improvement, these organizations are also looking for competitive advantages over their rivals. The previous movement was incorporating new challenges as it is required an organizational transition based on operations management to allow individual firms to adapt their processes and channels to the multiplicity of heterogeneous firms. Following Moller & Rajala (2007) and Chou *et al.* (2016) we felt the need to understand the relation between the technology-based business networks and the customers. As we suspected, not all channels and services could be considered a part of the multi-brand experience. In fact, the case analysis revealed that only two of the omni-channel service architectures meet the requirements, namely: the mixed services and the pure virtual services. As a result of these three empirical research we were able to answer the second research question. The three chapters (IV1, IV2 and IV3) contributed to the second question in the extent that, for the first time, it allowed to fulfil a gap in the literature by identifying the roots of the technology-based business networks. Moreover, these chapters contributed to understand

the challenges and dynamics that are posed to companies which desires to cooperate into a heterogeneous network.

By deepening the technology-based business networks knowledge, we were confronted with service failures, as managers are focus on maintaining high standards of service delivery, specially when those failures may affect the overall network image. Therefore, we explored the way service providers were employing their channels to support the handling of customer complaints and the characterization of recovery practices to improve customers' satisfaction. The results shown the degree of customer (dis)satisfaction was not directly linked to the nature nor the severity of the existing failure, but rather with the service recovery process. The same research was carried out to a similar field of study, the technology-based business networks (chapter V2). By investigating the implications from the existing misalignments between the service delivery failures and the complexity of technology-based business networks recovery processes, we revealed four types of technology-based business network debilities. The last two chapters (V1 and V2) contributed to the third research question. Both research allowed to fulfil a gap in the literature of paramount importance, as companies and managers are struggling to constantly maintain high service standers through all channels, especially to those that have implications on the brand image and network i.e., mixed service encounter and pure physical services.

Despite of the inclusion of a dedicated methodology section in each of the articles that resulted from the research work, it was thought important to develop and integrate a full article to detail and contextualize explain the research methodology (chapter III1). Complementary explanations for a better clarification of the data, methods and related decisions are referred to chapter I2 (design/methodology/approach).

VI.1.3 Innovation element

The academic literature frequently uses indistinctively different channel strategies while, technically, the omni-channel service phenomenon boundary is remaining unclear and difficult to define (Picot-Coupey *et al.*, 2015; Verhoef *et al.*, 2015). Along with the need to understand each channel strategy, practitioners are deploying suitable channel strategies to their business models and academics are determining boundaries to avoid overlaps (Beck and Rygl, 2015; Picot-Coupey *et al.*, 2015; Bernon *et al.*, 2016). In this

context, we revisited the literature and proposed future research avenues. During this process, we provided a theoretical landmark, contributing to a better understanding of each channel strategy, by promoting several systematic literature reviews. Following the literature reviews, we empirically uncovered organizational synergies in the omni-channel service context. To the best of our knowledge, this was the first attempt to discuss the way service organizations (i.e. banks) are being integrated into technology-based business networks. The element of innovation is achieved by understanding the whole process involved, and the underlying integration of a company into a business network. Currently, the literature has been investigating the shifting from multi- to omni-channel strategies (Picot-Coupey *et al.*, 2015), as it is complex and engaging, but is neglecting the fact that companies are being integrated into business networks, without having changed its associated processes and technologies. The introduction of new technologies and the shifting towards a firm-based omni-channel strategy (FbOS) to a technology-based business network (Tb2N) poses operations management challenges; this move is far from being straightforward as companies need to integrate operations within the business networks, which means the need to align the operations with the multi-brand image (Brun and Castelli, 2008). By other words, launching an omni-channel strategy rises the challenge of managing and integrating the operations between several business partners. Expanding the range of online offering and mobile devices are significantly changing firm's structures; for many firms, this implies completely new operational process (Hübner *et al.*, 2015). Thus, the implementation of an omni-channel strategy is motivating different companies to stop attempting to improve their own processes independently, in order to achieve a global benefit (Bagchi and Skjoett-Larsen, 2005). To improve their processes globally, practitioners must have knowledge of the omni-channel service architectures in a Tb2N context (cf. chapter IV.3); although the thesis' results concerning the Tb2N architectures are exploratory and adjusted to the Portuguese reality, we consider this innovative element as a first step to help managers to understand this new phenomenon and adapt their front-office operations. The importance of this innovation element underlies in the fact that executives have tried to implement the Tb2N strategy around the world, i.e. United States of America (e.g. Apple Pay) and Portugal (e.g. MB Way), as new strategy provides more available channels which results in a greater freedom for customers, although this freedom may be restricted when service failures occurs, as we shall see

further on. To this aim, we conducted this study to inform practitioners to be aware when they decide to adopt the technology-based strategy, by not neglecting customers' concerns regarding the potential lack of privacy, security and fraud when using a network-preferred channel (Groß, 2015; Oliveira *et al.*, 2016; Kerviler *et al.*, 2016). Moreover, as the complaint management has been considered an essential tool for managers (Matos *et al.*, 2009) in a multiple channel context, we have also identified omni-channel failures and recovery processes in a technology-based business network context, and thus we provided an additional contribution to the literature.

VI.2. Integrative perspective, conclusions and future research

VI.2.1 Conceptual contributions

The empirical investigation has identified the traditional service failure and recovery in the banking sector (Johnston and Fern, 1999; Michel and Meuter, 2008), but has left opened the opportunity to investigate the Tb2N inefficiencies, that we ended up exploring. At best, researchers have studied the back-office operations in virtual channels context, vide self-service technologies SFR (e.g. Zhu *et al.*, 2013), and physical channels environment, vide employee recovery in a SFR context (e.g. Bitner *et al.*, 1990; Hoffman *et al.*, 1995), but never in an integrated fashion i.e. omni-channel services. Therefore, we first study the implications of an organizational shift to an omni-channel strategy, in particular concerning service failure and recovery (cf. chapter V.1), secondly, we exploit the implications of integrating organizations into a omni-channel technology-based business networks (cf. chapter V.2). By analyzing service failures and recovery in an omni-channel service context, it was possible to determine that customers are not generally aware of the channel recovery attributes, and are often forced to search for help from front-line employees when the bank virtual response is not in accordance to their expectations. This way, they end up losing the freedom that supposedly the omni-channel service offers, which means that the transition was not fully successful causing inefficiencies to the organization, something never mentioned in the literature before. Additionally, we found that non-permanent recovery solutions, such as apologizing and monetary compensations (Roschk and Gelbrich, 2014) are the common used methods to generate positive customer attitude (Bambauer-Sachse and Rabeson, 2015), which is in line with the literature. What

we bring back is that non-permanent solutions are inefficient in the long term, because most part of the previous compensations implies financial losses. We advocate that, despite the investment that is required, it is imperative permanent recovery solutions, involving the improvement of complain handling processes, as the way to definitely recover customer satisfaction. Much likely, this approach will be translated in monetary gains and customer-switching resistance (N'Goala, 2007), because what seems to annoy customers after a failed service recovery is not that they were not satisfied, but rather their belief that the system remains unchanged. The case analysis revealed that customers' (dis)satisfaction is not directly linked to the nature nor the severity of an existing failure, but rather with the service recovery process (cf. chapter V.1). The recovery process is considered a key point. Although controversial, some researches corroborate this point of view, advocating that customers who experience the efficient handling of a complaint become a company's best customer (Hart *et al.*, 1990; Etzel and Silverman, 1991; Michel and Meuter, 2008; Sousa and Voss, 2009), this is also known as *service recovery paradox*. Generally, customers are not willing to interact with a large number of channels, leading to a high number of interactions, instead, they are willing to wait when a service failure requires a high level of decision-making (complex recovery). To avoid service failures and complex recovery processes, it is possible that companies may also be looking for new strategies or synergies to encompass simultaneously physical and virtual purchases (cf. chapter V.1). To substantiate the previous argument, we investigated new Tb2N strategies (cf. chapters IV.1 and IV.2) and exploited the Tb2N weaknesses (cf. chapter V.2), inherent to channel migration to new technologies, that is posing customer-resistance; customer barriers in accessing the firms' common channel; and employee's inexperience and/or lack of training in handling with new technological channels. Besides the shortage of research in the FbOS and Tb2N context, we went further by analyzing the debilities and recovery programs to deepen the knowledge and stimulate discussion among academics. Thus, we provide in this thesis a relatively solid investigation regarding the FbOS service failure and recovery, by the amount of data analyzed and reached depth inside of the bank, and an exploratory contribution about the Tb2N debilities, since this concept is still underdeveloped in Portugal, while the nearest existing literature only analyses cases of traditional failure and recovery (Kelley *et al.*, 1993; Johnston, 1995; Duffy *et al.*, 2006; Komunda and Osarenkhoe, 2012).

VI.2.2 Empirical contributions

Contributions from management practitioners are well noticeable to our topic when Parker & Hand (2009) and Ortis & Casoli (2009) coined for the first time the omni-channel term. Just after, this concept has gathered attention in academia, when Rigby's (2011) firstly mentioned the term; these two examples demonstrates that academics may be dependent on corporate developments, in a common effort to bring together new contributions to the literature. Therefore, the case research allowed us to understand the omni-channel phenomenon. By collecting and analyzing a substantial volume of data we were able to map the customers' path during the service recovery process. While the bank is required by law to register the customer complaint (annex b), not all the recovery interactions are officially registered (cf. chapter V.1.), since the bank is not enforced to record all the internal interactions during the service recovery process, especially the informal relations between employees. Consequently, not all employees are aware of the company recovery attributes, which entails seeking mutual help among them, or seeking help at higher decision levels. What is underlying is the missed opportunity for tracking and optimizing the available resources, which may mitigate unnecessary internal interactions. This is an important implication for practitioners in managing the employees' response, given that this response is considered a pillar in the process of recovering services (Bitner *et al.*, 1990). Allied to the high number of interactions is the need for a timely bank reaction, to reduce costs concerning: the resources employed during the recovery process or failure recovery (Smith and Bolton, 1998); the non-quality aspects that may have impact on customer retention, or customer recovery (Johnston and Michel, 2008; Zhu *et al.*, 2013); the recovering and fixing the service failure or service recovery (Maxham, 2001; Zhu *et al.*, 2013). Whereas the customer path is mapped, the bank is not taking into account the analysis of a major data source; although customers are seeking help by contacting the front-line employees (cf. chapter V.1.), in some cases, they engage all the available channels hoping to find a solution for the bank service failure. The company is currently engaging a large amount of resources to address a failure, while an adequate management analysis can shorten the existing number of paths, mitigating the aspect of having a customer interacting with a large number of channels and having different bank employees worried on resolving the same service failure. Our contribution to practice concerning the back-office operation in a Tb2N context is the fact that

managers should design their omni-channel strategy on the assumption that when something goes wrong within their organization, the image of the entire network that is at risk (cf. chapter IV.3. and V.2.). Additionally, our study allows practitioners to understand the debilities when transitioning their organization to an omni-channel strategy, or to integrate in a technology-based business network. In that regard, practitioners must be aware of the Tb2N debilities, since their (in)activity may affect positively or negatively their organization, and/or the network brand image. The identification of these debilities enables organizations to be more synchronized and competitive (cf. chapter V.2).

VI.2.3 Pulling together the contributions

Scholars are typically building their *raison d'être* on the mission of developing knowledge that can be translated into skills that advance the practice (Ven and Johnson, 2006). Accounts of the gap between theory and practice in management typically employ the rhetoric of “distance” between those organized around the totem “scholarship” and “practice” (Brownlie *et al.*, 2008). In this idea of correlation, practitioners also need to understand the concepts, to collect ideas and guidelines from the academics’ solid work (Weick, 2001). An important overall managerial implication of our work is that we reinforce the notion of permanent solutions when omni-channel service failures occur and, hence, is potentially manageable to improve the complaint handling process. This argument is corroborated by management literature, as “fixing the problem is preferable rather than apologizing or making atonement” (Duffy *et al.*, 2006, p. 112). Moreover, we invite practitioners to enable virtual channels with service recovery attributes. As a result: a) this adjustment prevents customers from seeking help at the banks front-desk and, therefore, maintains the freedom that the omni-channel strategy is supposed to offer; b) reduces the number of interactions that most likely will improve customers’ satisfaction. Practitioners can do this through highly publicized recovery policies, and through the optimization of service recovery processes, especially the virtual channels. Although prior studies have looked at the channels use for different types of service activities or attributes (e.g. Laukkanen, 2007; Danaher and Rossiter, 2011; Sousa *et al.*, 2015), they have not addressed the channel recovery attributes.

What the several articles that are part of this thesis have in common is that they constitute contributions to the omni-channel research according to an operations

management perspective. Generally, there is a limited understanding about the importance of the back-office processes in a context of multiple channels (cf. chapter V); we revisited the pillars of the recovering literature (Bitner *et al.*, 1990) and we found that there is a gap in the employees' response to service failure that needs to be operationalized. Regarding the omni-channel front-office operations, both contributions were made, to academia and practice. From the practice side, as discussed above we provided a contribution to help practitioners by suggesting managers to take into account the analysis of a major data source, by mapping all the customers' paths in search for the service recovery (cf. chapter V.1.). To academics, our contribution was the first attempt to expose how service organizations are being integrated into technology-based business networks and how there are changing their operations to adapt to these business networks (cf. chapter IV).

VI.2.4 Limitations of the research

This thesis is not free of limitations. We have used the Scopus database to perform our literature review, however, the Scopus citation index is constantly being updated with new peer-reviewed international literature. Additionally, our sample was mainly consisted of journal articles, based on the assumption that these amount to the frontier of research (Coombes and Nicholson, 2013), although we accept that there may be other publications that are not included at this database and, thus, in this thesis (Mustak *et al.*, 2013). Moreover, some relevant articles may be missing since the search is restricted to a selected keyword, although during the thesis we have performed several literature reviews and we managed to mitigate this limitation. This thesis is based on a set of scientific papers that integrated each chapter; due to space limitations of each journal it was not possible to list all the systematic literature review articles. To maintain the scientific rigor, the list of all documents of the systematic literature review can be provided on request to the author. Despite the identified limitations, the literature review allowed a better understanding of the phenomenon. This work is also limited because of its exploratory nature, however, by integrating a conceptual and empirical study, the qualitative multi-method research approach provided a balanced design, paying due attention to the dimensions of development, triangulation and complementarity, as well as contributing to an overall understanding of the subject under investigation. Conducting a field study in a bank is not an easy task, as it involves dealing with confidential data, which usually may bring some

constraints to the researcher and to the organization. Due to confidentiality reasons we have not provided any information about key informants and the respective organization. The researcher is responsible not only for maintaining the confidentiality of all information but also for information that might affect the privacy of the research participants (Marczyk *et al.*, 2005). Despite these limitations, this thesis intends to fill a gap in the literature with exploratory research, and for that purpose, this study may be a relevant contribution. It is difficult to generalize with qualitative multi-methods, as some authors suggest that generalization is difficult to obtain without the use of repeatable quantitative metrics (Neufeld *et al.*, 2003). Moreover, some issues may arise when an investigator uses different methods in the same study: it may carry the risk to obtain contradictory findings, but this should not in itself be considered as a problem; it is, however, a clear indication that further work may be required to understand better what is happening (Darlington & Scott, 2002). Whereas a qualitative multi-method research is a well suited method for operations studies, in particular for exploratory research, to mitigate the generalization limitation we suggest to filled this gap with complementary studies of peer researchers.

VI.2.5 Perspective of future investigations

A number of avenues for future research may arise from our study. First, empirical work is needed to develop measurements instruments to help deepen the finds of this thesis. To this end, it would be interesting to develop an instrument to determine the maturity level of omni-channel service organizations, since this subject is unaddressed in the literature and not all the companies present the same omni-channel maturity. In the Tb2N context, it would be relevant to determine minimum ingredients to considered a network as Tb2N; although we have already determined some dimensions in this thesis (cf. chapter IV.2., fig. 7), we consider that our work is still exploratory and there is scope to deepen this study, validating our previous findings. Second, it may be enriching to understand the challenges of how service operations are building technology-based business networks, as we propose to conduct a study within the Tb2N that focus not only on collecting data from one company but from the entire network; or to understand what happens to the network when technology-based business network relationships break up. This might be an interesting topic for managers that have their organizations operating within this type of networks.

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Supplementary Data

Appendix A.

Sources of Data Collection

The chapters of this thesis are built on qualitative case studies, systematic literature reviews or a mixed of both. The objective of this section is to explain, in general, how the data was collected at the bank. All the sources of data collection came from a single unit of analysis – a Portuguese private bank. All the case studies included several sources of data collection, namely interviews, direct observation, archival records, institutional documents. The data analysis was performed with the help of qualitative software package in order to support the organization of unstructured data to achieve more efficient use of time and to discover new paths. Multiple sources of data collection were used as a form of triangulation and corroboration, which prevented the exclusive reliance of a single data collection method and, thus, aiding to neutralize any bias inherent to a particular data source (vide Chapter III.1.). Thus, we present a table 14 that summarizes the research:

Table 14. General overview of the thesis data

Research question	Thesis Chapter(s)	Research Method(s)	Unit of Analysis	Data Collection Sources	
RQ1	II.1	Systematic Literature Review	Electronic Database: Scopus	Journal Articles: 118 articles	
	II.2				
	IV.1	Qualitative Multi-method Research	Systematic Literature Review	Electronic Database: Scopus	Journal Articles, Books, Conference Proceedings: 44 documents
			Case Study Research	01 Bank Branch	05 Interviews 13 Visits 714 Documents
RQ2	IV.2	Case Study Research	02 Bank Branches	10 Interviews 20 Visits 632 Documents	
	IV.3	Case Study Research	01 Bank Branch	07 Interviews 15 Visits 820 Documents	
RQ3	V.1	Case Study Research	02 Bank Branches	10 Interviews 18 Visits 530 Documents 50 Records	
	V.2	Case Study Research	02 Bank Branches	10 Interviews 22 Visits 970 Documents	

Note: First, not all the branches presented the generic configuration (cf. Table I); for instance, some of the branches did not had an intern or an employee for premium clients;
 Second, not always was possible to interview all the branch employees e.g. refuse to be interviewed, absence...

We have conducted over 2 systematic literature reviews², 4 case studies³, 1 multi-method research, a total of 42 interviews (up to 1,890 hours interviewing employees), 75 archival records (sensitive data), more than 80 visits to the bank (registered in a research diary) and the collection of more than 3,600 institutional documents.

The following subsections provide a resume of the aforementioned numbers, by displaying tables, graphics and evidence excerpts, with the intent to provide a better understanding of the thesis research methodology and for transparency purposes.

A1 Interviews

The translation of the interviews is extensive. We have performed over 42 interviews which resulted up to 1,890 hours interviewing the bank employees. We do not think it is reasonable to incorporate all the interviews records on this thesis. However, for transparency purposes, we have released some of the transcriptions. On request, and depending on the reasons, the author of the thesis might facilitate the access to some transcriptions. Following, we include the interview protocol of the Chapter IV.2 “Omni-channel Service Operations: Building Technology-based Business Networks” and the corresponding transcriptions of this primary source (2 transcriptions).

A1.2 Interview Protocol(s)

A.1.2.1 Case Study Interview Protocol – Chapter IV.1

Introduction

- Explain the purpose of the interview
 - Explain about tape recorder (when applicable)
 - Explain length of the interview
 - Discuss the confidentiality purpose
- **Employee background information**
- When did you started working at the bank?
 - Which branches did you serve?
 - What is your current main responsibilities?
- **Banking Operations Management perspective**
- Is the bank investing on new digital technologies?
 - What are the advantages, can you provide us some examples?
 - What are the priorities to integrate those technologies?

² Include Chap.III.1

³ It is not included the case study from chapter IV.1

- Which are the channels that connects the bank with their customers?
 - What is the main function of each channel?
 - Do the channels have any connection with each other (integration)?
 - If we accept the fact that we are transitioning from a traditional organization into a multiple channel organization, what are the requirements for this transition?
 - What are the (dis)advantages?
- **Synergies and partnerships**
- Is the bank currently establishing new synergies with other companies?
 - What is motivating this bank to establish such partnerships?
 - How do you classify those partnerships?
 - Can you provide me some real examples of those classifications?
 - Do you think the bank should compete by its own means, avoiding this synergies? (Why)
 - Do you agree that new digital and technological tools are facilitating partnerships? (Why?)
 - Can you provide me some examples?
- **Suggestions**
- Is there anything you want to add?
 - Do you have any suggestion for the future?

A.1.2.2 Case Study Interview Protocol – Chapter IV.2

- **Introduction**
- Explain the purpose of the interview
 - Explain about tape recorder (when applicable)
 - Explain length of the interview
 - Discuss the confidentiality purpose
- **Employee background information**
- When did you started working at the bank?
 - Which branches did you serve?
 - What is your current main responsibilities?
- **General questions about SIBS and the network-preferred channel (MB Way)**
- Are you familiar with the activities of SIBS group?
 - Are you familiar with the Bank Apps (General App, Stock Market App)?
 - Are you familiar with other Apps? As the MB Way Technology?
- **Omni-channel Services/ OM (Operations Management)**
- Is the bank implementing new digital technologies?

- If yes (continue or move to last)
 - How is the bank incorporating those technologies?
If yes (continue or move to last)
 - Is the bank adapting its operations to these digital technologies?
(last points)
 - How is the bank managing its multiple channels?
 - Are you moving towards the an omni-channel service implementation?
- **Technology-based Business Networks/ OM**
- Does the bank have any partnership?
If yes (continue).
 - In your opinion, why are these partnerships occurring?
 - Are some of these partnerships using a common technology?
 - According your experience, what is the underlying objective behind the adoption of a common technology?
 - Do these new technologies have a direct impact on the bank operations?
 - What basic elements should these partnerships have, in order for them to work?
 - Are these partnerships currently a new way of doing business?
 - What are the main opportunities and challenges that these new partnerships, which are based on a common technology, presents?
- **Suggestions**
- Is there anything you want to add?
 - Do you have any suggestion for the future?

A.1.2.3 Case Study Interview Protocol – Chapter IV.3

- **Introduction**
- Explain the purpose of the interview
 - Explain about tape recorder (when applicable)
 - Explain length of the interview
 - Discuss the confidentiality purpose
- **Employee background information**
- When did you started working at the bank?
 - Which branches did you serve?
 - What is your current main responsibilities?
- **General questions about the bank direct channels**
- Which are the channels that connects the bank with their customers?
 - What is the main function of each channel?
 - Do the channels have any connection with each other (integration)?
 - Can you provide us any example of that integration?

- Do any of those channels goes beyond the banks barrier (connection with other companies)?
- **General questions regarding the Business Networks**
 - Are you familiar with the activities of SIBS group?
 - Are you familiar with the MB Way technology?
 - Can you explain me how do that App works?
 - Does the bank have any partnership?
If yes (continue).
 - Are some of these partnerships using a common technology?
 - According your experience, what is the underlying objective behind the adoption of a common technology?
 - Do these new technologies have a direct impact on the bank operations?
 - What basic elements should these partnerships have, in order for them to work?
- **Omni-channel Services Architecture in a Technology-based business**
Network environment
 - Which kind of services does the bank perform?
 - Which kind of services does the bank participate inside the heterogeneous network?
 - What kind of joint services can we identify during the service delivery process of a business network?
 - Can you divide those joint services by groups and explain each group by characteristics?
 - Which advantages does each group present?
 - Which limitations are you aware of?
- **General questions regarding to the Bank Operations Management**
 - Which challenges does the bank have to face when dealing with a network of companies?
 - Do you think the bank in a network context should rethink the way its dealing with its operations?
- **Suggestions**
 - Is there anything you want to add?
 - Do you have any suggestion for the future?

A.1.2.5 Case Study Interview Protocol – Chapter V.1

- **Introduction**
 - Explain the purpose of the interview
 - Explain about tape recorder (when applicable)
 - Explain length of the interview
 - Discuss the confidentiality purpose

- **Employee background information**
 - When did you started working at the bank?
 - Which branches did you serve?
 - What is your current main responsibilities?

- **General questions about the bank direct channels**
 - Which are the channels that connects the bank with their customers?
 - What is the main function of each channel?
 - Do the channels have any connection with each other (integration)?
 - Can you provide us any example of that integration?

- **Complaint Channels**
 - What are the main complaint channels?
 - What is the process to deal with a complain? (starting at the branch)
 - Do the other channels follow the same rules?
 - Is there any channel integration when dealing with a complaint?
 - Does the bank record the complaints? (type of records)

- **Omni-channel complaint management**
 - According to your experience what is the most common complaint? (frequent reported failure)
 - What are the main reason(s) for the occurrence of (a) failure(s)?
 - What are the most frequent customer complaint contact point(s)?
 - How to deal with a service failure? (explain the most common)
 - According to your experience, are the most common failures recurrent?
 - If so, why?
 - If so, what to do in order to avoid the failure persistence?
 - According to your experience, what are the causes of customer (dis)satisfaction? (related to service failure)
 - According to your experience, what are the causes of customer (dis)satisfaction? (related to service recovery)
 - What the bank should do to improve the recovery process and the customer acceptance?

- **Suggestions**
 - Is there anything you want to add?
 - Do you have any suggestion for the future?

A.1.2.6 Case Study Interview Protocol – Chapter V.2

- **Introduction**
 - Explain the purpose of the interview
 - Explain about tape recorder (when applicable)

- Explain length of the interview
- Discuss the confidentiality purpose
- **Employee background information**
 - When did you started working at the bank?
 - Which branches did you serve?
 - What is your current main responsibilities?
- **General questions about the bank direct channels**
 - Which are the channels that connects the bank with their customers?
 - What is the main function of each channel?
 - Do the channels have any connection with each other (integration)?
- **Synergies and partnerships**
 - Is the bank currently establishing new synergies with other companies?
 - Can you provide me some examples?
 - Are some of these synergies using a common technology? (ask for examples also)
 - Do you know MB Way?
 - If so, do you think this technology is connecting companies together?
- **Complaint Channels**
 - What are the main complaint channels?
 - What is the process to deal with a complain? (starting at the branch)
 - Do the other channels follow the same rules?
 - Is there any channel integration when dealing with a complaint?
- **Complaint Management Through Multiple Channels and Networks:**
 - What are the debilities you identify with e.g. the MB Way?
 - Are there any customers obliged to use channels they do not want to?
 - If so, what do you think it will be the customer reaction(s)?
 - What to do to mitigate negative reactions?
 - According to your experience, do you think there is a full integration of physical and virtual channels in a network context?
 - If so, can you give examples?
 - If not, can you explain why (e.g. existing barriers)?
 - Are there any barriers to operation management in a network context?
 - If so, what is the solution?
- **Suggestions**
 - Is there anything you want to add?
 - Do you have any suggestion for the future?

A1.3 Interview(s) Transcription(s)⁴**➤ Introduction**

The purpose of this interview is mainly to investigate the omni-channel services in the banking industry. If it is not an inconvenient, we will record this interview in order to facilitate the transcription and analysis process. We are committed to delete the recordings as soon as the transcription is complete, and your name will not be disclosed either. This interview is expected to last between 45 up to 90 minutes, all the interview content will be strictly confidential.

First Respondent**➤ Employee background information**

I started working at the bank as soon as I finished my university degree in 2007. Although the course I attended was not closely linked to management, it gave me the essential skills to perform this duty. I have started working in Lisbon as an intern, my duties were essentially to be in direct contact with the customers and dealing with the administrative processes (back-office). To date I have been serving only in two branches. At the first one I had to complete the internship and I served as a manager. A few years ago I changed to a new area and I was promoted to sub-director of this branch. According to my duties, I like to do a little bit of everything, to be involved in all the activities of the bank. Although I support the branch director, I still like to be in direct contact with the customers and with the small and medium-sized companies.

➤ General questions about SIBS and the network-preferred channel (MB Way)

Yes, I am familiar with SIBS, as they are one of our main partners. Actually, they are known to the public for managing the national ATM network. Although at this branch we have both ATMs: the ones managed by our bank and other(s) by SIBS. I am also familiar with the bank Apps, in particular the generic App – I know its capabilities very well and I quite use it during my daily life. Concerning the MB Way, it is a very well known tool, in particular at the banks that are oriented to new technologies, like ours.

➤ Omni-channel Services/ OM (Operations Management)

This bank is known to be a technological bank and is always innovating in this regard. For instance, we were the first (in the banking area) to use several technologies as the App's (generalist App or stock market App). Well, the example I provided presupposes facilitating the client's life. But, internally, the bank is also incorporating similar technologies as iPads. The use of iPads has several advantages – reduce our administrative activities, the paperless policy allows to reduce the use of paper (it has been one of the bank flags) and permits the customers digital signature, these are just some advantages that comes to my mind. With regard to adapting the bank operations to the new digital technologies that is a complex answer question. I am convicted that we have not

⁴ Example from Chapter IV.2

yet been able to adapt all the bank operations to the new technologies, this is a process of continuous improvement. I can tell that our bank has quite a few contact points (channels), but not all are fully integrated, therefore, we are trying to bridge all the contact points. For example, we now allow the online account opening which can be started through the Internet or at a customer smartphone, tablet or laptop, while waiting for its time to be attended at the branch office. The customer only has to finish the process presently with a digital signature on the employee's iPad as I have mentioned to you before. Currently, the bank promoted several forms of communication (channels) that complement each other, allowing a better identification of the customer needs. On the other hand, it also promotes and stimulates new forms of dialogue, such as the social networks. All these channels are being managed by multidisciplinary teams. In this extent, and according to my experience over the years, I believe that the bank is moving towards an omni-channel service implementation. At least that has been the bank's strategy, although it is difficult to achieve integration that at all levels. The difficulty lies in the fact that there are services that are easier to integrate and manage at all channels ("omni-channelity"), rather than others, because of their complexity.

➤ **Technology-based Business Networks/ OM**

Yes, the bank has partnerships with other companies e.g. insurance companies. But, nowadays, these partnerships are now being extended due to the current technological advancements. In my belief these partnerships are occurring to gain the customer loyalty since once a customer uses the technologies is more prone to use it again. Sometimes, the companies which are joined in a partnership use the same systems and technologies. Yes, the MB Way technology is a facilitator of these partnerships and is a common technology between them. The underlying objective behind the adoption of a common technology is to generate more competitiveness rather than their rivals that do not adopt those systems. Of course, when a channel is created or incorporated a new technology we have to adapt our processes and systems. Even our employees have to constantly adapt to these changes, because customers often ask questions related to these subjects (e.g. Apps). Well, you mentioned the MB Way, if we take that technology in consideration to establish a partnership the basic elements should be: a common technology, an agreement between companies, the Internet connection/company systems, the banking validation of the transaction/operations and the human agents. Yes, I believe this is a new way of doing business. In addition to the business network that MB Way technology came to stimulate, there were already some other networks which use other and simpler tools. For example, the *Sonae* card, from the retailer *Continente*, allows that card to be used in other partner companies within a network (e.g., *Pizza Hut* a Pizzeria, and *Galp* a oil company, both allow discounts), but of course it does not allow the same advantages as the business network that uses the MB Way technology – because it allows immediate payments, for example. In my opinion, when we adhere to certain groups and technologies, the main challenges are associated to the change that we have to make at the bank, which means that some processes change. For example, the employees have to be prepared to give answers about the networks and the use of applications. But, in

what is related to the new technologies and Apps, we had a “good teacher” – the various applications for android and iPhone of our bank.

➤ **Suggestions**

I just want to let you know that you are on the right track, this topic is very interesting and needs to be explored.

Second Respondent

➤ **Employee background information**

I have been working at the bank for over 15 years, and I have always worked at this bank. I know that soon I will have to make a rotation that will happily be close to my area of residence. I have started as an intern, a little different from the present day, where the admitted interns are admitted by the bank through a company that hires them. In practical terms, the interns do not work directly for the bank. Well, I was then admitted to stay in the bank as a manager, until my recent promotion as the director of this branch. According to my duties, I have to make sure that the daily work takes place without any issues and above all the goals of the bank are achieved. In addition, all my employees, including myself, have to meet individual goals.

➤ **General questions about SIBS and the network-preferred channel (MB Way)**

Yes, of course I am aware of the activities of the SIBS group, they are our partners. As well as the bank’s APP that we are required to have knowledge and also the MB Way APP, which I am a customer. We usually have training at the bank, in addition, we also have several tools that may help us if a client asks us about certain technologies to which the bank is associated. An example of helpdesk tools..., we have for example a virtual collaborator who answer to our questions form our system, sometimes we ask for help to other branches or to the support center.

➤ **Omni-channel Services/ OM (Operations Management)**

Yes. Definitely, nowadays the bank is investing on new technologies and digital transformation. For example, we are investing on the dematerialization of the processes – we use e.g. interactive panels (as you can see), digital support to the employees (tablets) and new contact channels to the customers. Some of the technologies are embedded inside the branch offices, others are available to customers on their smartphones, tables or portable computers. The incorporation of innovative and technological elements is not always linear, because its integration involves the whole structure of the bank and sometimes dedicated teams to study and change processes are needed. (new question) Yes, precisely what we were talking about. The bank has to adapt its operations as new technological elements are being introduced. As I mentioned, the changes to the processes are made by dedicated teams. Changes normally come from innovation elements, customer complaints, the attempt to improve and optimize processes, but also from the employees themselves. The bank is managing its multiplicity of channels through teams that were built for that purpose and you should notice that, at Tagus Park (Oeiras) we have our own virtual service

headquarters, that are in charge of these aspects. Our bank is prone to use many channels, to the best of my knowledge this bank has the highest number of contact points with the public, which means that no other bank has so many channels and this means something. In my opinion, we are moving towards a greater integration in order to reach out to everyone. The more customers and partners the bank has, the better. I believe so, we are moving towards an omni-channel service implementation, although that is quite difficult to achieve at all levels.

➤ **Technology-based Business Networks/ OM**

Yes, our bank has a lot of partnerships. I believe you can find them all at our website, it is quite a lot in fact – it is surely more than 100 partnerships. I believe these partnerships are established for several reasons: to obtain a greater number of clients, to get a greater proximity to the society, government and business companies. Mostly of our partnerships are associated with some of our products, for example, some well known movie theatres offer discounts to our customers if they use our bank cards. Yes, we also have partnerships that connects our bank with other companies through technology. The MB Way links us through SIBS to other partners in the group. The goal behind this technology is to connect companies to serve customers and actually everybody wins – customers improve their buying process and companies are collecting customers from other partner companies. Yes, of course this phenomenon changes our operations, in the extent that when something fails we also blamed, what I mean is that there is a greater business participation – if companies collaborate with each other there are shared responsibilities. For instance, if a customer makes a purchase through the MB Way and the payment system is failing, who is to blame? SIBS, the bank, the retail company? Everyone shares the blame, therefore, everyone has to optimize their operations in order to avoid these service failures. On the other had, imagine you went to a supermarket and you want to pay with the MB Way. If the employee of the supermarket does not have the adequate training that allows him to carry out the operations, the entire system fails. Therefore, all companies at their level should tailor their operations to make these functionalities work. I think the basic elements for partnerships to happen are: people, companies, channels/technology and services. People connect to business through several channels in order to get services through a common technology. Yes, no doubt these new partnerships are a new way of establishing new businesses. Note that if a customer is interested in going to a supermarket and has doubts about which brand to use, he/she can choose one that uses the MB Way technology. The others will be clearly losing, because they will lose a client(s). The opportunities that these partnerships give are exactly the ones I have previously mentioned, that is, it allows to gather a larger number of customers, for example. The challenges are clearly at the operational level.

➤ **Suggestions**

Your work is interesting. I suggest that you also contact other companies to further deepen the knowledge in this area. Eventually, you can contact SIBS, although I know that is very difficult to get access to certain information that related new technological developments.

A2 Direct Observation

During a 4-year period, we have conducted more than 80 visits to the bank. During that period, we have systematically observed and listened the participants, in order to enable documenting the real life phenomenon and serendipitous moments. During those visits and tours to the bank facilitates it was possible to take field notes and observe operations first-hand. Those field notes were then turned into a research diary. Usually, direct observations were the secondary source of data collection and it was decisive for corroboration and clarification purposes. Following, we can find some notes from the research diary. We have made an effort to translate all the diary data and to edit it by order of events in the text of this thesis. To facilitate our own analysis, we always used the 5W's: Who? What? When? Where? and What for?

A2.1 Observation Protocol (5W)

- Who is being observed?
- What is the subject of the observation/conversation?
- When did that observation occurred?
- Where did that observation took place?
- What is the main purpose of the observation?

A2.2 Excerpts from the Research Diary (Selections from all Chapters)

- **Who?** Deputy Director
What? Supposedly each branch employee has designated functions, however, we observed that it is frequent during rushing hours' employees performing other tasks for which they are not assigned for, such as the brunch director making customer service. Therefore, a brunch director may also perform the direct sellers' tasks and being considered as a frontline employee.
When? September 01, 2016
Where? Lisbon
What for? Understanding the banking phenomenon.
- **Who?** Deputy Director
What? The bank employee explained the importance of digital transformation. She has shown that the employees are using tablets to reduce administrative work, as well as reducing the use of paper. To make a test, the researcher asked to do a transfer using this system. The director made a transfer using this technology and then asked the researcher to digitally sign the transfer in order to confirm the request. The director said that this technology is often used and thus they have more free time to deal with customer issues, instead of losing time with administrative tasks after the bank closing time. The director also mentioned that new technologies require new elements to be trained i.e. interns. However, after a while using technology it becomes routine, moreover, these new generations easily adapt to new technologies. Additionally, all this digital transformation is environmentally friendly because it makes the bank to save a lot of paper, which is the same to say a lot of trees.

When? September 01, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.77: “a contact sales employee emphasized that the bank was pursuing a transition to multiple channels to an omni-channel strategy, e.g. is investing and making available to its contact sales employees tablets to facilitate interactions with customers. The same contact sales employee reinforces that the required organizational effort is high, because the bank has to invest on: (1) technology and, concomitantly, on restructuring existing processes as new channels are introduced (i.e. revisiting its structural decisions); (2) training its employees (i.e. revisiting infrastructural decisions) and; (3) disseminating the information regarding the availability of new channels to the customers (i.e. acting on the integration of the components of the service system).” Corroboration purposes, thesis pag.91: “we realized that the same changes were performed at the bank, mainly concerning the service operations, with the intention of bringing the bank closer to the omni-channel standards and their customers (e.g. introduction of iPads).”

- **Who?** Contact Sales Employee

What? A contact sales employee mentioned the existence of synergies between the bank and one insurance company. These partnerships bring new customers to both companies. And because the clients have advantages, they benefit from establish a contract with another company that offer better prices due these customers are already part of the network. The contact sales employee also mentioned that the same happens with “electronic network chains” (MB Way).

When? September 22, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.78: “the contact sales employees argued that the bank was already preparing complex channel synergies, building on the establishment of synergies with other companies from different specialties.”

- **Who?** Researcher

What? The researcher made use of the application to validate data.

When? September 24, 2016

Where? Lisbon

What for? Triangulation purposes, thesis pag.78: “the bank already participated in the MB Way service, a functionality that allows customers to connect the bank to several retail companies. This solution allows customers to combine an act of physical purchase and virtual payment, by making a mobile payment for a service or product purchase in a retail store. This kind of synergy is complex because customers can use the payment function across a network of companies, and also combines several types of services (physical and virtual).

- **Who?** Contact Sales Employee

What? Currently the bank is part of the MB Way system that was created by SIBS. This allows our bank appealing to customers who make use of new technologies. On the other hand, the bank cannot be left behind in comparison with other banks that are also joining the same mode of payment (MB Way),

that is, our bank is seen by peers and clients as a leader in the use of new technologies.

When? September 27, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.78: “the contact sales employees argued that the bank was already preparing complex channel synergies, building on the establishment of synergies with other companies from different specialties. (...) m-payments are actually opening the door to synergies, as these technologies are bringing together companies that are using or intending to use the same means of payment.”

- **Who?** Researcher

What? We tested the MB Way buying process. We went to a retail store and paid our purchase with the App. The process comprised simultaneously a physical purchase and the virtual payment with the cell phone, and it involved two companies, the private banking (our case unit) and the retail store that adhere to the MB Way. Additionally, we made an also purchased a product online at another store (store B) that is also part of the MB Way (means that it is an adherent company). Conducting this process, we realized that this is not free-riding, because all the companies make part of the network. According with our observation we may be facing the mitigation of the free-riding phenomenon that is well described in the literature. Therefore, this App presents advantages that a single company does not enjoy. On the other hand, when we use MB Way App we also conduct a purchase within the same network of companies and all benefits from this. That is, there are companies that gain new customers because they make part of the network.

When? October 2, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.79: “A customer may choose the Supermarket B that has a partnership with Bank A, which allows the customer to pay for a product with her mobile device. This process comprises simultaneously a physical purchase and virtual payment, involving two different companies. On the other hand, if the customer wishes to add another purchase to the shopping cart, but does not like the wine offers of the Supermarket B, she can alternatively buy that product online from Supermarket C, using her mobile device to pay the purchase”.

- **Who?** Researcher

What? By observing the buying process using MB Way technology, we realized that the buying process connects 3 different factors, which is: it combines two or more companies; it encompasses physical and virtual purchases with a virtual payment – more than one channel and service.

When? October 3, 2016

Where? Lisbon

What for? Understanding the banking phenomenon, thesis pag.80: “this process connects three different companies; it encompasses, simultaneously, a physical and a virtual purchase with a virtual payment (m-payment) to deliver a service to a customer. What is new here is that we believe this strategy goes beyond the omni-channel experience that originally reflects the articulation of different

channels in the context of a single service provider.” Understanding the banking phenomenon, thesis pag.89: “The case study allowed for the observation of alliances between heterogeneous firms, e.g. banks and retail shops, which resulted in a business network to generate competitive advantages against their rivals.”

- **Who?** Researcher

What? The researcher started to frequently use m-payments for research purposes. We realized that this m-payment allows immediate transfers at the retail stores. With the MB Way technology, it is able to choose a bank where we are affiliated, to select a virtual card and to make a purchase. This act combines a physical purchase because we were able to buy a product, and to connect our bank with the retail company (virtual payment) in order to pay the physical item with our mobile device. We just realized that customers are not just debit/card holders; we make part of the buying/paying process – self-service buyers.

When? November 16, 2016

Where? Lisbon

What for? Understanding the banking phenomenon, thesis pag.90: “The m-payments allow for immediate transfers at the retail store, therefore combining an act of physical purchase and virtual payment, without the need of a debit/credit card. This means that a customer may simultaneously connect his bank to a retail company in order to pay a physical service with his mobile device. This example illustrates that customers are not just debit/credit card holders, they make part of the process as self-service buyers and the purchase is encompassed on a virtual service.” Corroboration purposes, thesis pag.106: “The direct observations corroborated the aforementioned arguments, with the witnessing of settings where a customer may choose a retail store from the business network to purchase a physical service, the purchase can be paid by e.g. mobile devices (m-payment), which connects the bank with the retail store.”

- **Who?** Contact Sales Employee

What? During an informal conversation we questioned a sales employee, in order to understand the reasons that takes the bank to adhere to the MB Way (why question?) the bank. According to the contact sales employee the bank is trying to establish new relationships because it wants to call more clients. The banks that do not participate in these new trends will lose the ability to reach younger generations. If a customer wants to pay a purchase with the MB Way technology and, if the bank is not associated, we immediately lose a client. Moreover, if a client decides to go to a retail store that is in the same network as we are we will collect a client. That is the advantage of being part of the network. Younger generations are using new channels to purchase products and services, these combinations of channels and services is a challenge for us because we have to learn how to work with several new technologies, for several reasons e.g., complaints, questions concerning the technology.

When? November 18, 2016

Where? Lisbon

What for? Understanding the banking phenomenon, thesis pag.90: “there is an involvement of two or more companies in a partnership (e.g. bank, retail store),

the combination of more than one channel (e.g. Internet, point of sale) and more than one service (e.g. bank transaction, customer support by a human agent), which is customer perceived as an integrated network of brand experiences or multi-brand experience.” Understanding the banking phenomenon, thesis pag.92: “(...) when the bank integrated the MB Way concept it was underpinned the interest to collaborate in a heterogeneous network of companies, in order to get access to a wider customer market.”

- **Who?** Contact Sales Employee

What? A contact sales employee mentioned that SIBS is sending inquiries to customers in order to understand if MB Way customers would adhere to Apple Pay if it reaches the Portuguese market. According to his opinion SIBS, Apple and a lot of technological companies are trying to implement new strategies around the world. The technology is pretty the same and the objectives is to facilitate customers’ life. Nowadays, with an iPhone or Apple Watch is possible to make a link with a store to pay a product. According to the sales employee SIBS is in a good position, as it was the first company to penetrate the market. He refers that, according his management classes, at the university, he learned that the first company penetrating the market will have more opportunities to remain the leader. In his opinion, SIBS have to remain innovating, that way they will keep their position in the Portuguese market.

When? November 18, 2016

Where? Lisbon

What for? Understanding the banking phenomenon, thesis pag.91: “practitioners are also trying to implement this strategy around the world, e.g. Apple Pay, as this strategy allows customers that use iPhone and/or Appel Watches to pay in stores that accept contactless payments at point-of-sales (POS) terminals and online.” Corroboration purposes, thesis pag.82: “There are no relevant differences between the MB Way and Apple Pay features. According to an internal consumer survey we found that SIBS is questioning the MB Way customers, in order to check out their propensity to join the Apple Pay as soon as it arrives to Portugal.” Corroboration purposes, thesis pag.92: “In fact, SIBS intends to avoid the penetration of the Apple Pay in Portugal; according to interviews, this event can probably be prevented using innovation and with service operations, making MB Way a differentiating element. This argument corroborates the existent literature, as the technology-based services carry risks, as markets shift rapidly, technologies proliferate unceasingly, and innovation cycles become shorter.”

- **Who?** Contact Sales Employee

What? In order to understand how the omni-channel service banking works we made that question to a contact sales employee. According to his feedback, the bank allows for example the account openings with a cellphone, table, computer, anytime and anywhere. With the omni-channel policy the bank allows to start the process in one channel and to close it in another. The customer is just requested to close the process presently with his digital signature at the bank. Another good thing about this technology is that clients do not have to wait at long queue lines, the process becomes must faster. The same happens at retails stores; nowadays markets are using contactless technologies and m-payments to

reduce the queue lines. The employee also mentioned that according to his experience, the queue line is/was one of the reasons for customer complaints.

When? November 22, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.92: “Another example of a typical omni-channel service of this bank is the online account opening. Real-life statements confirm that, contrary to what was advocated in multiband cross-channel services, customers can now start an account opening process through the Internet on their mobile phone, tablet or laptop, while waiting for their time to be attended at the branch office. At the end, the customer only has to close the process presently with a digital signature on the bank employee’s iPad.” Corroboration purposes, thesis pag.92: “Concerning the omni-channel service operations, the contactless technology and the m-payments will better integrate virtual and physical services. For instance, we know that customers use virtual services to avoid queue lines, the contactless technology reduce queuing time as people do not have to stand in queue for long time to get their transactions done.” Corroboration purposes, thesis pag.106: “These mobile devices have advantages known as queue avoidance, immediacy, ease of use and low cost. This experience can be considered as omni-channel mixed service architecture in a technology-based business network; it comprehends a virtual payment to acquire a physical purchase”.

- **Who?** Contact Sales Employee

What? Digging more on the online account opening the researcher asked about the procedure and the contact sales employee explained it better. We understood that all the procedure can be online but the final signature is at the branch office and with the first monetary transfer (presently or online). The employee also mentioned that many customers that opt to open one account via online first search for additional information with a branch office or by calling to the call center, just after collecting all the needed information they upload the necessary documents and start the process online.

When? November 22, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.107: “The bank employees stated that, for instance, many of those customers that opt to open an account online, first search for additional information through the call center, and then upload all the necessary documents to open the account through the virtual channel, using their mobile device (e.g. table, smartphone). To finish the account opening process, they must perform a monetary transfer e.g. through the network preferred channel, to officially start using the new account and complete the process.”

- **Who?** Contact Sales Employee

What? According to the perception of a contact sales employee the transactions with MB Way technology is pretty safe. He mentions that although he is not information engineering, according to his commercial experience he had received any complain related to security aspects of this application. He is convinced that these new technologies are pretty much safe, although he recognizes that customers are still sceptic concerning the potential attacks that

might occur in the future. In any case, the employee assumes that there have been already some complains related to the “cloning” of credit cards, but none related to the wireless technologies.

When? November 25, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.91: “Recent study evaluated the security of Apple Pay for transactions at POS terminals and proved that relay attacks cannot be avoided, in general, however, particular security features of Apple Pay prevent that relay attacks can be practically exploited. The security level of Apple Pay is comparable with the security level of payments with traditional credit cards, in contrast to the mobile payment service Google Wallet, no serious security vulnerabilities exists.”

- **Who?** Contact Sales Employee

What? During an informal conversation a contact sales employee mentioned that in Portugal SIBS performs a central role in the Portuguese banking industry. SIBS is responsible to manage the national ATM network and some other utilities as the MB Way. However, there is an exception: the ATM machines that are normally inside of the banks are managed by those banks. We are also observing that SIBS is managing the entire MB Way network, gathering companies as a big company.

When? November 25, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.105: “In Portugal, it performs a central role as a technology operator in the payments sector. In particular, with respect to the banking services, it manages the ATM network and the latest MB WAY brand (SIBS, 2015). The MB WAY has a vast number of adherents, including banks and retail stores, which have merged into a business network. With this solution it is possible to purchase services employing mobile payments (m-payments) in retail stores or online. SIBS, as a well-established technology-based business firm, is managing the network, recruiting other companies and linking these companies by using a network-preferred channel (MB WAY).”

- **Who?** Contact Sales Employee

What? A contact sales employee with his computer gave a tour to the researcher; he showed us all the channels that may be used by customers. In total, the bank has 5 channels: bank mail, bank website (click to call/click to chat), the call center, branches and social networks (e.g. Facebook). He then, explained us how to use each channels and capabilities, which are also online.

When? November 29, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.105: “Our case is a well-established private retail bank operating in Portugal; it uses a vast array of its own physical and virtual channels that are available to customers for service provision purposes. The bank mainly interacts with their customers using direct channels: 1) *bank mail*; 2) *bank website*, which includes two communication icons (click to call/chat) – *click to call*, a virtual icon that allows customers to receive contacts from the bank, and the *click to chat*, a virtual icon that allows

customers to interact with the bank using a chat box; 3) *call center*; 4) *brick-and-mortar*; 5) *social networks*.”

- **Who?** Researcher
What? The researcher went to an ATM to withdraw money as a self-service buyer.
When? November 30, 2016
Where? Lisbon
What for? Corroboration purposes, thesis pag.108: “Customers are not just debit/credit card holders, they make part of the process as self- service buyers and the purchase is encompassed by virtual services, and is virtually involving two companies”.
- **Who?** Researcher
What? The researcher transferred a code to an other user to test the technology. The other user was able to withdraw money from an ATM machine with that code.
When? November 30, 2016
Where? Lisbon
What for? Exploring the phenomenon, thesis pag.108: “Customers are increasingly involved in the service, being able to interact with other customers, e.g. by sending a code, so that a member of the MB WAY can withdraw money from an ATM in real-time and geographically elsewhere”.
- **Who?** Researcher
What? The researcher tested the technology by purchasing a product at a retail store using the self-checkout, by scanning the acquisition and making the payment without human intervention.
When? November 30, 2016
Where? Lisbon
What for? Exploring the phenomenon, thesis pag.108: “Other example can be offered concerning the virtual pure services when customers goes to a retail store and pay their purchases at the self-checkout (employing what is known as self-service technologies), scanning their acquisitions and making the payment without any or low human intervention. In this example, we may include the use of a self-checkout, owned by the retail store (e.g. hypermarket), and the MB WAY application, that represents the customer’s bank (network adherent bank)”.
- **Who?** Researcher
What? The researcher tested all the bank channels, which included search for the bank mail channel, social network, click to call, call center, click to chat, brick and mortar, customer ombudsman and the customer service center.
When? October 17, 2016
Where? Lisbon
What for? Exploring the phenomenon, thesis pag.122: “The key channels used by employees for interactions concerning service failure and recovery involved (figure 14): (1a) *Bank mail*, the possibility of contact with the bank by electronic mail; (1b) *Social Networks*, the possibility of posting questions and interacting with the bank via social networks; (1c) *Click to call*, is a virtual place that allow

customers to receive a contact from a bank, free of charge; (1d) *Call center*, a physical facility offering customer interaction, by request (click to call) or by a customer call; (1e) *Click to chat*, is a virtual service that allow customers to interact with the bank using a chat box; (1f) *Brick and mortar bank* (branch office) the possibility of face-to-face interaction in the physical facilities of the bank.”

- **Who?** Contact Sales Employee
What? The contact sales employee perception is that most part of the service failures are related to bank automated services (e.g. charges and fees).
When? October 26, 2016
Where? Lisbon
What for? Corroboration purposes, thesis pag.123: “The analysis records from customer complaints revealed that the most relevant service failures were connected to issues regarding bank fees (13 failures), bank charges (5 failures) and account closures (4 failures), about 1/3 of the sample.”
- **Who?** Contact Sales Employee
What? Concerning the customers complains there is a legal obligation to register all the interactions with the customers, everything have to be recorded, but there is no enforcement concerning the contacts inside the bank. The best way to track the resolution to a failure between employees is through the e-mail, but it is not an official record.
When? October 26, 2016
Where? Lisbon
What for? Corroboration purposes, thesis pag.124: “Furthermore, whereas there are legal obligations for the bank to register the interactions with the customers, there is no enforcement in recording contacts between employees.”
- **Who?** Contact Sales Employee
What? The contact sales employee mentioned that sometimes costumers address to the branch because they do not know how to use the internet channels or because they can not find answers on these channels. The employee's perception is that when a customer wishes to make a complaint, they prefer to do it preferentially and discuss it with an employee of the bank, unless they do not have the mobility to do so, the alternative is to call.
When? December 14, 2016
Where? Lisbon
What for? Corroboration purposes, thesis pag.125: “Evidence suggested that customers were often forced to use physical channels when the bank virtual response is not appropriate, ending up losing the freedom that supposedly the omni-channel services offer. This phenomenon occurred whenever the direct channels were not prepared to provide other than standard answers, in complaint cases where high level decision-making needs to be called to act.”
- **Who?** Deputy Director
What? The deputy director mentioned that sometimes the bank prefers to chargeback the customers in order to get rid of a particular complaint. The advantage is that the bank avoid additional costs e.g. the customer keeps

complaining in another channel(s) – this bring costs. But, the negative implications is that often the same problem remain unchanged for other customers.

When? December 14, 2016

Where? Lisbon

What for? Corroboration purposes, thesis pag.125: “However, this argument is not enough, as non-permanent solutions are inefficient in the long term, because most part of these compensations implies financial losses.”

- **Who?** Contact Sales Employee

What? A contact sales employee refers that although not directly related to the bank decision, because it is mainly a decision of SIBS, some consumers have complained about the migration of services (MB NET).

When? May 9, 2017

Where? Lisbon

What for? Corroboration purposes, thesis pag.137: “An example, collected from the interview data, shows that the MB Net service, which allows customers to create virtual cards to safely pay their online purchase, were migrated to the network-preferred E-channel. As a result of this migration, customers are forced to use different technologies and channels with their smartphones, losing the freedom that was previously available through the Web.”

- **Who?** Researcher

What? In order to verify the information from the complaint records, the researcher went to a bank after the closing time and found the same difficulties described by the customers. The test was ok, the complaint was upheld.

When? May 9, 2017

Where? Lisbon

What for? Corroboration purposes, thesis pag.138: “Automated teller machines (ATMs) are a good example of this. In Portugal, some ATMs are located inside the branch facilities. The access to those ATMs, requires customers to use their physical debit or credit card to pass through a security door. In this context, complaint records showed that customers that wished to withdraw some money, by using their smartphone and the network-preferred E-channel, were requested to firstly use their debit/credit card to get into the branch office. This debility is severe as it limits the customer access to a pure virtual service and restricts the use of a network virtual channel.”

- **Who?** Researcher

What? We observed that front-line employees are often confronted with the difficulty to provide services where new technology is associated. Employees from a retail store were unaware of the possibility of a physical acquisition and a virtual payment. This indicates that the organization has joined the network of technology-based services but has not prepared its employees.

When? May 30, 2017

Where? Lisbon

What for? Corroboration purposes, thesis pag.140: “The case observations supported that Tb2N is no different from traditional service organizations in this area. We have repeatedly verified that in order to purchase a product at a retail

store, front-line employees are often confronted with the difficulty to provide services where new technology channels are associated. An example is the virtual payment with the MB Way technology: the employees of a retail store were unaware of the possibility of a physical acquisition and virtual payment. This indicates that the organization has joined the network of technology-based services but has not prepared its employees. That is, some organizations are not properly following the demands of the external environment. When implementing new technologies and channels, it is crucial that managers ensure adequate staff training (Sobiya and Thangavel, 2015), because the failures of a company may affect the image of the entire network.”

A3 Archival Records

This thesis reports on the analysis of 75 customers’ complaints records. Banks usually keep diaries and archives to register their activity. In some specific cases, banks may be enforced by law to register sensitive information; one example is the customer complaints registration. By collecting and analysing the customer complaints records may be useful to map the customers’ path during the service recovery process. As some banks are currently engaging a large amount of resources to address failures, the results of our study may provide fruitful insights for managers. For instance, the analysis of archival records or bank internal reports may be offering a timely contribution to those who are interested in analysing service failures and recovery processes.

Chapter V analyses how service providers employ their channels to support the handling of customers’ complaints in the context of omni-channel services and technology-based business networks. To this end we included 2 subsections A3.1 and A3.2. A3.1 displays an example of an archival record of a customer complaint from the chapter V.1; and A3.2 displays a socio-demographic details of the customers’ complaints from the chapter V.2.

A3.1 Client Ombudsman Records⁵

This subsection focuses on the data collection process of the Chapter V.1. “Omni-channel Services Failure and Recovery”. It reported on a documental examination of 50 records of customers’ interactions with the client ombudsman. Due to confidential reasons we cannot provide all 1) reports of the customer complaints, 2) the key informants and 3) the respective organization. However, we are next providing some standard documents of customer complaints, then we explain each example and its contribution to the chapter.

A3.1.1 Automatic Banking Services – Customer Complaint I

One of the most frequent failures was fees associated to the account maintenance costs; these fees are normally charged by automatic bank services. A specific case was presented by a customer that assumed that his account was closed, after sending an electronic mail to the bank. However, after not having received the bank answerer, a

⁵ From Chapter V.1

notification of non-compliance was sent from the Bank of Portugal concerning those bank charges of the accounts that were supposedly ended. This required a high number of interactions with the bank, as it involved a third party and a high degree of depth to recover the customer.

Transcription of the letter to the bank
***** Beginning of the first letter *****

From: Customer

To: Bank

Subject: Account closure

First Letter:

Gentleman,

I kindly ask you to close the following accounts, since we do not use it and only incur on expenses.

The account has a positive balance of 10,44 euros. By closing and after deducting the necessary expenses, I would be grateful that remain balance would be transferred to the AAA account.

Regarding the BBB account, I would like to know the reason why the bank had debited 23,83 euros. This card has not been in use for several months and when we checked the balance we noticed that their debt to liquidate.

Thank you for informing me if any further action is needed. If I do not have any contact with you, I assume that the accounts will be closed on this date, so no further expenses will be due.

Best regards,

***** End of letter *****

***** Beginning of the second letter *****

From: Customer

To: Bank

Subject: Account closure

Second Letter:

Good morning,

Once again I request to close the account. The account is without balance and I will not be responsible for the payment of any expenses.

Yours sincerely,

***** End of letter *****

The following documents are a copy of the non-compliance notification sent from the Bank of Portugal to the customer. It is related to the non-payment fee, charged from bank from an account that was supposedly closed.

Non-compliance notification from the Bank of Portugal



Banco de Portugal

EURO SISTEMA

Central de Responsabilidades de Crédito

Nome: [Redacted]

Tipo de identificação: NIF / NIPC [Redacted] Nº de identificação: [Redacted] Data de nascimento: [Redacted]

Responsabilidades referentes a: [Redacted]

Informação comunicada pela instituição		Produto Financeiro	Prazo Original	Prazo Residual	Situação de Crédito	Duração Incumprimento	Prestação €	Saldo €	Garantias	
Nível Responsabilidade	Descobertos em depósitos à ordem	001 - Indeterminado	001 - Indeterminado	Regular				Tipo	Valor €	
Créd conjunto - out mutuários	Cartão de crédito	001 - Indeterminado	001 - Indeterminado	Potencial						
Crédito individual	Crédito ao consumo	061 - Mais de 5 até 6 anos	004 - Mais de 180 dias até 1 ano	Regular						
Créd conjunto - 1º mutuário	Cartão de crédito	001 - Indeterminado	001 - Indeterminado	Regular						
Crédito individual	Descobertos em depósitos à ordem	001 - Indeterminado	001 - Indeterminado	Potencial						
Créd conjunto - out mutuários	Leasing mobiliário	063 - Mais de 7 até 8 anos	053 - Mais de 3 até 4 anos	Potencial						
Avalista ou fiador - individual	Crédito ao consumo	010 - Mais 30 anos	010 - Mais 30 anos	Regular						
Créd conjunto - out mutuários	Crédito à habitação	010 - Mais 30 anos	010 - Mais 30 anos	Regular						

Informação comunicada pela instituição		Produto Financeiro	Prazo Original	Prazo Residual	Situação de Crédito	Duração Incumprimento	Prestação €	Saldo €	Garantias	
Nível Responsabilidade	Descobertos em depósitos à ordem	001 - Indeterminado	001 - Indeterminado	Vencido	Mais de 36 até 48 meses				Tipo	Valor €
Créd conjunto - out mutuários										



Banco de Portugal
EUROSISTEMA

Central de Responsabilidades de Crédito

Nome: [redacted] Responsabilidades referentes a: [redacted]
 Tipo de identificação: NIF / NIPC Nº de identificação: [redacted] Data de nascimento: [redacted]

Informação comunicada pela instituição: [redacted]

Nível Responsabilidade	Produto Financeiro	Cartão de crédito	Prazo Original	Prazo Residual	Situação de Crédito	Duração Incumprimento	Prestação €	Saldo €	Garantias	
									Tipo	Valor €
Crédito individual			001 - Indeterminado	001 - Indeterminado	Potencial			[redacted]		

Tipos de garantias
001 - Colateral real - hipotecário

Número total de saldos neste mapa : 10

Fim de relatório

[redacted]

Remarks

- **Who?** Customer complaint record
What? This record was a piece of the 50 complaint records and helped to statistically establish the most relevant service failures.
When? October 26, 2016
Where? Lisbon
What for? Understanding the phenomenon, thesis pag.113: “The analysis records from customer complaints revealed that the most relevant service failures were connected to issues regarding bank fees (13 failures), bank charges (5 failures) and account closures (4 failures), about 1/3 of the sample (graphic 12). The register of the customers’ complaints revealed that 82% of the claims were related to automatic services, brick and mortar services and ATM services. The most frequently reported service failure was derived from the automated services that charged fees disregarding the customer profile. Thus, the most frequent contact point for customer complaints was the branch office and the call center.”
- **Who?** Customer complaint record
What? Evidence shows that customers were often forced to use physical channels when the bank virtual response is not appropriate. After the customer received the non-compliance letter from the bank of Portugal this failure became a complex failure, because it required interactions with external entities to the bank. The customer were obliged to interact with a large number of channels (e.g. bank e-mail, mail, phone call, etc.) which brought dissatisfaction regarding the recovery process.
When? October 26, 2016
Where? Lisbon
What for? Understanding the phenomenon, thesis pag.115: “The case analysis revealed that the degree of customers’ (dis)satisfaction is not directly linked to the nature nor the severity of an existing failure, but rather with the service recovery process. Evidence suggested that customers were often forced to use physical channels when the bank virtual response is not appropriate, ending up losing the freedom that supposedly the omni-channel services offer. This phenomenon occurred whenever the direct channels were not prepared to provide other than standard answers, in complaint cases where high level decision-making needs to be called to act. Customers are not willing to interact with a large number of channels, leading to a high number of interactions; instead, they are willing to wait when a service failure requires a high level of decision-making.”

A3.2 Banks’ Physical Branch records

This subsection focuses on the data collection process of the Chapter V.2. “Service Failure and Recovery through Multiple Channels and Networks”. It reported on a documental examination of 25 records of customers’ complaints records. A socio-demographic analysis reveals that most customers’ age ranges from 26 to 38. Middle-age groups are more likely to adhere and use new technologies, and, thus, it is reasonable to expect a higher number of complaints from that group. Moreover, the ages above 55 years are the most demanding in terms of adaptation, especially in what concerns to different processes and channels. These complaints resulted in a higher number of interactions with the service provider, due to the difficulties in addressing aspects related to the adaptation to the different mobile banking features.

Figure I. Customer complaints chart

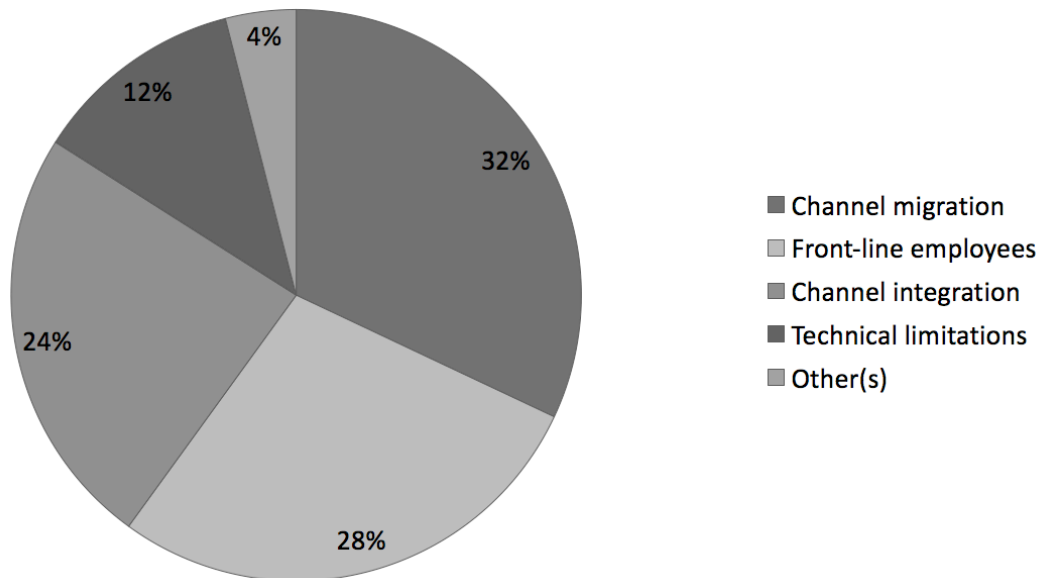


Figure 1 displays a concise list of the customer complaints. It can be seen that the majority of these complaints is related to channel migration, employees training and multichannel integration. This means that 78% of these complaints are associated to virtual services and 28% to physical services, the latter being mainly focused on front-line employees.

Remarks

- Who?** Customer complaint record

What? Records has shown that especially younger customers (ages from 26 to 38) are frequently using the network-preferred channel, however they are finding some constraints as they are complaining about being forced to use some channels that they do not want to (example of MB Net service).

When? October, 2016

Where? Lisbon

What for? Understanding the phenomenon, thesis pag.126: “In the Tb2N context addressed in this study, several customer records reported complaints about the bank forcing customers to use the network-preferred E-channel.”

- **Who?** Customer complaint record

What? Records has shown that especially younger customers (ages from 26 to 38) are frequently using the network-preferred channel, however they are finding some constraints as they are complaining about being barred to automated service delivery.

When? October, 2016

Where? Lisbon

What for? Understanding the phenomenon, thesis pag.128: “In Portugal, some ATMs are located inside the branch facilities. The access to those ATMs requires customers to use their physical debit or credit card to pass through a security door. In this context, complaint records showed that customers that wished to withdraw some money, by using their smartphone and the network-preferred E-channel, were requested to firstly use their debit/credit card to get into the branch office.”

What? Records have shown that especially senior customers (over 55) who are using the network's preferred channel face some difficulty in terms of adaptation.

When? October, 2016

Where? Lisbon

What for? Understanding the phenomenon, thesis pag.129: “The complaint records also shown limited knowledge to perform certain banking operations. These limitations may prevent clients from carrying out their self-service operations. To mitigate this last aspect, the bank is using their channels to educate their customers in order to increase the awareness of the various aspects of the mobile banking. Interviews and documental analysis have greatly contributed to understand that the bank is not working alone in the network. The network and, in particular, the system manager (SIBS), is largely contributing to disseminating all the needed information to understand the technology, in order to simplify the customers integration.”

A4 Official Documents

These are institutional documents, generally produced by the organization for communication purposes and a source of exceptional data collection because they are of easy access and recorded by the organizations' day-to-day activities. Official documents include organizational newsletters and reports available from the official website. We make a distinction from the previous source since general documentation is more easily collectable when compared with official banking records that usually contains sensitive information, and therefore is more inaccessible. Following, we add some excerpts of official documents. The official documents list is an extensive list. For transparency purposes we decided to release some of the official documents. To facilitate the resume, we are going to use the 5W's: Who? What? When? Where? and What for? and an additional print screen.

Excerpts from Official Documents⁶

- **Who?** Bank
What? Bank Strategic Plan on digital transformation
When? November 27, 2016
Where? Formal documents
What for? Corroboration purposes, thesis pag.67: Data analysis from the case study highlighted, in the strategic plan (2016-2018), the importance of channel management, notably by referring to the implementation of more digital and technological tools for customers and workers (explicitly mentioned in the bank's official documents). Corroboration purposes, thesis pag.67: "a contact sales employee emphasized that the bank was pursuing a transition to multiple channels to an omni-channel strategy, e.g. is investing and making available to its contact sales employees tablets to facilitate interactions with customers. The same contact sales employee reinforces that the required organizational effort is high, because the bank has to invest on: (1) technology and, concomitantly, on restructuring existing processes as new channels are introduced (i.e. revisiting its structural decisions); (2) training its employees (i.e. revisiting infrastructural decisions) and; (3) disseminating the information regarding the availability of new channels to the customers (i.e. acting on the integration of the components of the service system)." Corroboration purposes, thesis pag.81: "we realized that the same changes were performed at the bank, mainly concerning the service operations, with the intention of bringing the bank closer to the omni-channel standards and their customers (e.g. introduction of iPads)."

⁶ Selection of 11 extracts

Document print screen:

Tecnologia

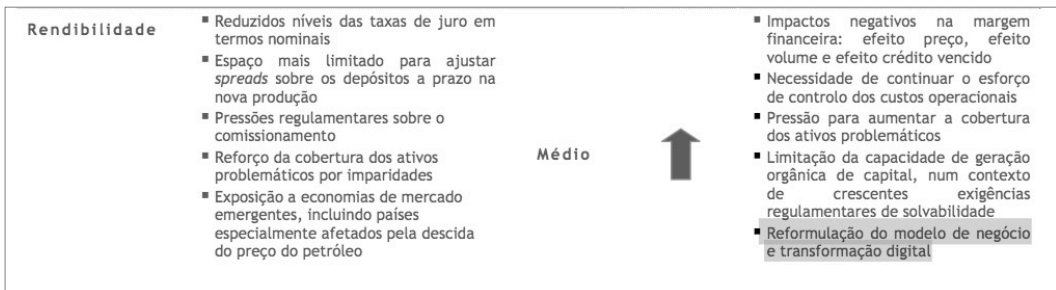
Prosseguindo uma estratégia de melhoria contínua dos seus sistemas de informação, o Banco desenvolveu, neste período, um conjunto de iniciativas e projetos estruturantes, dos quais se destacam: o alargamento, no âmbito do Projeto “Go Paperless”, da possibilidade de assinatura digital e consequente desmaterialização de novos processos, nomeadamente operações de fundos de investimento, algumas transações de cartões, seguros de capitalização/PPR e também a desmaterialização das transações de caixa sem intervenção direta com os Clientes; a “App Inovação”, uma nova versão da App [REDACTED], com novas funcionalidades, entre as quais o pré-login *widget*, fundo parametrizável, *login* por impressão digital e o detalhe de empréstimos; a “App M2020”, ferramenta inovadora de apoio às empresas na organização e acompanhamento dos Projetos Portugal 2020; a implementação da nova funcionalidade, de “Operações Pendentes”, proporcionando maior flexibilidade na concretização de operações iniciadas numa sucursal, podendo estas ser validadas, autorizadas e concluídas pelos Clientes no canal Internet, e também a reformulação do *layout* do site do [REDACTED], tornando-o ainda mais simples e intuitivo, melhorando a navegabilidade e experiência ao Cliente.

No contexto das melhorias operativas menção para a nova plataforma [REDACTED] *Customer Care Application* na gestão de reclamações e a nova solução MARC (“Modelo de Acompanhamento e Regularização de Crédito”), melhorando o processo de acompanhamento e monitorização proactiva dos Clientes; a implementação da “nova Segmentação Prestige”, possibilitando a evolução para uma proposta de valor mais personalizada e ajustada à realidade deste segmento, e também a disponibilização no “Dossier [REDACTED]” de um conjunto de novas funcionalidades, entre outras, maior detalhe de operações, cálculo de rentabilidades e soluções de investimento por perfil de investidor; menção também para as adaptações realizadas com vista à utilização da plataforma pan-europeia para liquidação de operações sobre valores mobiliários (*Target 2 Securities - T2S*) e para as melhorias introduzidas no processo de decisão de propostas de *leasing* imobiliário, e respetivo alinhamento de plataformas.

Referências adicionais para o arranque da disponibilização de caixas automáticas assistidas nas sucursais de Retalho, “[REDACTED] *Teller Machine*”, que promovem uma reformulação na coreografia de atendimento ao Cliente e o lançamento do novo produto para o ramo automóvel associado ao Crédito Pessoal “MAuto” e ainda a disponibilização do serviço de pagamentos “MBWay”.

Translation: “Following a strategy of continuous improvement of its information systems, the Bank developed a set of structuring initiatives and projects during this period, among which the following: the extension, within the scope of the "Go Paperless" Project, to the possibility of a digital signature and consequent dematerialization of new processes, namely investiture fund operations, some card transactions, capitalization / PPR insurance and also the dematerialization of cash transactions without direct intervention with clients.” (...)

“and the availability of the "MB Way" payment service.”



Translation: Reformulation of the business model and digital transformation.

- Fase 2 (2014-2015): Criação de condições para o crescimento e rentabilidade

Durante a segunda fase do Plano Estratégico, o enfoque consistiu na recuperação da rentabilidade das operações domésticas do Banco, em conjunto com o desenvolvimento continuado das subsidiárias internacionais na [REDACTED]. A melhoria da rentabilidade doméstica foi impulsionada principalmente: i) pelo aumento da margem financeira através da redução do custo dos depósitos e da alteração do *mix* do crédito, privilegiando produtos de melhor margem; ii) pela continuação do enfoque na otimização de custos operacionais através da redução do número de colaboradores e a eliminação de sobreposições administrativas; e iii) pela adoção de rigorosos limites de risco de crédito, reduzindo-se dessa forma as necessidades de provisionamento.

- Fase 3 (2016-2017): Crescimento sustentado

Durante a terceira fase, a gestão estará enfocada em alcançar um crescimento sustentável do resultado líquido, beneficiando da implementação bem-sucedida das duas primeiras fases do Plano Estratégico, de um melhor equilíbrio entre as contribuições das operações domésticas e internacionais para rentabilidade e da conclusão do processo de liquidação / desinvestimento da carteira não *core* do Banco.

Para o triénio 2016-2018, foi definido um novo conjunto de prioridades estratégicas para a operação doméstica que têm como objetivo a construção de um Banco sustentável e adaptado às novas necessidades do mercado e dos Clientes. No 1º semestre de 2016, o Banco prosseguiu a implementação da sua Agenda Estratégica 2016-2018.

O projeto é composto por 6 frentes de trabalho dedicadas ao negócio e 3 frentes dedicadas transversalmente à organização. No total mais de 100 colaboradores estão envolvidos na execução das iniciativas identificadas nesta Agenda.

Este período foi dedicado à renovação da rede de sucursais, à inovação e comunicação. Foram visíveis externamente as novidades desenvolvidas no âmbito do projeto estratégico do [REDACTED]. O Banco

Relatório e Contas do 1º Semestre de 2016

passa por um período de transformação de forma a adaptar-se ao perfil mais digital dos seus Clientes, procurando sempre manter a proximidade característica da relação Bancária.

Como exemplo, no 1º semestre do ano:

- Implementou-se um novo *layout* de sucursal, mais moderno e preparado para os novos perfis de Clientes que se afiguram mais digitais e tecnológicos;
- Prosseguiu-se e acelerou-se o trabalho de renovação da rede de sucursais, em todos os segmentos de negócio;
- Lançou-se o crédito *online* - um produto inovador que permite aos Clientes ter o *funding* do crédito na conta no momento do pedido, num processo totalmente desmaterializado;
- Implementou-se um conjunto de melhorias na App de particulares do Banco, tornando-a mais moderna e aumentando as funcionalidades;
- Criou-se e lançou-se a primeira App que permite aos Clientes empresariais fazer a gestão dos seus projetos do Portugal 2020.

A face mais visível do trabalho esteve na definição e disseminação dos novos valores da organização (um Banco ágil, moderno, próximo, simples e sustentável) e na campanha publicitária de lançada em maio que culmina com a nova assinatura do Banco "Aqui consigo".

O projeto da Agenda Estratégica continua, assim, a ser o embrião das iniciativas que têm como objetivo tornar o [REDACTED] bcp o Banco comercial de referência em Portugal.


Translation: This period was dedicated to the renewal of branch network, innovation and communication. Form externally visible the innovations developed within the scope of the Bank's strategic project. The bank undergoes a transformation period in order to adapt to the more digital profile of its clients, always seeking to maintain the proximity characteristic of the Banking relationship.

- A new layout was introduced, more modern and prepared for new customer profiles that appear to be more digital and technological.
- A set of improvements was implemented in the Bank's Personal App, making it more modern and increasing the functionalities.

- Prosseguiu-se também o programa - Green IT -, dinamizado pela Direção de Informática e Tecnologia, iniciativa que contempla um conjunto de ações que visam a identificação de medidas e soluções que se traduzam em ganhos ambientais e tecnológicos. Foi neste quadro de referência que se consolidou o recurso às ferramentas de *webcasting* e reduziu significativamente o número de impressões locais (-11.5% em 2016), resultados que têm permitido prosseguir uma cultura de hábitos sustentáveis na estrita medida das necessidades funcionais, reduzindo custos e desperdícios e otimizando consumos.
- No âmbito dos projetos tecnológicos, destaque ainda para o "GO P@perless" - que aposta na desmaterialização das operações como forma de inovar e otimizar os processos (ex. abertura de conta, depósitos a prazo, cartões) recorrendo a soluções de produção e assinatura eletrónica de documentos - e para as alterações de natureza aplicacional que permitiram o seu alargamento a novos processos de negócio.
- Assim, durante o 1º semestre, foram poupados 1.6 milhões de impressões, o que corresponde a uma diminuição de 6% das impressões realizadas nos equipamentos das Sucursais quando comparado com valor verificado no período homólogo de 2015.
- A estratégia de promoção da adesão aos documentos em formato digital - Extrato Combinado e Faturas/Notas de Lançamento - permanece como uma das prioridades do Banco junto dos Clientes.

O [redacted] continua assim a contribuir para a diminuição da utilização e circulação de papel, efetuando ações de comunicação/informação regulares sobre as vantagens da desmaterialização documental, ao mesmo tempo que dinamiza e executa programas de migração para soluções digitais.

Neste momento, cerca de 40% dos Clientes do Banco em Portugal recorrem já a formatos digitais para a receção da sua documentação.



Translation:

- In the scope of technological projects, the "Go P@perless" - which focuses on the dematerialization of operations as a way of innovating and optimizing processes (eg. account opening, term deposits, cards) using electronic signature of documents - and to the changes of application nature that allowed its extension to new business processes.
- Thus, during the first half of the year, 1.6 million impressions were saved, which corresponds to a 6% decrease in the impressions made in the Branches' equipment when compared to the value verified in the same period of 2015.
- The strategy to promote adherence to documents in digital format - Combined Statement and Invoices / Release Notes - remains one of the Bank's priorities with clients.
- The Bank continues to contribute to the reduction of the use and circulation of paper by carrying out regular communication / information on the advantages of document dematerialization, while also streamlining and executing migration programs for digital solutions.
- At the moment, about 40% of the clients of the bank of Portugal already use digital formats to receive their documentation.

Further details may be provided upon request to the author.

- **Who? SIBS**

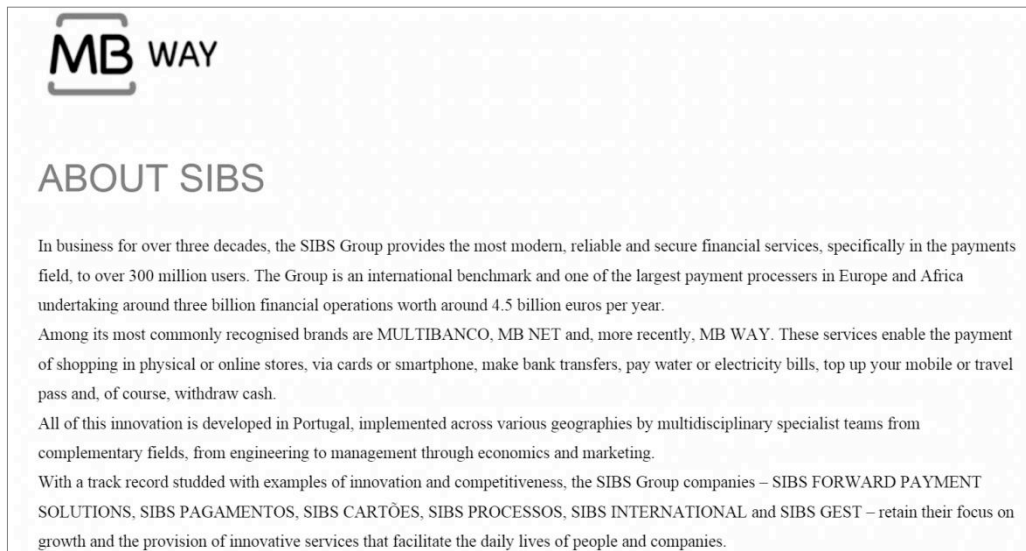
What? MB Way initial announcement

When? December 2015

Where? <https://www.mbway.pt/en/about-sibs/>

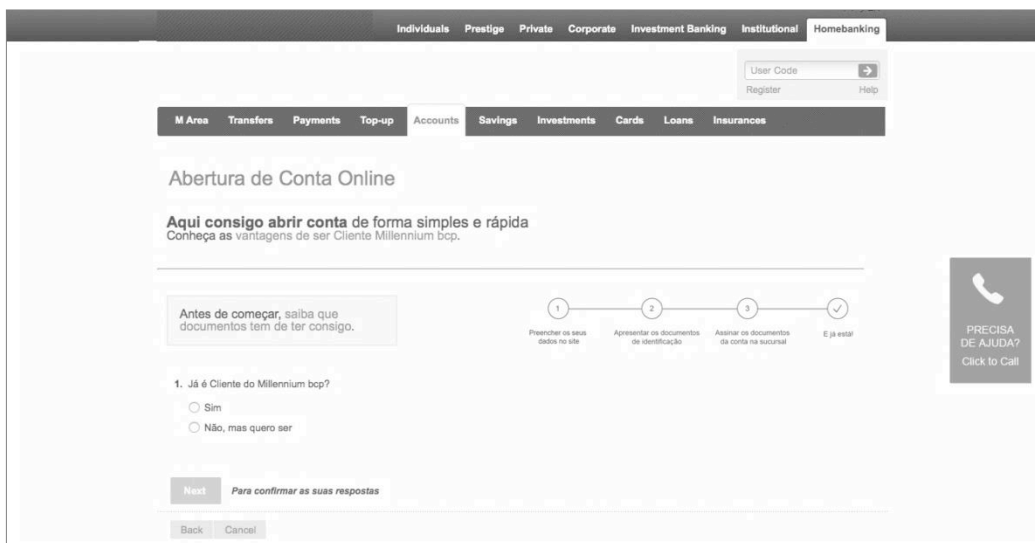
What for? Corroboration purposes, thesis pag.79: “For instance, SIBS group, a company that operates mainly in the payments sector had recently launched the MB Way Application. The MB Way service allows customers to connect a bank to several retail companies that have joined the MB Way service.” Corroboration purposes, thesis pag.124: “In Portugal, SIBS group is a company that operates in the payment sector (SIBS, 2015) and has recently launched the MB Way application (MB Way, 2015). Similar to Apple Pay, where most merchants and banks supported this service shortly after its initial launch, bringing a new set of capabilities and installed base of consumers (Liu *et al.*, 2015), the MB Way has reached the same achievements”.

Document print screen:



- **Who?** Bank
- **What?** Online account opening
- **When?** November 22, 2016
- **Where?** www.(confidential).pt
- **What for?** Corroboration purposes, thesis pag.82: “Another example of a typical omni-channel service of this bank is the online account opening. Real-life statements confirm that, contrary to what was advocated in multiband cross-channel services, customers can now start an account opening process through the Internet on their mobile phone, tablet or laptop, while waiting for their time to be attended at the branch office. At the end, the customer only has to close the process presently with a digital signature on the bank employee’s iPad.”

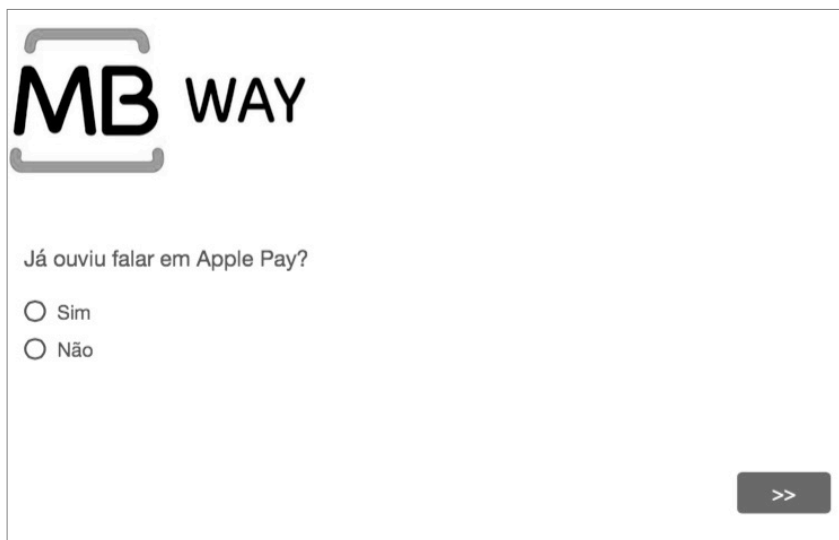
Document print screen:



Further details may be provided upon request to the author.

- **Who?** SIBS
- **What?** SIBS Survey/inquiry
- **When?** December 2016
- **Where?** Online
- **What for?** Corroboration purposes, thesis pag.82: “There are no relevant differences between the MB Way and Apple Pay features. According to an internal consumer survey we found that SIBS is questioning the MB Way customers, in order to check out their propensity to join the Apple Pay as soon as it arrives to Portugal.” Corroboration purposes, thesis pag.82: “In fact, SIBS intends to avoid the penetration of the Apple Pay in Portugal; according to interviews, this event can probably be prevented using innovation and with service operations, making MB Way a differentiating element. This argument corroborates the existent literature, as the technology-based services carry risks, as markets shift rapidly, technologies proliferate unceasingly, and innovation cycles become shorter.”

Document print screen:



MB WAY

Já ouviu falar em Apple Pay?

Sim

Não

>>

Translation: Have you ever heard about Apple Pay? Yes. No.



MB WAY

Tenciona usar quando estiver disponível em Portugal?

Sim

Não

<< >>

Translation: Are you willing to use it when it is available in Portugal? Yes. No.

- **Who? SIBS**

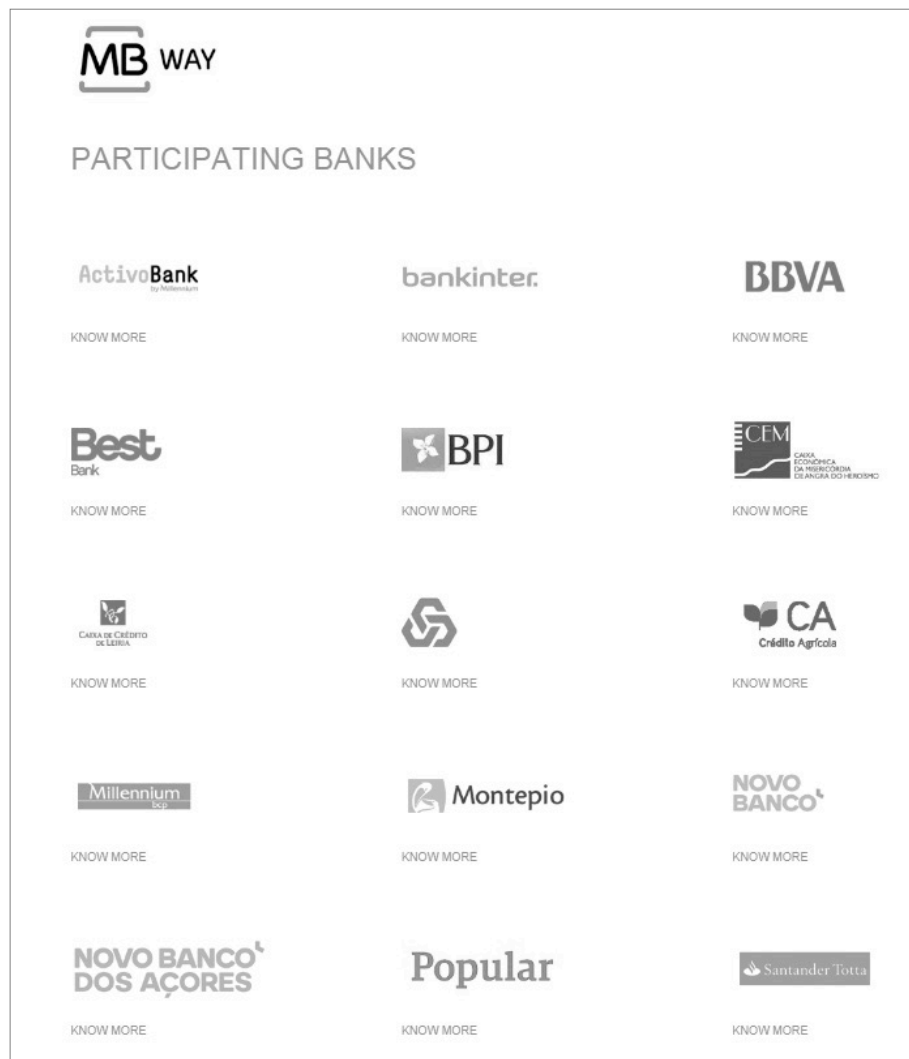
What? MB Way Adherent Banks

When? 2016-2017

Where? <https://www.mbway.pt/en/bancos-aderentes/>

What for? Corroboration purposes, thesis pag.124: “At this moment, in Portugal, the MB Way has 14 adherent banks and vast number of retail stores that have merged in a business network. This application allows customers to connect their bank to several retail companies that have joined the MB Way service.”

Document print screen:



- **Who?** SIBS/Bank

What? MB Way Cash Withdrawals

When? 2016-2017

Where? <https://www.mbway.pt/en/mb-way-to-enable-cardless-cash-withdrawals/>

What for? Triangulation and corroboration purposes, thesis pag.97: “Data analysis also reported the existence of pure virtual services in a technology-based business network. (...) Official documents corroborated this information, and mention that customers may establish electronic bridges from their bank and automatic teller machines that are managed by SIBS. This connection is performed by mobile device, using the network-preferred channel (e.g. MB WAY), in order to withdraw money without any human intervention. We consider this experience as Omni-channel pure virtual service architecture in a technology-based business network; it comprehends a virtual purchase to collect a physical service delivery. Traditionally, this service does not involve two companies, e.g. transactions using debit/credit cards, which reinforces the idea that Tb2N is different because it includes more than one company in the process. In the figure 10 it is involved the user’s bank (e.g. an adherent bank) and the company that manages the ATM network (i.e. SIBS). What underlies is that customers are not just debit/credit card holders, they make part of the process as self-service buyers and the purchase is encompassed by virtual services, and is virtually involving two companies. As self-service buyers, these customers also have other features that further distinguish this service from the traditional one. Customers are increasingly involved in the service, being able to interact with other customers, e.g. by sending a code, so that a member of the MB WAY can withdraw money from an ATM in real-time and geographically elsewhere.”

Document print screen:

SIBS



Bank

What is an MB WAY withdrawal?

The MB WAY withdrawal is a tool part of the MB WAY service that enables the withdrawal of cash from the Multibanco ATM network, without the need to use a bank card.

The MB WAY generates a 10 digit code that will enable the withdrawal at any Multibanco ATM. This type of withdrawal is available for MB WAY customers who have an up-to-date App MB WAY (version 1.6.0). If you are not an MB WAY customer you may receive, via sms, the code generated with the App MB WAY, by an MB WAY user.

- **Who? SIBS**

What? Retailer can boost client loyalty

When? 2016-2017

Where? <https://www.mbway.pt/en/frequently-asked-questions-2/>

What for? Understanding the banking phenomenon, thesis pag.82: “(...) when the bank integrated the MB Way concept it was underpinned the interest to collaborate in a heterogeneous network of companies, in order to get access to a wider customer market.”

Document print screen:

▶ MB NET @ MB WAY

▶ MB WAY APP

▼ RETAILERS/SELLERS

▶ How do I make MB WAY available as a means of payment?

▼ What advantages does MB WAY provide retailers/sellers?

The provision of a still simpler shopping experience, both fast and easy to use. The retailer may even be able to boost client loyalty through the provision of a new payment method that is simultaneously both very modern and very safe, characteristics of particular relevance in the digital retail market where the usage of real card data is not a recommended practice. In order to make the payment, the client simply needs to provide their mobile phone number to the retailer/seller and, on the app installed on their mobile device, introduce their MB WAY PIN number.

MB WAY deploys web services based on market standards that makes them easy to integrate into whatever system the retailer/seller already provides. This is a MULTIBANCO service that presents the same guarantees that nowadays already exist for the acceptance of card payments at traditional MULTIBANCO Network Automatic Payment Terminals.

As MB WAY based purchases do not require the card data, there is no need to obtain the security certifications otherwise necessary for databases with this goal. All the communications are secured by HTTPS with client – server authentication certificates.

▶ Where to make available payments by MB WAY?

▶ Can you accept international payments via MB WAY?

▶ What payment guarantees are there?

▶ Which technological partners are integrated into MB WAY?

- **Who? SIBS**

What? Retailer contracts the service of the Bank

When? 2016-2017

Where? <https://www.mbway.pt/en/frequently-asked-questions-2/>

What for? Triangulation purposes, thesis pag.68: “the bank already participated in the MB Way service, a functionality that allows customers to connect the bank to several retail companies. This solution allows customers to combine an act of physical purchase and virtual payment, by making a mobile payment for a service or product purchase in a retail store. This kind of synergy is complex because customers can use the payment function across a network of companies, and also combines several types of services (physical and virtual). Corroboration

purposes, thesis pag.124: “Similar to Apple Pay, where most merchants and banks supported this service shortly after its initial launch, bringing a new set of capabilities and installed base of consumers (Liu *et al.*, 2015), the MB Way has reached the same achievements.” (...) “This application allows customers to connect their bank to several retail companies that have joined the MB Way service.”

Document print screen:

▼ RETAILERS/SELLERS

▼ How do I make MB WAY available as a means of payment?

Following the contracting of the service by the bank, you should make the technical integration necessary for the support software that ensures you are technically able to accept MB WAY payments. MB WAY deploys web services based on market standards that ensure compliance with and easy integration into whatever system you already run.

Should you need further support, consult our network of certified partners to carry out the technical implementation necessary. Additionally, you may register in the DEVELOPERS area and gain access to the respective technical information.

- **Who? SIBS**

What? TAP Announcement

When? Last time we have followed: May 10, 2017.

Where? <https://www.mbway.pt/tap-e-o-mb-way/>

What for? Corroboration purposes, thesis pag.127: “For example, the Portuguese airline company (TAP), together with SIBS, refunded the full amount of the first ten people who make their reservation and payment through this network-preferred E-channel.” Corroboration purposes, thesis pag.128: “In short, the compensation is not being implemented by all the companies in the network, and is not reaching all the customers, only those who participate in certain campaigns, as previously in the case of TAP.”

Document print screen:

MB WAY CHALLENGE APP MB WAY OFERTAS

CAMPANHAS

A TAP E O MB WAY DÃO ASAS À TUA VIAGEM DE SONHO!

10 de Maio de 2017

Compra as tuas viagens TAP com o MB WAY e habilita-te a receber o teu dinheiro de volta ou vouchers até 50€.

A partir das 10h00 do dia 23 de Maio às 10h, até às 23h59 do dia 29 do mesmo mês, as primeiras 10 compras de voos TAP a serem pagas com o número de telemóvel através do MB WAY vão receber o dinheiro de volta (até no máximo 1000€)!

Mas as boas notícias não se ficam por aqui. Durante todo o passatempo, todos os que comprarem as suas viagens TAP através do MB WAY vão também receber vouchers até 50€ por reserva. Estes vouchers vão ser atribuídos da seguinte forma:


1- Na compra de voos intercontinentais:

- em classe executiva: será atribuído um voucher de 50€.
- em classe económica: será atribuído um voucher de 25€

2- Na compra de voos domésticos, Europa e norte de África:

- em classe executiva: será atribuído um voucher de 25€.
- em classe económica: será atribuído um voucher de 10€.

Estes vouchers têm um ano de validade e poderão ser utilizados numa compra futura na TAP Portugal.



Translation: Advertisement. TAP and MB Way give wings to your dream trip! May 10, 2017. Buy your TAP trips with MB Way and enable yourself to receive your money back or vouchers up to 50 €. From 10:00 am on May 23 at 10:00 a.m. to 11:59 p.m. on the 29th of the same month, the first 10 purchases of TAP flights to be paid with the mobile phone number through MB WAY will receive the money back (up to maximum 1000 €). But the good news does not stop here. Throughout the competition, all those who buy their TAP trips through MB WAY will also receive vouchers up to € 50 per booking. These vouchers will be assigned as follows: 1- When buying intercontinental flights: a) in business class: a voucher of € 50 will be awarded. b) in economy class: a voucher of € 25. 2- When buying domestic flights, Europe and North Africa: a) in business class: a voucher of € 25 will be awarded. b) in economy class: a voucher of € 10 will be awarded. These vouchers are valid for one year and may be used for future purchases at TAP Portugal. To participate in the competition, when you are finishing your reservation, you must choose the MB WAY payment option, enter the mobile phone number associated with your MB WAY account and accept the Terms and Conditions of the competition. Check here the official page of the TAP Competition. Do not have MB WAY yet? Download the APP here.

- **Who? SIBS**

What? SIBS activity

When? June 4, 2017

Where? <https://www.sibs-international.com/markets/portugal/>

What for? Understanding the phenomenon, thesis pag.94-95: “SIBS Group has been providing payment services worldwide over the last three decades. In Portugal, it performs a central role as a technology operator in the payments sector. In particular, with respect to the banking services, it manages the ATM network and the latest MB WAY brand (SIBS, 2015).”

Document print screen:

Portugal

In **Portugal**, the first market, SIBS is the **central utility for payments**, running the payment system end-to-end for more than 30 years, serving Banks, the Central Bank, government, etc.

Currently, SIBS plays a **transversal role in the payment system**, presenting a one-stop-shop offer with unique innovative services, covering a wide range of business areas along the processing and complementary services' value chain. For example, the first mobile solution in the world was launched in 1996.

Multiple examples of the innovative services offered are proof of SIBS' capability to face new market challenges and needs. Currently, SIBS offers more than 100 interoperable services on ATM networks and more than 30 services on POS networks, making it unique at global level.

Along the same lines, SIBS **launched several spin-offs of complementary solutions** such as Via Verde (contactless road toll and parking payments), digital certification, card personalisation and a BPO unit for document dematerialisation and process optimisation.

- **Who?** Bank
What? E-channel migration
When? Janeiro 4, 2017
Where? www.(confidential).pt
What for? Corroboration purposes, thesis pag.126-127: “E-channel mitigation strategy causes similar reactance levels as forced migration does. As a result of this migration, customers are forced to use different technologies and channels with their smartphones, losing the freedom that was previously available through the Web. From the official documents we acknowledged that the bank is using their channels to inform clients that the discontinuation of the service and migration is due to new security requirements for Internet payments.”
Document print screen:

MB NET is also available in MB WAY

Now, your online purchases are all available in the same place, as well as the possibility of using Touch ID to validate all your transactions.

How can I use the MB NET?

To be able to use the MB NET through the MB WAY, you must access the App MB WAY on your smartphone or tablet, select the menu "Cards", select the option "Generate card" and in the next screen select:

- The intended type of virtual card: "Single purchase" or "Retailer Card" (several purchases from the same retailer);
- Define the maximum amount you wish to spend on your purchases (>5 €); and;
- The card's validity in case you selected the "Retailer Card";
- To finalize, you only have to enter the MB WAY PIN on your App MB WAY and make your online purchases using the MB NET card.

By providing this tool with the app MB WAY the MB NET will become even more easy and comfortable to use since it does not require the definition of credentials for managing the service or any specific pre-subscription to use the service. Thus, MB NET is a truly comprehensive service in the extent that you may use it through the mobile phone and also take advantage of the MB WAY tools.

The MB WAY allows you to make purchases online, or not, in domestic or international retailers and also make immediate transfers. Easy, Comfortable and Fast.

See on the MB WAY website which retailers joined MBWAY and where you can already make your purchases.

For more information send us a message via BancoMail with the subject "Information request" and the sub-subject MB WAY.

A5 NVIVO Analysis⁷

Category	Subcategory	Representative citations
<p>Multi-brand experience</p>	<p>Combination of services</p>	<ul style="list-style-type: none"> • When service and a payment occurs, a joint service is established, that might be considered as a basic element for partnerships (interview) • The basic elements for partnerships are (...) services (interview) • The buying process connects 3 different factors, which are: (...) it encompasses physical and virtual purchases with a virtual payment, and more than one channel and service (observation) • Banking validation of the transaction and the human agent (interview) • There is always joint connections through services, e.g. B2B, B2C, etc. (interview) • In my opinion, the basic elements for establishing partnerships are the exchange of services and the sharing of clients (interview) • Younger generations are using new channels to purchase products and services, these combinations of channels and services is a challenge for us because we have to learn how to work with several technologies, for several reasons e.g. complaints, questions concerning the technology (observation) • The sharing of services are essential, nowadays many companies exchange services between them and with their customers (...) (interview) • If we are talking about partnerships and networks, we are naturally talking about the exchange of services, channels and knowledge (interview) • Companies establishing partnerships share profits and services (...) (interview) • (...) services and products are essential elements for any business and business networks (interview) • The basic elements that joins companies are (...) the transfer of products and services (interview)
	<p>Combination</p>	<ul style="list-style-type: none"> • Company systems/channels (interview)

⁷ Example from Chapter IV.2

of
channels

- The basic elements for partnerships are (...) channels/technology (interview)
- If we are talking about partnerships and networks, we are naturally talking about the exchange of services, channels and knowledge (interview)
- (...) channels are everywhere in business, you can find them on the retail, banking industry, business networks, etc. The problem is to manage all these channels (interview)
- The combination of technologies is essential to business, including the direct channels. The same, if we are talking about business networks, yes (interview)
- Without any doubt that without channels, clients can not establish a connection with companies and with the company(ies) service(s); channels are essential to business (interview)
- The use of direct channels allows the direct communication between clients and the bank, have partnerships these channels are still essential elements to establish business (interview)
- (...) partnerships we have talked about (MB Way) require that customers have to join the service by using a certain technology and by using some channels (e.g. Internet, App.) (interview)
- The buying process connects 3 different factors, which are: (...) it encompasses physical and virtual purchases with a virtual payment – more than one channel and service (observation)
- The MB Way solution, which connects companies together, is a solution for mobile payments that enables immediate transfers and payment purchases through several channels, via mobile device and can thus combine ATM purchases (official documents)
- I might consider the basic elements of partnerships: the employees, companies, systems, services, channels and technologies (interview)
- Younger generations are using new channels to purchase products and services, these combinations of channels and services is a

	<p>challenge for us because we have to learn how to work with several technologies, for several reasons e.g. complaints, questions concerning the technology (observation)</p> <ul style="list-style-type: none"> • Companies are being connected by channels all around, if you go to a cinema you can pay with your mobile phone, etc. (observation)
<p>Involvement of companies</p>	<ul style="list-style-type: none"> • Agreement between companies (interview) • The basic elements for partnerships are (...) companies (interview) • A partnership requires obligatorily two companies (...) (interview) • Partnerships require a contract between several companies (interview) • (...) companies common interests are essential to the establishment of partnerships (interview) • The bank is trying to establish new relationships (observation) • The essential elements are the organizations, but also the customers and the profits, this is the main reason why they come together (interview) • The buying process connects 3 different factors, which are: it combines two or more companies (...) (observation) • The process comprised simultaneously a physical purchase and the virtual payment with the cell phone, and it involved two companies, the private banking and the retail store that adhere to the MB Way (observation) • The bank is already preparing complex channel synergies, building on the establishment of synergies with other companies from different specialities (...) m-payments are actually opening the door to synergies, as these technologies brings together companies that are intending to use the same means of payment (interview) • (...) if companies collaborate with each other there are shared responsibilities (TB2N context) (interview) • More and more business companies are starting to connect with each other, that is the future, in particular when there is so much technology (interview)

- Customers are not just debit/credit card holders, they make part of the process as self-service buyers and the purchase is encompassed by virtual services, and is virtually involving two companies (observation)
- If we analyse the situation, almost all banks have joined the MB Way; everyone wants to be part of this network of companies, because they know that this can attract a greater number of customers (interview)
- MB Way has 14 adherent banks and a vast number of retail stores that have merged in a business network (official documents)
- Customers may establish electronic bridges from their bank and automatic teller machines that are managed by SIBS (official documents)
- The process comprised simultaneously a physical purchase and the virtual payment with the cell phone, and it involved two companies, the private banking and the retail store that adhered to the MB Way (observation)
- The goal behind this technology is to connect companies to serve customers and actually everybody wins – customers improve their buying process and companies are collecting customers from other partner companies (interview)
- Companies are joining the MB Way concept to underpin the interest to collaborate in a heterogeneous network in order to get access to a wider customer market (official documents)
- These partnerships bring new customers to both companies. Because the clients have advantages, they benefit from the establish a contract with another company that offer better prices due these customers are already part of the network (observation)
- (...) we are also observing that SIBS is managing the entire MB Way network, gathering companies as a big company (observation)
- The contact sales employee mentioned the existence of synergies between the bank and one insurance company (...) that contact sales employee mentioned the same happens with “electronic network chains” (observation)

Annex A
Conferences Certifications
21st European of Operations Management Conference
Palermo – Italy, June 20th-25th 2014.



This is to certify that

João Reis

Participated in the

European Operations Management
Association Conference 2014

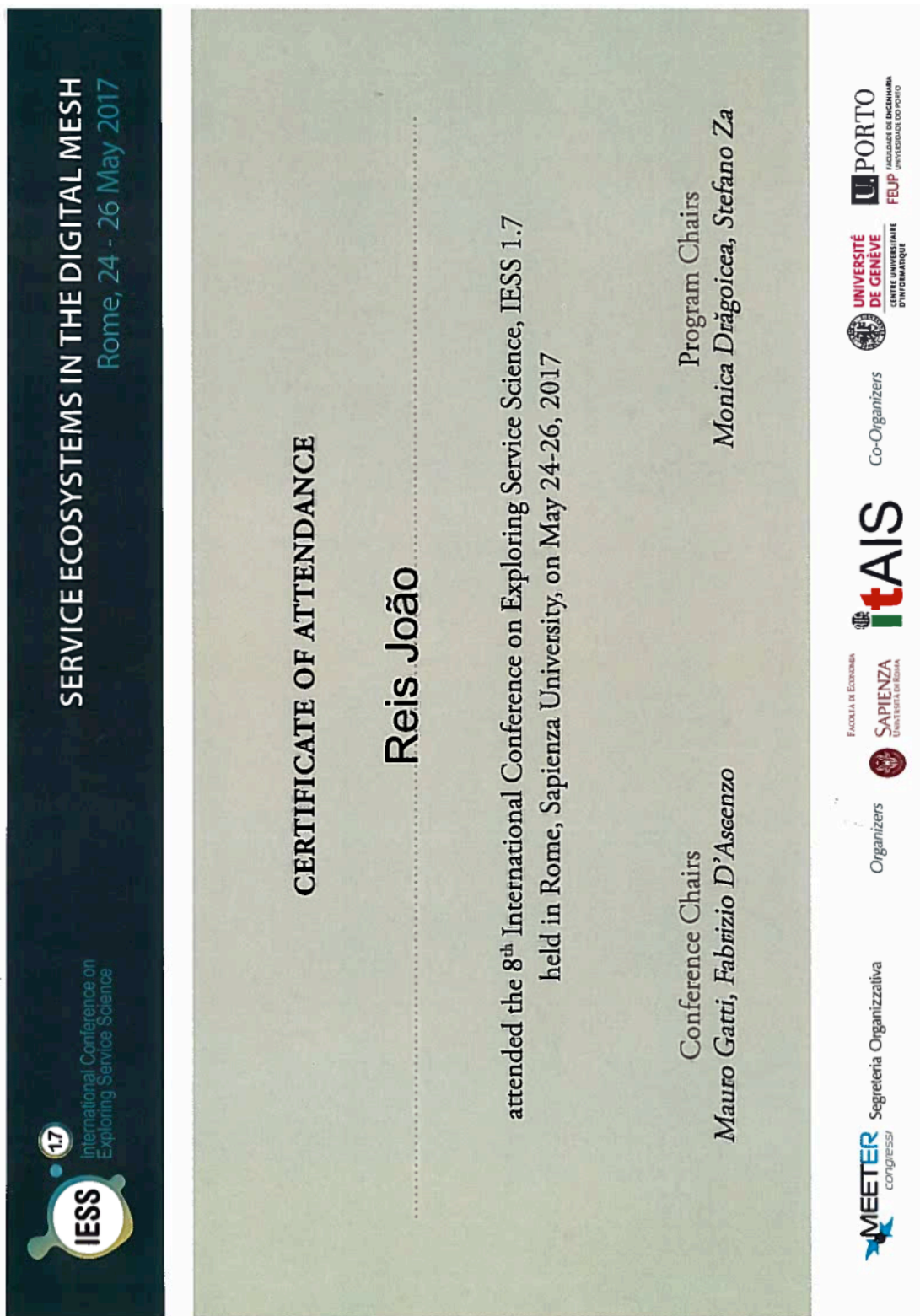
Operations Management in an Innovation Economy

University of Palermo, Italy
20 - 25 June 2014

A handwritten signature in black ink, appearing to read "Giovanni Ferrone".

Professor Giovanni Ferrone
University of Palermo

8th International Conference on Exploring Service Science (IESS 1.7.)
Rome – Italy, 24th-26th, 2017.



**24th European of Operations Management Conference.
Edinburgh – Scotland, 1st – 5th July, 2017.**



CERTIFICATE OF ATTENDANCE

This is to certify that

JOÃO CARLOS GONÇALVES REIS

has participated in the EUROMA 2017 ANNUAL CONFERENCE, held in
EDINBURGH, UK, JULY 3-5, 2017

Cristina Setyar
EurOMA 2017
Conference Team



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Website <http://www.euroma-online.org>

2017 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI 2017).
Bari – Italy, 18 – 20 September, 2017.



Politecnico
di Bari

DIPARTIMENTO DI
INGEGNERIA ELETTRICA
E DELL'INFORMAZIONE

CERTIFICATE OF ATTENDANCE

This is to certify that Prof./Dr./Mr.

attended the

2017 IEEE SOLI



IEEE International Conference on Service
and Logistics, and Informatics

September 18-20 2017 Bari, Italy

General Chair
Prof. Maria Pia Fanti
Polytechnic of Bari, Italy

Maria Pia Fanti

Organizing Secretariat  CENTRO ITALIANO CONGRESSI CIC

Viale Escrivá, 28 - 70124 Bari - Italy - Tel. +39.080.5043737 - www.cicisud.it

**1st Technology, Innovation, Entrepreneurship and Education Conference.
Canterbury – Great Britain, 11th – 12th September, 2017.**



CERTIFICATE OF ATTENDANCE

This is to certify that

João Reis

participated as an author

in

**EAI International Conference on
Technology, Innovation, Entrepreneurship and
Education**

**September 11 – 12, 2017
Canterbury, Great Britain**

**Dominika Belisová
Conference Manager
European Alliance for Innovation**

